

PREPARED FOR: Bruce Johnson
Tucson Water

PREPARED BY: Peter Livingston/TUS
Eduardo Latimer/TUS

DATE: November 15, 1993

SUBJECT: Brawley Wash Surface Recharge - Water Quality Study
Tucson Recharge Feasibility Assessment - Phase B

PROJECT: PHX21325.C1.11

GB-0985

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CH2M Hill, 1993

Brawley Wash Surface Recharge - Water Quality Study - Tucson Recharge
Feasibility Assessment - Phase B

c 1 of 1

Introduction

This document presents and discusses water quality results for the Brawley Wash pilot surface recharge operations performed from February 1990 through January 1991. The primary goal of the water quality program was to determine how recharged water would impact the existing groundwater quality. Specific objectives of the water quality monitoring program were:

- Document baseline water quality of the recharge source water and the groundwater prior to recharge operations.
- Monitor recharge source water and groundwater for changes in quality during recharge operations.
- Investigate possible leaching of inorganic and organic compounds from the vadose zone into the groundwater.
- Assess the extent of displacement/mixing of resident groundwater with recharge water.

The recharge site was once used as farming land (Buckelew, 1991). It was surface irrigated using siphon tubes (furrows) and oftentimes would produce considerable runoff. Historical farming data revealed that irrigation wetting profiles were never more than 3 feet deep. The analysis of the soils at the site indicate that any constituents present in the irrigation water or added to the fields (fertilizers, insecticides, etc.) most likely remained fixed in the ground 4 to 6 feet from the surface.

Summary

The water quality monitoring program was successful in assessing the water quality issues of interest. The most important results from the study are:

- Soluble inorganic constituents stored in the vadose zone were leached into the groundwater by the surface recharge operations. The concentrations of the majority of constituents peaked for approximately one month and then decreased to near baseline levels. At one of the monitor wells, however, sulfate concentrations did not return to baseline levels during the operation of the recharge basins. The direction of movement of leached constituents correlated with changes in lithology and permeability within the study area. Leached constituents moved predominantly from areas of low permeability to areas of high permeability, or from east to west across the study area.
- Pesticide and herbicide concentrations in groundwater samples taken during the recharge operation were either detected below the quantification limit of the analysis method, or were not detected.
- Overall, the quality of the recharge source water did not vary significantly during the 12-month testing period. The reason for a TOC concentration increase at the source well and monitor wells during June, 1990 is unclear (see discussion in text).
- Correlation of water quality changes at monitoring wells with recharge from a specific basin (i.e., basin two or four) was not possible due to lack of synchronization in timing between water quality sampling at monitoring wells and individual basin recharge events.
- Recharge water appears to move vertically downward to the surface of the groundwater and then horizontally with little mixing occurring. Horizontal flow is governed by the hydraulic gradient.
- Analysis of monitoring data showed that the hydraulic conductivity of the recharge site's vadose zone increases from east to west across the study area. The westerly movement of water was verified with transmissivity and groundwater contour maps obtained by Montgomery & Associates.

EXPLANATION

- AF-64 PRODUCTION WATER WELL AND IDENTIFIER
- WR-157A MONITOR WELL AND IDENTIFIER
- ▲ WR-166A(TD=105) VADOSE ZONE PIEZOMETER AND IDENTIFIER
WR-168A(TD=69)
WR-167A(TD=31) TOTAL DEPTH OF PIEZOMETER, IN FEET
- ⊙ WR-159A INDICATES PIEZOMETER(S) INSTALLED IN ANNULUS OF MONITOR WELL
WR-159B(TD=23) TOTAL DEPTH OF PIEZOMETER, IN FEET

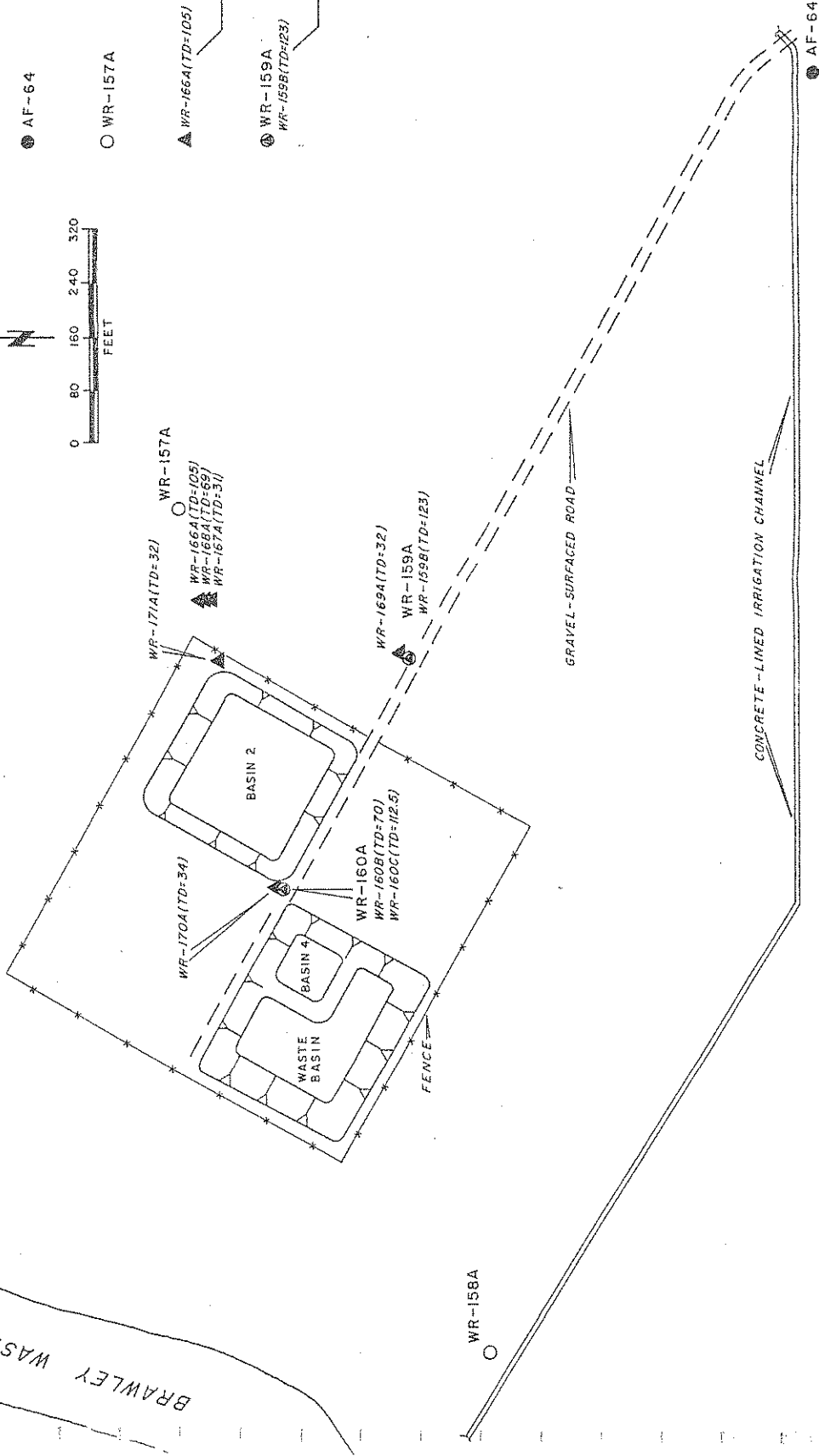
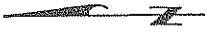


FIGURE 1 LOCATIONS OF WELLS AND PIEZOMETERS, BRAWLEY WASH PILOT SURFACE RECHARGE SITE



ERROL L. MONTGOMERY & ASSOCIATES, INC.
TUCSON, ARIZONA

Testing Procedures

Project Site and Facilities

The Brawley Wash pilot project was originally designed with four test basins and two waste basins. Initial construction included only two test basins and one waste basin as illustrated in Figure 1. After operating the facility for 6 months, it was established that the other basins would be of minimal value to the project and were never constructed.

The larger test basin, Basin No. 2 in Figure 1, was constructed to a depth of 4 feet in silty loam. The other test basin, Basin No. 4 in Figure 1, was constructed to a depth of 10 feet in gravel and coarse sands. These basins were constructed at different depths to assess the movement of water through different soil profiles. Prior to the recharge operations, infiltration rates (double ring infiltrometers) for Basin Nos. 2 and 4 were measured at 1.0 and 20.0 feet per day (ft/day), respectively.

An existing production well (AF-64) with an approximate capacity of 700 gallons per minute (gpm) was used to supply the testing recharge water source. The operation protocol called for continuous pumping, thus each basin was equipped with valves and controls to direct the flow of recharge source water in and out of the basins.

Four monitor wells (WR-157A, WR-158A, WR-159A, and WR-160A) and nine piezometers were installed in or near the project site. Refer to Figure 1 for the locations of these wells and piezometers. Three piezometer bores located near the center of the recharge facility—WR-170A (34 feet), WR-160B (70 feet), and WR-160C (112.5 feet)—were also sampled when they could provide enough water for a complete set of water quality samples. Monitor well WR-160A was located at what is considered to be the center of the recharge area. The other monitor wells and their approximate distance from well WR-160A are:

Well Number	Distance to WR-160A	Relative Location
WR-157A	600 feet	N-74°-E
WR-158A	768 feet	S-64°-W
WR-159A	400 feet	S-60°-E

Recharge Basin Operation

The operations objective of the project was to operate the supply well (AF-64) continuously from February 1990 through January 1991 by cycling water between the two test basins. During the 12-month period of operations, however, there were 20 incidents when either data collection or source water pumping was interrupted. The maximum operational down

BASIN 2

DATE	AUGUST			SEPTEMBER			OCTOBER			NOVEMBER			DECEMBER			JANUARY			
	8/1	8/10	8/20	8/30	9/10	9/20	9/30	10/10	10/20	10/30	11/10	11/20	11/30	12/10	12/20	12/30	1/10	1/20	1/31
WET		14 DAYS			10 DAYS			19 DAYS						29 DAYS				6 DAYS	
DRY	6 DAYS		20 DAYS			13 DAYS			7 DAYS								14 DAYS		
INFLTRATION RATE (ft/day)	1.5													*	*	*	*	*	*
	1.0													*	*	*	*	*	*
	0.5	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

RECORDED DATA

PUMP ON

BASIN 4

DATE	AUGUST			SEPTEMBER			OCTOBER			NOVEMBER			DECEMBER			JANUARY			
	8/1	8/10	8/20	8/30	9/10	9/20	9/30	10/10	10/20	10/30	11/10	11/20	11/30	12/10	12/20	12/30	1/10	1/20	1/31
WET	6 DAYS		20 DAYS			13 DAYS			7 DAYS									14 DAYS	
DRY	14 DAYS				10 DAYS			19 DAYS						29 DAYS				6 DAYS	
FILLING INFLTRATION RATE (ft/day)	25																		
	20																		
	15																		
	10	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	5	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

BRAWLEY WASH
OPERATION AND INFILTRATION DATA
(August 1 Through January 31)

Table 1
BRAWLEY WASH WATER QUALITY

MAJOR CONSTITUENTS (greater than 5 mg/l)

Calcium (mg/l)	Magnesium (mg/l)
Sodium (mg/l)	Bicarbonate (mg/l)
Chloride (mg/l)	Carbonate (mg/l)
Silica (mg/l)	Sulfate (mg/l)

MINOR CONSTITUENTS (0.001 - 10.0 mg/l)

Boron (mg/l)	Fluoride (mg/l)
Bromide (mg/l)	Iron (mg/l)
Potassium (mg/l)	Strontium (mg/l)
Zinc (mg/l)	Nitrate (mg/l)

TRACE CONSTITUENTS (less than 0.1 mg/l)

Arsenic (mg/l)	Barium (mg/l)
Chromium (mg/l)	Cadmium (mg/l)
Manganese (mg/l)	Lead (mg/l)
Selenium (mg/l)	Mercury (mg/l)

OTHER LAB PARAMETERS

Lab pH (units)
Lab Electrical Conductivity (umhos/cm)
Total Dissolved Solids (mg/l)
Total Suspended Solids (mg/l)
Turbidity (NTU)
Total Coliform EPA Method 305 (MPN/100 ml) or EPA Method 303 (CFU/100 ml)
Heterotrophic Plate Count (CFU/100 ml)
Total Alkalinity (mg/l as CaCO₃)
Total Hardness (mg/l as CaCO₃)
Total Organic Carbon - EPA Method 415.1 or 9060 (mg/l)
Total Organic Halogen - EPA Method 9020 (µg/l)
Pesticides and Arachlors - EPA Method 608 (µg/l)
Herbicides - EPA Method 8150 (µg/l)

FIELD PARAMETERS

Field pH (units)
Temperature (Degrees C)
Field Electrical Conductivity (µmhos/cm)
Dissolved Oxygen (mg/l)
*Chlorine Residual (mg/l)

*Recharge source water from the distribution system only.

time was a 5-week period (during July and August) which was caused by a lightning strike that destroyed portions of the electronic monitoring system being used to collect data. Refer to *Results of Pilot Project Operations and Infiltration Tests - Brawley Wash* (CH2M HILL, 1991) for more information regarding the operational interruptions of the pilot recharge project.

During the first 4 weeks of surface recharge, both basins were operating on a 7-day wet/7-day dry cycle. The wet/dry cycle was changed to a 14-day wet/14-day dry cycle for the next 10 weeks (April through May). From June through October, the cycle lengths were varied (e.g. 20 days wet/17 days dry, 14 days wet/20 days dry, etc.). Recharge operations ceased at the end of October, 1990 to allow the test basins to dry.

During the month of November, modifications were made to Basin No. 2 for the purpose of measuring vadose zone parameters. The modifications consisted of excavating two crossing trenches, 8-feet deep, to expose more permeable subsurface material. Recharge into Basin No. 2 resumed on December 7 for a 29-day wetting period. Flow was then diverted into Basin No. 4 for a 14-day wetting period. On January 22, 1991, after flow had been diverted back into Basin No. 2 for 6 days, recharge operations were terminated. The wet/dry cycles for both test basins are depicted in Figures 2A and 2B.

Sampling Protocol and Field Measurements

During recharge operations that began in February 1990 and ended in January 1991, water quality samples from the supply well were collected every month except in September and October. Electrical conductivity, pH, temperature, and dissolved oxygen were measured weekly at the source well. Water quality samples from the four monitor wells were collected on a monthly basis during April through August, October, and December. Water quality samples taken from the source well and monitor wells were tested for approximately 40 constituents and parameters, including major and minor dissolved inorganic constituents, pesticides, and herbicides. Table 1 provides a complete listing of the constituents and parameters for which the samples were tested. A compendium (tables) of the water quality analyses are presented in the Appendix.

Prior to commencing recharge operations, electrical conductivity (EC), pH, temperature (T), and dissolved oxygen (DO) were measured at the supply well (in May 1989) and each of the monitor wells (July/June, 1989 and October, 1989). Water quality samples for the supply well were taken in November, 1986 and May, 1989, while water quality samples for the monitor wells were taken in June or July, 1989, and October, 1989. These samples were tested for approximately 40 constituents and parameters, including major and minor dissolved inorganic constituents, pesticides, and herbicides. Availability of this data depends on the sample date. Availability of data on constituent concentrations of specific interest to this study, prior to recharge operations, is shown in Table 2.

Table 3

Summary of Field Water Quality Parameters for Groundwater Samples
Brawley Wash Pilot Surface Recharge Site

IDENTIFIER	DATE	TIME	ELECTRICAL		pH (pH units)	DISSOLVED OXYGEN (mg/l)
			TEMPERATURE (Cent.)	CONDUCTANCE (umhos/cm)		
AF-64	12-May-89	--	26.0	414	7.9	--
	13-Feb-90	1100	25.0	385	7.9	6.7
	20-Feb-90	0940	25.2	378	8.0	--
	28-Feb-90	1220	24.0	375	7.4	--
	28-Feb-90	1220	26.2	418	7.6	4.1
	07-Mar-90	1100	26.2	385	7.8	--
	07-Mar-90	1100	25.5	382	7.8	--
	14-Mar-90	1135	25.1	401	7.6	
	14-Mar-90	1140	25.2	405	7.6	5.2
	21-Mar-90	1025	26.1	402	8.2	--
	21-Mar-90	1020	26.6	408	7.8	5.8
	28-Mar-90	1300	26.4	372	8.0	--
	28-Mar-90		26.5	395	7.7	7.6
	02-Apr-90	1232	25.1	390	7.9	6.2
	11-Apr-90	1040	26.5	405	7.6	6.9
	18-Apr-90	1010	26.7	405	7.7	8.9
	25-Apr-90	1435	26.6	405	7.7	5.2
	03-May-90	1145	26.5	415	7.7	4.5
	09-May-90	1002	27.1	402	7.7	7.4
	16-May-90	0915	26.6	408	7.7	6.0
	23-May-90	0935	26.5	415	7.7	6.7
	30-May-90	1240	26.5	405	7.6	6.3
	04-Jun-90	1030	27.0	405	7.8	5.4
	13-Jun-90	1240	27.1	412	7.5	6.2
	20-Jun-90	1025	27.1	412	7.6	6.3
	27-Jun-90	1055	27.1	416	7.4	6.8
	05-Jul-90	0725	26.9	400	7.6	7.1
	11-Jul-90	1100	27.0	405	7.7	6.9
	19-Jul-90	--	26.9	--	7.8	--
	24-Jul-90	--	27.0	415	7.7	6.5
	01-Aug-90	--	27.3	412	7.5	6.1
	07-Aug-90	1045	26.6	418	7.6	7.6
	15-Aug-90	1320	26.7	408	7.4	6.4
	22-Aug-90	1040	27.3	410	7.7	6.3
	05-Sep-90	1030	27.1	385	7.2	6.3
	20-Sep-90	0955	27.0	415	7.3	7.3

AVERAGE	402
STANDARD DEVIATION	13
PERCENT CHANGE	3

Recharge Source Water

Table 3 presents all the collected data on EC, pH, temperature and DO at the source well. As shown in Table 3, electrical conductivity values at the source well did not vary significantly during recharge operations. A standard deviation of 13 represents only a 3 percent change from the mean electrical conductance of 402 $\mu\text{mhos/cm}$. Baseline EC values reported in November, 1986 and May, 1989 were 412 and 414, respectively. Unfortunately, baseline data for other dates was not available.

Nitrate, chloride, and sulfate concentrations at the source well did not vary significantly throughout the recharge process (see Figures 4, 6 and 7). Although baseline data prior to recharging for these constituents was sporadically available, all three concentrations did not vary significantly from baseline concentrations.

The only constituent in the source water that was reported to have varied significantly during recharge operations was Total Organic Carbon (TOC), which increased by 400 percent in June 1990. Strangely, those constituents which should have changed due to the sudden increase in TOC were not showing the appropriate trends. The Tucson Water Quality Laboratory verified that the control was checked before and after the respective samples were analyzed and that recovery figures were within 2 percent. This appeared to indicate that the higher TOC concentrations may have resulted from sample contamination occurring during the collection process, however, the analyses of TOC in the samples collected from the monitor wells also showed sudden increases of this constituent in June, which tends to contraindicate sample contamination. Given these facts, it is difficult to ascertain the reason for the high TOC readings in June, 1990.

Given that electrical conductivity, nitrate, chloride, and sulfate concentrations at the source well showed little variation throughout the 12 months of recharge, it is concluded that the recharge water did not reach the supply source. It should be noted, however, that the TOC peak in June, 1990 could be a real affect. The cause of this peak is unknown.

Impact of Recharge Operations on the Groundwater

Certain groundwater quality parameters varied independently for each of the monitor wells during recharge. Individual operation of the recharge basins could not be correlated to the water quality samples extracted from any of the monitor wells since their sampling was not synchronized with recharge operations.

The concentrations of nitrate ($\text{NO}_3\text{-N}$), TOC, chloride, and sulfate were plotted (per well) versus sampling date. These plots are Figure 3 (EC), Figure 4 ($\text{NO}_3\text{-N}$), Figure 5 (TOC), Figure 6 (Cl), and Figure 7 (SO_4). Figures 4, 5, 6, and 7 use data obtained in the laboratory while Figure 3 uses data mostly obtained in the field.

The EC, nitrate ($\text{NO}_3\text{-N}$), and chloride time series plots were similar in nature. Well WR-160A was the first of the wells to detect the slug of leached constituents from the vadose zone due to recharge. The maximum measured values of EC, $\text{NO}_3\text{-N}$, and chloride

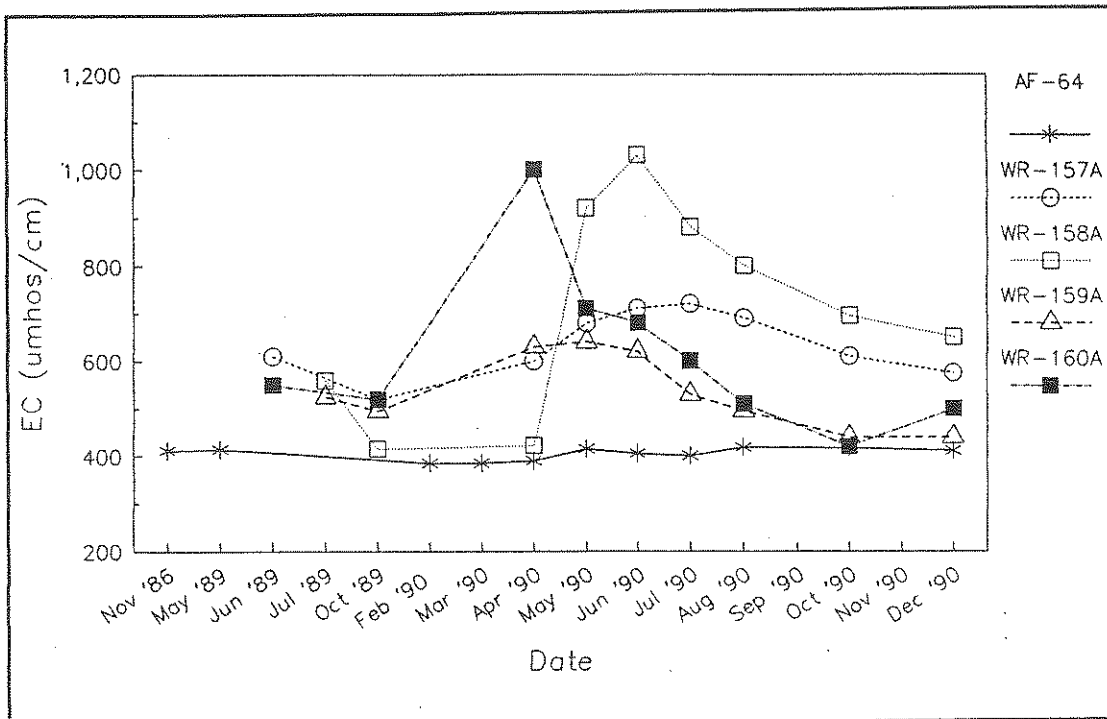


Figure 3. Brawley Wash Water Quality - Electrical Conductivity (μ mhos/cm)

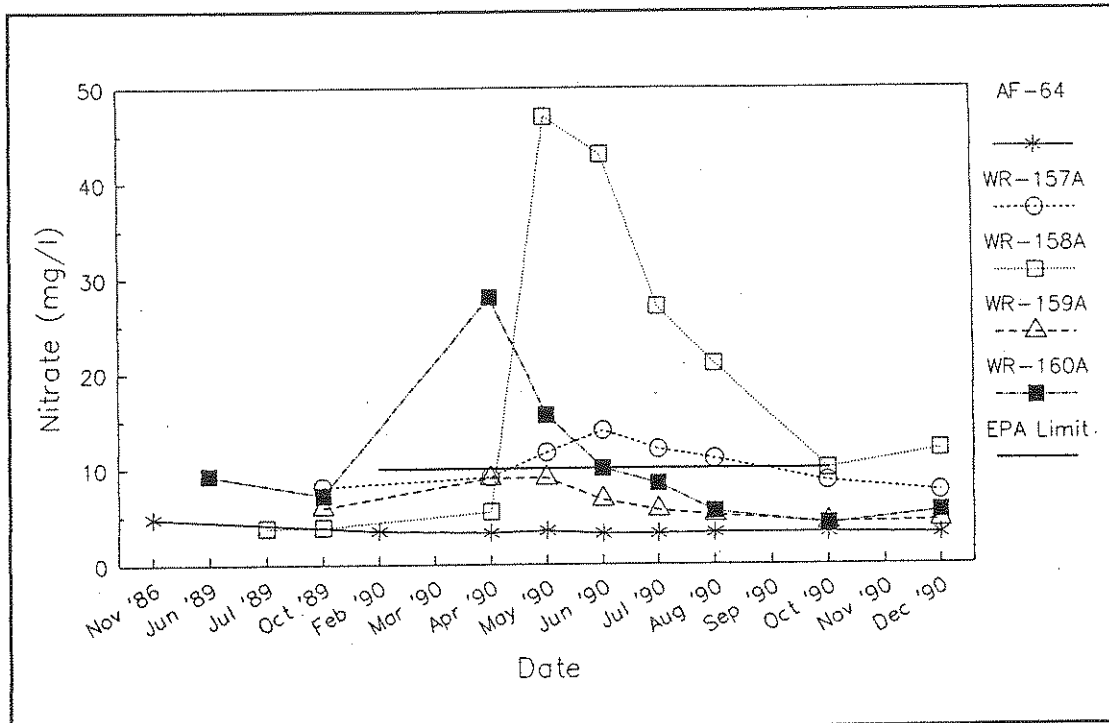


Figure 4. Brawley Wash Water Quality - Nitrate (mg/l)

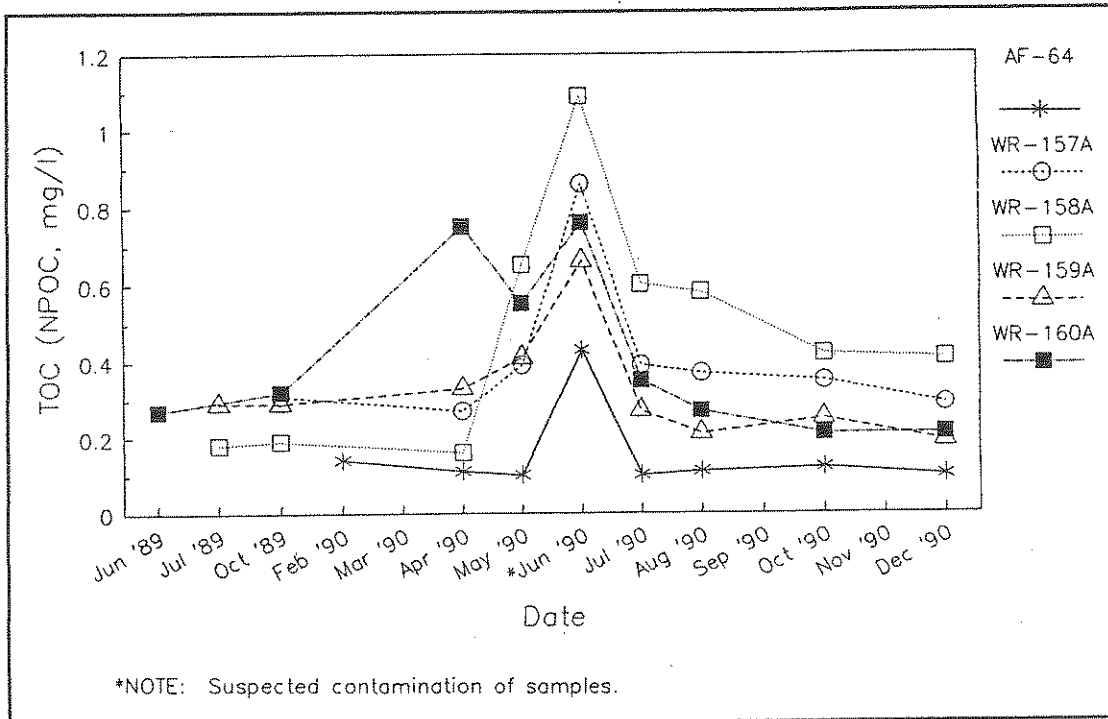


Figure 5. Brawley Wash Water Quality—Total Organic Carbon (mg/l)

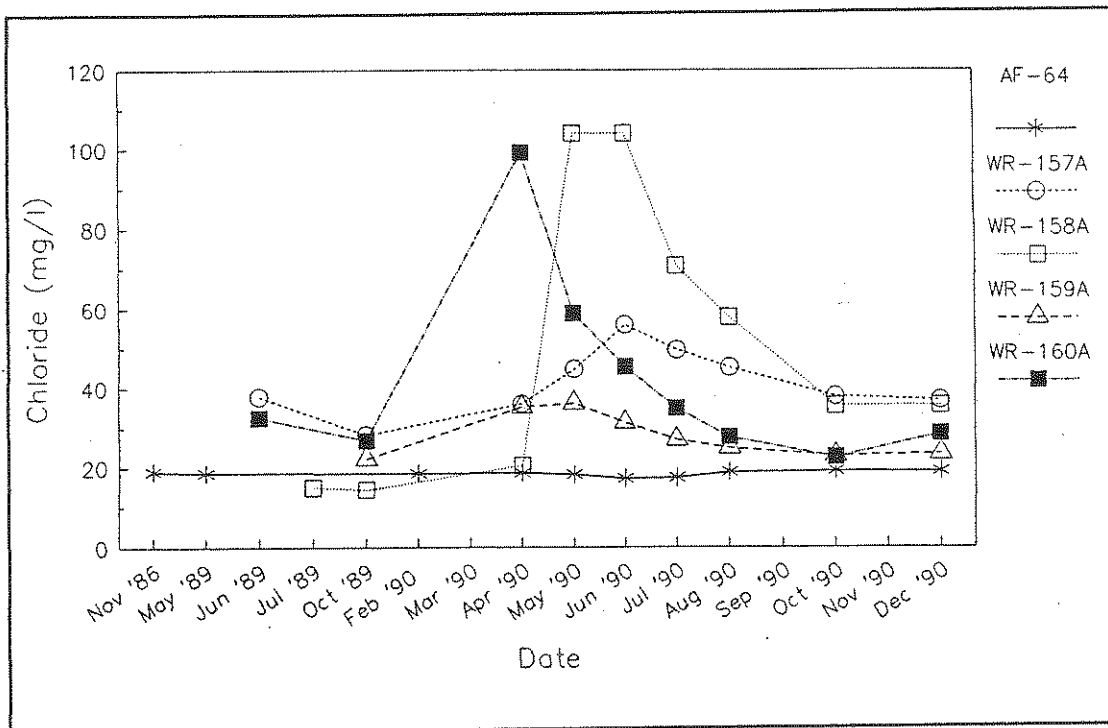


Figure 6. Brawley Wash Water Quality—Chloride (mg/l)

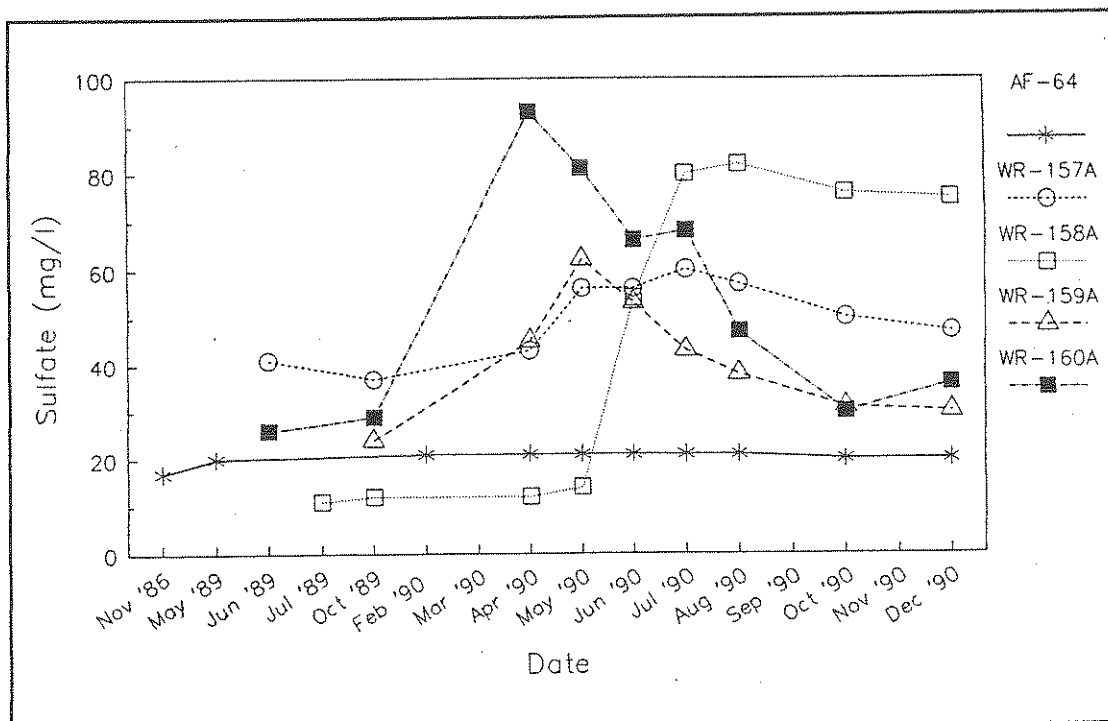


Figure 7. Brawley Wash Water Quality—Sulfate (mg/l)

in well WR-160A occurred in April. These concentrations were significantly high (more than double their baseline concentrations). The well's rapid response was reasonable since it is located in the middle of the two test basins and can receive recharge from either one.

One to two months later, EC, $\text{NO}_3\text{-N}$, and Cl values peaked in well WR-158A (west of the pilot facility). This shows that the hydraulic conductivity of the vadose zone was greater to the west. The water in well WR-158A had a EC of 950 micromhos per centimeter ($\mu\text{mhos/cm}$), a 125 percent increase from the previous month. The concentration of $\text{NO}_3\text{-N}$ increased from 5.5 milligram per liter (mg/l) to 47.0 mg/l, while the concentration of chloride increased from 20.5 mg/l to 104 mg/l. Meanwhile, the values of $\text{NO}_3\text{-N}$ and EC in well WR-160A had decreased. Wells WR-157A and WR-159A, located eastward of the pilot facility, experienced minimal changes in the values of $\text{NO}_3\text{-N}$ and EC.

Towards the end of recharge operations, the values of EC, $\text{NO}_3\text{-N}$, and chloride in well WR-160A had already reached pre-recharge levels of approximately 500 $\mu\text{mhos/cm}$, 5.4 mg/l, and 28.4 mg/l, respectively. For well WR-158A, EC levels were approximately one and a half times greater than pre-recharge levels in October, 1989, while they were only approximately 100 $\mu\text{mhos/cm}$ greater than pre-recharge levels in July, 1989; the $\text{NO}_3\text{-N}$ concentration had decreased from a peak of 47 mg/l to 12 mg/l; and chloride concentrations had decreased from a peak of 99.1 mg/l to 28.4 mg/l. Due to the hydraulic gradient in the vicinity of study area, well WR-158A was still experiencing the tail-end of the slug of constituents leached out of the vadose zone by the recharge operations. The delay of well WR-158A in detecting the leachate slug is probably due to the fact that WR-158A is much farther from basin 4 than is well WR-160A.

Peak values of chloride, nitrate, and EC for monitor wells WR-157A and WR-159A never reached the levels that were measured in wells WR-160A and WR-158A. EC values, along with NO₃-N, chloride, and sulfate concentrations, in well WR-159A peaked before well WR-157A did. The lower peaking values can be attributed to the westward hydraulic flow in the aquifer. The time to peak was approximately proportional to the wells' distances from the test basins.

As with the EC, NO₃-N, and chloride concentrations, sulfate concentrations for well WR-160A peaked in April. Sulfate concentrations for well WR-159A peaked before well WR-157A. Peak sulfate concentrations in both wells WR-159A and WR-157A were lower than the peak sulfate concentrations in wells WR-158A and WR-160A. The highest sulfate concentration occurred at well WR-160A, which is logical given its location between the two recharge basins. Sulfate concentrations in well WR-158A never did reach pre-recharge values. It is unclear why this occurred.

Other Observations

Piezometer WR-170A, at a depth of 34 feet, contained enough water to collect samples only on March 1990. Water quality results were approximately the same as the source water for that month. Therefore, it was concluded that the wetting front had already passed this piezometer.

The piezometer at the 70 foot level, WR-160B, was tested monthly from March through July. The March sample had an EC of 700 μ mhos/cm. This EC value was about 45 percent lower than the corresponding value measured in monitor well WR-160A. This suggests that the wetting front had probably recently moved past the piezometer. Monthly EC tests performed after March resulted in values that were approximately the same as the values for the source water.

On only one occasion, in early April, did piezometer WR-160C (depth of 112 feet) contain enough water to collect samples. From these, exceedingly high values of EC (6,900 μ mhos/cm) and pH (12.2) were measured. The reason for the high values was probably due to contaminants from the cement plug installed in the well during its construction. It is postulated that when the water came in contact with the plug, it dissolved enough of the lime in the cement to increase the EC and pH of the water. For this reason it is believed that piezometer wells constructed in such manner should not be used for sampling water quality.

Conclusions

The main objective of the water quality monitoring program was to determine if recharged water would impact existing groundwater quality. In the short term of operations, soluble inorganic constituents stored in the vadose zone were leached into the groundwater by surface water recharge. These inorganic constituents were predominantly transported from the recharge basins to the west. The westerly movement of water was verified with transmissivity and groundwater contour maps. At the majority of monitor wells, the concentrations of nitrate, sulfate, and chloride peaked for approximately one month and then decreased to near baseline levels. However, the sulfate concentration at monitor well WR-158A did not return to baseline levels.

Overall, the quality of the recharge source water did not vary significantly over the 12-month testing period. The exception to this was the concentration of TOC in samples taken from the source well. TOC concentrations for the source well peaked in June, 1990. This peak may or may not be real (see discussion in text).

The pesticide and herbicide concentrations in groundwater samples taken during the recharge operations were either detected below the quantification limit of the analysis or were not detected.

The type and amount of leached constituent contributed from each recharge basin may vary due to differences in lithology. Unfortunately, a recharge event at an individual basin could not be correlated with water quality changes at the monitor wells due to lack of synchronization in timing between monitor well sampling and surface recharge at an individual basin.

Recharge water appears to move vertically downward to the surface of the groundwater, and then horizontally with little mixing occurring. Horizontal flow is governed by the hydraulic gradient.

Whether or not soil should be removed to keep constituents from getting into the groundwater should be analyzed on a case by case basis. Soils excavated from retired farm fields should be tested during construction of the test basins for resident salts and potentially dangerous chemicals such as DDT. Soils that are contaminated with health-threatening constituents should be excavated (and properly disposed of).

Recommendations

- Add tracers to the water in individual recharge basins to better assess the mixing phenomenon that occurs when the recharged water comes in contact with the resident groundwater.

- Synchronize sampling of the aquifer and the recharge operations of an individual basin to establish which constituents are leached from the basin's underlying vadose zone.
- If the need for accurate water quality data warrants the expense, construct separate sampling wells to monitor the different confining layers of the aquifer.
- Analyze soil samples obtained during basin excavation and during the drilling of monitor wells to establish the initial concentration of some of the more important constituents (i.e., chloride, sulfate, nitrates, pesticides and herbicides) in the soils.
- Sample the monitor wells for EC and pH prior to commencing recharge operation and then twice per month until constituent concentrations indicate that the contaminant plume is no longer in the vicinity of the monitoring well (i.e., until constituent concentrations reach baseline levels).

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Appendix
WATER QUALITY DATA

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE AF-064 A 12/11/90 1248 109293 ATL 907439 WQ 907440 WQ 907440 WQ 12/11/90 1248 109293 ATL 907440 WQ 12/11/90 1248 109293 ATL 907440 WQ 12/11/90 1248 109293 ATL 907440 WQ

(D-16-10) 08 BDD PH IN FIELD (S.U.) 7.8 PH IN LAB (S.U.) 7.2 R

TEMPERATURE (DEGREES CENT.) 26.1 DISSOLVED O2 (PPM) 6.3 FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM) 411 LAB CONDUCTIVITY (UMHO/CM) 400 CALCULATED CONDUCTIVITY (UMHO/CM) 433

TOTAL DIS. SOLIDS (180) (MG/L) 251 Y TOTAL DIS. SOLIDS CALC (MG/L) 322 TOTAL SUSPENDED SOLIDS (MG/L) 0.23 VOLUME FILTERED, LITERS 3.8 TURBIDITY, LAB 0.3

TOTAL HARDNESS (CACO3, MG/L) 99 TOTAL HARDNESS CALC. (CACO3, MG/L) 82.4 HARDNESS, CALCIUM CALC. (CACO3, MG/L) 144 HARDNESS, CALCIUM CALC. (CACO3, MG/L) 143 R BICARBONATE ALKALINITY (CACO3, MG/L) 144

TOTAL ALKALINITY, CALCULATED (CACO3, MG/L) 0.06 LANGLIER INDEX 3.14 ION BALANCE, CALC. 2.36 SODIUM ADSORPTION RATIO, CALC. FLUORIDE, (MG/L) 0.588

METHOD B CHLORIDE (MG/L) 19.0 SULFATE (MG/L) 20 BROMIDE (MG/L) 0.18 SODIUM (MG/L) 54

POTASSIUM ((MG/L) 1.6 CALCIUM (MG/L) 33 MAGNESIUM (MG/L) 4.1 SILICON (MG/L) 15 ORTHOPHOSPHATE AS P. (MG/L) NO.5 NITRATE AS NITROGEN (MG/L) NO.1 NITRATE AS NITROGEN (MG/L) 3.2

TOTAL ORGANIC HALOGENS AS CL (UG/L) NS TOTAL ORG. CARBON, AS C (NPOC, MG/L) 0.10 BORON (MG/L) <0.05 IRON (MG/L) 907440 WATER QUALITY LAB NUMBER 109300

ALL REPORT NUMBER FOR QA TOTAL COLI - MPN (CFU/100ML) <2 TOTAL COLI - FILTR (CFU/100ML) 0 HETEROD. PLATE COUNT (MEMBRANE, CFU/ML) 23 BACKGROUND (CFU/100 ML) 0 4,4'-DICHLOROBIPHENYL (SURROGTE%RECOVERY) 97.400 ***** PESTICIDES - EPA METHOD 608 *** 901218

INITIALS:

TUCSON WATER SAMPLES
ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	AF-Q64-A (SAMPLES CONTINUED)	12/11/90	12/11/90	12/11/90	12/11/90	12/11/90	12/11/90
		1248	1248	1248	1248	1248	1248
	109293 ATL	907439 WQ	907440 WQ	907439 WQ	907440 WQ	109293 ATL	907440 WQ
	(D-16-10) 08 BDD						

ALPHA BHC (UG/L)	NO.011
GAMMA BHC (LINDANE) (UG/L)	NO.012
BETA BHC (UG/L)	NO.011
HEPTACHLOR (UG/L)	NO.012
DELTA BHC (UG/L)	NO.011
ALDRIN (UG/L)	NO.011
HEPTACHLOR EPOXIDE (UG/L)	NO.012
ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L)	NO.019
4,4'-DDE / PP'-DDE (UG/L)	NO.019
DIELDRIN (UG/L)	NO.021
ENDRIN (UG/L)	NO.025
4,4'-DDD / PP'-DDD (UG/L)	NO.022
ENDOSULFAN II/BETA ENDOSULFAN (UG/L)	NO.026
4,4'-DDT / PP'-DDT (UG/L)	NO.034
ENDRIN ALDEHYDE (UG/L)	NO.012
ENDOSULFAN SULFATE (UG/L)	NO.117
METHOXYCHLOR (UG/L)	NO.508
CHLORDANE (UG/L)	NO.544
TOXAPHENE (UG/L)	NOT ANALYZD
PCB 1016 (UG/L)	NOT ANALYZD
PCB 1221 (UG/L)	NOT ANALYZD
PCB 1232 (UG/L)	NOT ANALYZD
PCB 1242 (UG/L)	NOT ANALYZD
PCB 1248 (UG/L)	NOT ANALYZD
PCB 1254 (UG/L)	NOT ANALYZD
PCB 1260 (UG/L)	NOT ANALYZD
DIMETHYL PHTHALATE (UG/L)	NOT ANALYZD
DIETHYL PHTHALATE (UG/L)	NOT ANALYZD
HEXACHLOROBENZENE (UG/L)	NOT ANALYZD
DI-N-BUTYL PHTHALATE (UG/L)	NOT ANALYZD
BENZYL BUTYL PHTHALATE (UG/L)	NOT ANALYZD
BIS (2-ETHYLHEXYL) PHTHALATE (UG/L)	NOT ANALYZD
DI-N-OCTYL PHTHALATE (UG/L)	NOT ANALYZD
**** HERBICIDES - EPA METHOD 8150 ****	
2,4-DICHLOROPHENOX ACETIC ACID (UG/L)	8150
2,4-DICHLOROPHENOX BUTYRATE (UG/L)	<1.0
(2,4,5-TRICHLOROPHENOX) ACETATE (UG/L)	<1.0
SILVEX/2(2,4,5-TRICHLOROPHENOX) (UG/L)	<0.5
DALAPON/2,2-DICHLOROPROPANOATE (UG/L)	<0.1
DICAMBA/3,6-DICHLORO-2-METHOXY.. (UG/L)	<5.0
DICHLORPROP/2(2,4-DICHLOROPHENO.. (UG/L)	<0.5
DINOSER/2-SEC-BUTYL-4,6-DINITRO (UG/L)	<1.0
MCPA/2-METHYL-4-CHLOROPHENOX.. (UG/L)	<0.1
MCP/MECOPROP/2(4-CHLORO-2-METH.. (UG/L)	<200
	<200

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE AF-064 A	10/24/90	10/09/90	10/09/90	10/09/90	10/09/90
	1030	1030	1122	1122	1122
(D-16-10) 08 BDD	906400 WQ	107183 ATL	107184 ATL	906057 WQ	906058 WQ
					906059 WQ

FLOW RATE (GPM) 712
 STATIC WATER LEVEL 155.05
 PUMPING WATER LEVEL 182.60
 PH IN FIELD (S.U.) 7.8
 PH IN LAB (S.U.)

TEMPERATURE (DEGREES CENT.) 26.6
 DISSOLVED O2 (PPM) 5.8
 FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM) 412
 LAB CONDUCTIVITY (UMHO/CM)

CALCULATED CONDUCTIVITY (UMHO/CM) 420
 TOTAL DIS. SOLIDS(180) (MG/L) 413 R
 255
 254 R

TOTAL DIS. SOLIDS CALC (MG/L) 316 R
 TOTAL SUSPENDED SOLIDS (MG/L) 2.5
 VOLUME FILTERED, LITERS 3.5
 TURBIDITY LAB
 TOTAL HARDNESS (CACO3, MG/L) 88
 HARDNESS CALC. (CACO3, MG/L) 67.4
 HARDNESS, CALCIUM CALC. (CACO3, MG/L) 146
 BICARBONATE ALKALINITY (CACO3, MG/L) 146 R

TOTAL ALKALINITY, CALCULATED (CACO3, MG/L) 146 R
 LANGLIER INDEX -0.50 R

ION BALANCE, CALC. -2.40

SODIUM ADSORPTION RATIO, CALC. 2.32
 FLUORIDE (MG/L) 0.62B
 METHOD B
 CHLORIDE (MG/L) 19.1
 SULFATE (MG/L) 20
 BROMIDE (MG/L) 0.18
 SODIUM (MG/L) 51
 POTASSIUM ((MG/L)) 1.5
 CALCIUM (MG/L) 27
 MAGNESIUM (MG/L) 4.0
 SILICON (MG/L) 17

ORTHOPHOSPHATE AS P. (MG/L) NO.5
 NITRITE AS NITROGEN (MG/L) NO.1
 NITRATE AS NITROGEN (MG/L) 3.4
 TOTAL ORGANIC HALOGENS AS CL (UG/L) <5
 TOT. ORG. CARBON, AS C (NPOC, MG/L) 0.12

INITIALS: 0.051 T <0.05 T

TUCSON WATER ANALYSIS OF WATER SAMPLES
- CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE AF-064 A. (SAMPLES CONTINUED)	10/24/90	10/24/90	10/09/90	10/09/90	10/09/90	10/09/90
	1030	1030	1122	1122	1122	1122
(D-16-10) 08 BDD	906400 WQ	906400 WQ	107183 ATL	107184 ATL	906057 WQ	906058 WQ
						906059 WQ

IRON (MG/L)						<0.10
WATER QUALITY LAB NUMBER		906057				
ATL REPORT NUMBER FOR QA			906058 D			
			107191			
			107184 D			
			107185 S			

TOTAL COLI. - FILTR (CFU/100ML)	0
HETERO. PLATE COUNT (MEMBRANE, CFU/ML)	8
BACKGROUND (CFU/100 ML)	

INITIALS:

07/28/93

TUCSON WATER SAMPLES
ANALYSIS OF WATER
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	AF-064 A	10/09/90	10/09/90	10/09/90	10/09/90	10/09/90	10/09/90	10/09/90	10/09/90
		1122	1122	1122	1122	1122	1122	1122	1122
		906060 WQ	906061 WQ	906057 WQ	906058 WQ	906060 WQ	906061 WQ	906061 WQ	906057 WQ
	(D-16-10) O8 BDD								

PH IN FIELD (S.U.)	TEMPERATURE (DEGREES CENT.)	DISSOLVED O2 (PPM)	FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)	TOTAL COLI. - MPN (CFU./100ML)	TOTAL COLI. - FILTR (CFU./100ML)	FECAL COLIFORM (CFU/100ML)
7.3	26.9	7.8	417	5	2	3
7.3	26.9	7.8	417	2	<2	0
				71	129	171
						217 X

HETERO. PLATE COUNT (MEMBRANE, CFU/ML)
BACKGROUND (CFU/100 ML)

4,4'-DICHLOROBIPHENYL(SURROGTE%RECOVRY)
METHOD %

- **** PESTICIDES - EPA METHOD 608 **
- ALPHA BHC (UG/L)
- GAMMA BHC (LINDANE) (UG/L)
- BETA BHC (UG/L)
- HEPTACHLOR (UG/L)
- DELTA BHC (UG/L)
- ALDRIN (UG/L)
- HEPTACHLOR EPOXIDE (UG/L)
- ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L)
- 4,4'-DDE / PP'-DDE (UG/L)
- DIELDRIN (UG/L)
- ENDRIN (UG/L)
- 4,4'-DDD / PP'-DDD (UG/L)
- ENDOSULFAN II/BETA ENDOSULFAN (UG/L)
- 4,4'-DDT / PP'-DDT (UG/L)
- ENDRIN ALDEHYDE (UG/L)
- ENDOSULFAN SULFATE (UG/L)
- METHOXYCHLOR (UG/L)
- CHLORDANE (UG/L)
- TOXAPHENE (UG/L)
- PCB 1016 (UG/L)
- PCB 1221 (UG/L)
- PCB 1232 (UG/L)
- PCB 1242 (UG/L)
- PCB 1248 (UG/L)
- PCB 1254 (UG/L)
- PCB 1260 (UG/L)
- DIETHYL PHTHALATE (UG/L)
- DIETHYL PHTHALATE (UG/L)
- HEXACHLOROBENZENE (UG/L)
- DI-N-BUTYL PHTHALATE (UG/L)
- BENZYL BUTYL PHTHALATE (UG/L)
- BIS (2-ETHYLHEXYL) PHTHALATE (UG/L)

INITIALS:

99%
901015
NO.011
NO.012
NO.011
NO.012
NO.011
NO.011
NO.012
NO.019
NO.019
NO.021
NO.025
NO.022
NO.026
NO.034
NO.012
NO.117
NO.508
NO.544
NOT ANALYZD
NOT ANALYZD
NOT ANALYZD
NO.407
NOT ANALYZD
NOT ANALYZD
NO.326
N1.48
N1.42
NO.046
NO.800
NO.275
NO.860

TUCSON WATER
ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	AF-064 A (SAMPLES CONTINUED)	10/09/90	10/09/90	10/09/90	10/09/90	10/09/90	10/09/90	10/09/90
		1122	1122	1122	1122	1122	1122	1122
		906060 WQ	906061 WQ	906057 WQ	906058 WQ	906060 WQ	906061 WQ	906057 WQ
	(D-16-10) 08 BDD							

DI-N-OCTYLPHTHALATE (UG/L)
 *** HERBICIDES - EPA METHOD. 8150 ***
 2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)
 (2,4,5-TRICHLOROPHENOXY) ACETATE (UG/L)
 SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L)

N1.58
 901106
 NO. 072
 NO. 033
 NO. 022

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	10/03/90	10/03/90	10/03/90	09/20/90	09/05/90
AF-064 A	1122	1010	1010	0955	1030
	906058 WQ	905948 WQ	905948 WQ	905713 WQ	905147 WQ
(D-16-10) O8 BDD					

PARAMETER	10/03/90	10/03/90	10/03/90	09/20/90	09/05/90
FLOW RATE (GPM)	710	710	720	155.05	155.05
STATIC WATER LEVEL	182.27	182.27	186.37	186.37	186.37
PUMPING WATER LEVEL	7.6	7.6	7.3	7.3	7.3
PH IN FIELD (S.U.)	27.3	27.3	27	27	27.1
TEMPERATURE (DEGREES CENT.)	6.6	6.6	7.3	7.3	6.3
DISSOLVED O2 (PPM)	4.15	4.15	4.15	4.15	385
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)	2.3	2.3	0.3	0.3	0.21
TOTAL SUSPENDED SOLIDS (MG/L)	3.9	3.9	3.9	3.9	3.9
VOLUME FILTERED, LITERS					
TOTAL COLI. - FILTR (CFU./100ML)					0

PARAMETER	10/03/90	10/03/90	10/03/90	09/20/90	09/05/90
FECAL COLIFORM (CFU/100ML)					
HETERO. PLATE COUNT (MEMBRANE, CFU/ML)					
METHOD B					
BACKGROUND (CFU/100 ML)					
4,4'-DICHLOROBIPHENYL(SURROGTE%RECOVERY)					
*** PESTICIDES - EPA METHOD 608 **					
ALPHA BHC (UG/L)					
GAMMA BHC (LINDANE) (UG/L)					
BETA BHC (UG/L)					
HEPTACHLOR (UG/L)					
DELTA BHC (UG/L)					
ALDRIN (UG/L)					
HEPTACHLOR EPDXIDE (UG/L)					
ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L)					
4,4'-DDE / PP'-DDE (UG/L)					
DIELDRIN (UG/L)					
ENDRIN (UG/L)					
4,4'-DDD / PP'-DDD (UG/L)					
ENDOSULFAN II/BETA ENDOSULFAN (UG/L)					
4,4'-DDT / PP'-DDT (UG/L)					
ENDRIN ALDEHYDE (UG/L)					
METHOXYCHLOR (UG/L)					
CHLORDANE (UG/L)					
TOXAPHENE (UG/L)					
PCB 1016 (UG/L)					
PCB 1221 (UG/L)					
PCB 1232 (UG/L)					
PCB 1242 (UG/L)					
PCB 1248 (UG/L)					
PCB 1254 (UG/L)					
PCB 1260 (UG/L)					
DIMETHYL PHTHALATE (UG/L)					
DIETHYL PHTHALATE (UG/L)					

PARAMETER	10/03/90	10/03/90	10/03/90	09/20/90	09/05/90
FECAL COLIFORM (CFU/100ML)					
HETERO. PLATE COUNT (MEMBRANE, CFU/ML)					
METHOD B					
BACKGROUND (CFU/100 ML)					
4,4'-DICHLOROBIPHENYL(SURROGTE%RECOVERY)					
*** PESTICIDES - EPA METHOD 608 **					
ALPHA BHC (UG/L)					
GAMMA BHC (LINDANE) (UG/L)					
BETA BHC (UG/L)					
HEPTACHLOR (UG/L)					
DELTA BHC (UG/L)					
ALDRIN (UG/L)					
HEPTACHLOR EPDXIDE (UG/L)					
ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L)					
4,4'-DDE / PP'-DDE (UG/L)					
DIELDRIN (UG/L)					
ENDRIN (UG/L)					
4,4'-DDD / PP'-DDD (UG/L)					
ENDOSULFAN II/BETA ENDOSULFAN (UG/L)					
4,4'-DDT / PP'-DDT (UG/L)					
ENDRIN ALDEHYDE (UG/L)					
METHOXYCHLOR (UG/L)					
CHLORDANE (UG/L)					
TOXAPHENE (UG/L)					
PCB 1016 (UG/L)					
PCB 1221 (UG/L)					
PCB 1232 (UG/L)					
PCB 1242 (UG/L)					
PCB 1248 (UG/L)					
PCB 1254 (UG/L)					
PCB 1260 (UG/L)					
DIMETHYL PHTHALATE (UG/L)					
DIETHYL PHTHALATE (UG/L)					

NT ANAL (Z) 35B
 O X
 3590BX
 >200 X

INITIALS

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE AF-064-A (SAMPLES CONTINUED)	10/09/90	10/03/90	09/20/90	09/05/90	09/05/90
	1122	1010	0955	1030	1030
(D-16-10) 08 BDD	906058 WQ	905948 WQ	905713 WQ	905147 WQ	905147 WQ

HEXACHLOROBENZENE (UG/L)	NO.046
DI-N-BUTYL PHTHALATE (UG/L)	NO.800
BENZYL BUTYL PHTHALATE (UG/L)	NO.275
BIS (2-ETHYLHEXYL) PHTHALATE (UG/L)	NO.860
DI-N-OCTYL PHTHALATE (UG/L)	NT.68
*** HERBICIDES - EPA METHOD 8150 ****	901106
2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)	NO.072
(2,4,5-TRICHLOROPHENOXY) ACETATE (UG/L)	NO.033
SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L)	NO.022

INITIALS:

TUCSON WATER SAMPLES
ANALYSIS OF WATER
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	08/22/90	08/22/90	08/15/90	08/07/90	08/07/90	08/07/90
AF-064 A	1020	1020	1235	1135	1135	1135
(D-16-10) 08 BDD	904804 WQ	904804 WQ	904651 WQ	104715 ATL	904485 WQ	904485 WQ

FLOW RATE (GPM)	7.18					7.6
STATIC WATER LEVEL	155.05					7.6
PUMPING WATER LEVEL	184.95					26.6
PH IN FIELD (S.U.)	7.7		7.4			7.6
PH IN LAB (S.U.)						418
TEMPERATURE (DEGREES CENT.)	27.3		26.7			460
DISSOLVED O2 (PPM)	6.3		6.4			425
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)	410		408			243 H
LAB CONDUCTIVITY (UMHO/CM)						318
CALCULATED CONDUCTIVITY (UMHO/CM)						<0.5 V
TOTAL DIS. SOLIDS(180) (MG/L)	0.23		0.19			0.8
TOTAL DIS. SOLIDS CALC (MG/L)						0.2
TOTAL SUSPENDED SOLIDS (MG/L)						92
VOLUME FILTERED, LITERS	3.9		3.8			92
TURBIDITY, LAB						74.9
TOTAL HARDNESS (CACO3, MG/L)						142
HARDNESS CALC (CACO3, MG/L)						-0.17
HARDNESS, CALCIUM CALC (CACO3, MG/L)						1.65
BICARBONATE ALKALINITY (CACO3, MG/L)						2.45
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L)						0.54B
LANGLIER INDEX						18.8
ION BALANCE, CALC.						21
SODIUM ADSORPTION RATIO, CALC.						0.17
FLUORIDE (MG/L)						54
METHOD B						1.6
CHLORIDE (MG/L)						30
SULFATE (MG/L)						4.1
BROMIDE (MG/L)						16
SODIUM (MG/L)						NO.5
POTASSIUM ((MG/L)						NO.1
CALCIUM (MG/L)						3.3
MAGNESIUM (MG/L)						NS
SILICON (MG/L)						0.11
ORTHOPHOSPHATE AS P. (MG/L)						<0.05
NITRITE AS NITROGEN (MG/L)						<0.10
NITRATE AS NITROGEN (MG/L)						904485
TOTAL ORGANIC HALOGENS AS CL (UG/L)						104722
TOT. ORG. CARBON, AS C (NPOC, MG/L)						104723 R
BORON (MG/L)						
IRON (MG/L)						
WATER QUALITY LAB NUMBER						
ATL REPORT NUMBER FOR QA						
TOTAL COLI. - FILTR (CFU./100ML)	0	3	0	0	0	87
HETERO. PLATE COUNT (MEMBRANE, CFU/ML)			51			
			46 R			
INITIALS:						

TUCSON WATER
ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	AF-064 A (SAMPLES CONTINUED)	08/22/90	08/15/90	08/07/90	08/07/90	08/07/90	08/07/90
		1020	1235	1135	1135	1135	1135
	904804 WQ	904804 WQ	904651 WQ	104715 ATL	904485 WQ	904485 WQ	904485 WQ

(D-16-10) 08 BDD

BACKGROUND (CFU/100 ML)

1

25

163

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	AF:064 A	08/07/90	08/07/90	08/01/90	07/25/90	07/25/90	07/19/90
		1135	1011	1405	1250	1250	1025
		904486 WQ	904485 WQ	904377 WQ	904226 WQ	904226 WQ	904143 WQ

(D-16-10) 08 BDD

PH IN FIELD (S.U.)	TEMPERATURE (DEGREES CENT.)	DISSOLVED O2 (PPM)	FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)	TOTAL SUSPENDED SOLIDS (MG/L)	VOLUME FILTERED, LITERS	TOTAL COLI - MPN (CFU./100ML)	TOTAL COLI - FILTR (CFU./100ML)	FECAL COLIFORM (CFU/100ML)	HETERO. PLATE COUNT (MEMBRANE, CFU/ML)	BACKGROUND (CFU/100 ML)	4,4'-DICHLOROBIPHENYL(SURROGTE%RECOVRY)	METHOD %
						<2						

127%

900813
NO.021
NO.023
NO.021
NO.023
NO.023
NO.022
NO.024
NO.039
NO.037
NO.041
NO.050
NO.045
NO.053
NO.067
NO.023
NO.174
NO.303
NOT ANALYZD
NOT ANALYZD
NOT ANALYZD
NO.814
NOT ANALYZD
NOT ANALYZD
NO.326
900814
NO.180
NO.082
NO.081

*** PESTICIDES - EPA METHOD 608 ***
 ALPHA BHC (UG/L)
 GAMMA BHC (LINDANE) (UG/L)
 BETA BHC (UG/L)
 HEPTACHLOR (UG/L)
 DELTA BHC (UG/L)
 ALDRIN (UG/L)
 HEPTACHLOR EPOXIDE (UG/L)
 ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L)
 4,4'-DDE / PP'-DDE (UG/L)
 DIELDRIN (UG/L)
 4,4'-DDD / PP'-DDD (UG/L)
 ENDOSULFAN II/BETA ENDOSULFAN (UG/L)
 4,4'-DDT / PP'-DDT (UG/L)
 ENDRIN ALDEHYDE (UG/L)
 ENDOSULFAN SULFATE (UG/L)
 METHOXYCHLOR (UG/L)
 CHLORDANE (UG/L)
 TOXAPHENE (UG/L)
 PCB 1016 (UG/L)
 PCB 1221 (UG/L)
 PCB 1232 (UG/L)
 PCB 1242 (UG/L)
 PCB 1248 (UG/L)
 PCB 1254 (UG/L)
 PCB 1260 (UG/L)

*** HERBICIDES - EPA METHOD 8150 ***
 2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)
 (2,4,5-TRICHLOROPHENOXY) ACETATE (UG/L)
 SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L)

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE AF-064 A 07/19/90 07/11/90 07/11/90 07/05/90 07/05/90 07/05/90 07/05/90 07/05/90 07/05/90

(D-16-10) 08 BDD 1025 1035 904143 WQ 903997 WQ 903997 WQ 103366 ATL 903863 WQ 903864 WQ 903863 WQ 903863 WQ

PH IN FIELD (S.U.) 7.6
PH IN LAB (S.U.) 7.4
TEMPERATURE (DEGREES CENT.) 26.9
DISSOLVED O2 (PPM) 7.2
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM) 400
LAB CONDUCTIVITY (UMHO/CM) 400
CALCULATED CONDUCTIVITY (UMHO/CM) 415
TOTAL DIS. SOLIDS (380) (MG/L) 252 R

TOTAL DIS. SOLIDS CALC (MG/L) 313
TOTAL SUSPENDED SOLIDS (MG/L) 0.24

VOLUME FILTERED, LITERS 8.7
TURBIDITY, LAB 0.4
TOTAL HARDNESS (CACO3, MG/L) 90
HARDNESS CALC. (CACO3, MG/L) 94
HARDNESS, CALCIUM CALC. (CACO3, MG/L) 77.4
BICARBONATE ALKALINITY (CACO3, MG/L) 142
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L) 142
LANGLIER INDEX 0.15 R

ION BALANCE, CALC. 0.65
SODIUM ADSORPTION RATIO, CALC. 2.24

FLUORIDE (MG/L) 0.62B
METHOD B 17.4
CHLORIDE (MG/L) 21
SULFATE (MG/L) 0.18

BROMIDE (MG/L) 50
SODIUM (MG/L) 1.5
POTASSIUM ((MG/L) 31
CALCIUM (MG/L) 4.1
MAGNESIUM (MG/L) 15
SILICON (MG/L) NO.5
ORTHOPHOSPHATE AS P. (MG/L) NO.10
NITRATE AS NITROGEN (MG/L) 3.2
NITRITE AS NITROGEN (MG/L) NS
TOTAL ORGANIC HALOGENS AS CL (UG/L) <0.10
TOT. ORG. CARBON, AS C (NPOC, MG/L) <0.05

BORON (MG/L) 903864
IRON (MG/L) 0
WATER QUALITY LAB NUMBER 0
TOTAL COLI. - FILTR (CFU/100ML) 32
HETERO. PLATE COUNT (MEMBRANE, CFU/ML) 27
BACKGROUND (CFU/100 ML) 4

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE AF-064-A 07/05/90 0729 903864 WQ 07/05/90 0729 903864 ATL 103366 ATL 06/27/90 1055 903741 WQ 06/20/90 1026 903592 WQ 06/14/90 1240 903477 WQ (0-16-10) 08 BDD

PH IN FIELD (S.U.) 7.4 7.7 7.5
TEMPERATURE (DEGREES CENT.) 27.1 27.1 27.1
DISSOLVED O2 (PPM) 6.8 6.3 6.3
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM) 416 412 412
TOTAL SUSPENDED SOLIDS (MG/L) <0.1 0.27 0.14
VOLUME FILTERED, LITERS 3.980
R2AM INCUBATION TEMPERATURE DEGREES C <2
R2AM INCUBATION TIME IN HOURS
TOTAL COLI. - MPN (CFU./100ML)
TOTAL COLI. - FILTR (CFU./100ML)
FECAL COLIFORM (CFU/100ML)
HETERO. PLATE COUNT (MEMBRANE, CFU/ML)
BACKGROUND (CFU/100 ML)
WATER QUALITY LAB NUMBER
ATL REPORT NUMBER FOR QA

903864 103374 103375 R 608
*** PESTICIDES - EPA METHOD 608 **
ALPHA BHC (UG/L) <0.01
GAMMA BHC (LINDANE) (UG/L) <0.01
BETA BHC (UG/L) <0.01
HEPTACHLOR (UG/L) <0.01
DELTA BHC (UG/L) <0.01
ALDRIN (UG/L) <0.05
HEPTACHLOR EPOXIDE (UG/L) <0.05
ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L) <0.01
4,4'-DDE / PP'-DDE (UG/L) <0.01
DIELDRIN (UG/L) <0.05
ENDRIN (UG/L) <0.05
4,4'-DDD / PP'-DDD (UG/L) <0.02
ENDOSULFAN II/BETA ENDOSULFAN (UG/L) <0.05
4,4'-DDT / PP'-DDT (UG/L) <0.20
ENDOSULFAN SULFATE (UG/L) <0.05
CHLORDANE (UG/L) <0.20
TOXAPHENE (UG/L) <0.20
PCB 1242 (UG/L) <0.20
PCB 1254 (UG/L) 8150
*** HERBICIDES - EPA METHOD 8150 ***
2,4-DICHLOROPHENOXY ACETIC ACID (UG/L) <1.0
4(2,4-DICHLOROPHENOXY) BUTYRATE (UG/L) <1.0
(2,4,5-TRICHLOROPHENOXY) ACETATE (UG/L) <0.50
SILVEX/2(2,4,5-TRICHLOROPHENOXY) (UG/L) <0.10
DALAPON/2,2-DICHLOROPROPANOATE (UG/L) <5.0
DICAMBA/3,6-DICHLORO-2-METHOXY (UG/L) <0.50
DICHLOROPROP/2(2,4-DICHLOROPHENOXY) (UG/L) <1.0
DINOSB/2-SEC-BUTYL-4,6-DINITRO (UG/L) <0.10
MCPA/2-METHYL-4-CHLOROPHENOXY (UG/L) <200
MCPP/MECOPROP/2(4-CHLORO-2-METH (UG/L) <400

INITIALS:

TUCSON WATER SAMPLES
ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE AF-064-A	06/14/90	06/04/90	06/04/90	06/04/90	06/04/90	05/30/90
	1240	1105	1105	1105	1105	1240
(D-16-10) 08 BDD	903477 WQ	90102514 ATL	903258 WQ	903258 WQ	903258 WQ	903204 WQ

FLOW RATE (GPM)	705					
STATIC WATER LEVEL	NOT ANALYZD					
PUMPING WATER LEVEL	186.58					
PH IN FIELD (S.U.)	7.8					7.7
PH IN LAB (S.U.)	7.5					
TEMPERATURE (DEGREES CENT.)	27.0					26.5
DISSOLVED O2 (PPM)	5.4					6.3
CHLORINE FIELD (MG/L)	NO.05					405
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)	400					
LAB CONDUCTIVITY (UMHO/CM)	414					
CALCULATED CONDUCTIVITY (UMHO/CM)	248					
TOTAL DIS. SOLIDS(180) (MG/L)	251 R					
	312					
TOTAL DIS. SOLIDS CALC (MG/L)	0.3					0.17
TOTAL SUSPENDED SOLIDS (MG/L)	3.5					3.9
VOLUME FILTERED, LITERS	0.2					
TURBIDITY, LAB	95					
TOTAL HARDNESS (CACO3, MG/L)	92					
HARDNESS CALC. (CACO3, MG/L)	74.9					
HARDNESS, CALCIUM CALC (CACO3, MG/L)	141					
BICARBONATE ALKALINITY (CACO3, MG/L)	141					
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L)	0.03 R					
LANGLIER INDEX	1.02					
ION BALANCE, CALC.	2.31					
SODIUM ADSORPTION RATIO, CALC.	0.63B					
FLOURIDE (MG/L)	17.2					
METHOD B	21					
CHLORIDE (MG/L)	0.15					
SULFATE (MG/L)	51					
BROMIDE (MG/L)	1.5					
SODIUM (MG/L)	30					
POTASSIUM ((MG/L)	4.2					
CALCIUM (MG/L)	20					
MAGNESIUM (MG/L)	NO.5					
SILICON (MG/L)	NO.1					
ORTHOPHOSPHATE AS P (MG/L)	3.2					
NITRITE AS NITROGEN (MG/L)	5					
NITRATE AS NITROGEN (MG/L)	0.43					
TOTAL ORGANIC HALOGENS AS CL (UG/L)						
TOT. ORG. CARBON, AS C (NPOC, MG/L)	0.097					
BORON (MG/L)	<0.10					
COPPER (MG/L)	<0.10					
IRON (MG/L)						
WATER QUALITY LAB NUMBER	903258					
R2AM INCUBATION TEMPERATURE DEGREES C						35
R2AM INCUBATION TIME IN HOURS						48
TOTAL COLI. - MPN (CFU./100ML)						<2
INITIALS:						

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE AF-064 A (SAMPLES CONTINUED)	06/14/90	06/04/90	06/04/90	06/04/90	06/04/90	05/30/90
	1240	1105	1105	1105	1105	1240
(D-16-10) 08 BDD	903477 WQ	90102514 ATL	903258 WQ	903259 WQ	903258 WQ	903204 WQ

TOTAL COLI - FILTR (CFU/100ML) 0 X

FECAL COLIFORM (CFU/100ML) 0 X

HETERO. PLATE COUNT (MEMBRANE, CFU/ML) 115 Z

BACKGROUND (CFU/100 ML) >200 X

- *** PESTICIDES - EPA METHOD 608 **
- ALPHA BHC (UG/L)
- GAMMA BHC (LINDANE) (UG/L)
- BETA BHC (UG/L)
- HEPTACHLOR (UG/L)
- DELTA BHC (UG/L)
- ALDRIN (UG/L)
- HEPTACHLOR EPOXIDE (UG/L)
- ENDOSULFAN I/ALPHA (UG/L)
- 4,4'-DDE / PP'-DDE (UG/L)
- DIELDREN (UG/L)
- ENDRIN (UG/L)
- 4,4'-DDD / PP'-DDD (UG/L)
- ENDOSULFAN II/BETA (UG/L)
- 4,4'-DDT / PP'-DDT (UG/L)
- ENDRIN ALDEHYDE (UG/L)
- ENDOSULFAN SULFATE (UG/L)
- METHOXYCHLOR (UG/L)
- CHLORDANE (UG/L)
- TOXAPHENE (UG/L)
- PCB 1016 (UG/L)
- PCB 1221 (UG/L)
- PCB 1232 (UG/L)
- PCB 1242 (UG/L)
- PCB 1248 (UG/L)
- PCB 1254 (UG/L)
- PCB 1260 (UG/L)
- *** HERBICIDES - EPA METHOD 8150 ***
- 2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)
- (2,4,5-TRICHLOROPHENOXY) ACETATE (UG/L)
- SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L)

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE AF-C64 A	05/30/90	05/23/90	05/16/90	05/09/90	05/09/90
	1240	0935	0915	1002	1002
(D-16-10) 08 BDD	903204 WQ	903119 WQ	902919 WQ	902785 WQ	902785 WQ

PH IN FIELD (S.U.)	7.7	7.7	7.7	7.7	7.7
TEMPERATURE (DEGREES CENT.)	26.5	26.6	26.6	27.1	27.1
DISSOLVED O2 (PPM)	6.7	6.1	6.1	7.4	7.4
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)	415	408	408	402	402
TOTAL SUSPENDED SOLIDS (MG/L)	0.46	0.52	0.52	<0.10	<0.10
VOLUME FILTERED, LITERS	3.88	3.8	3.8	3.86	3.86
TOTAL COLIFORM FILTER (CFU/100ML)	0	0	0	0	0
FECAL COLIFORM (CFU/100ML)	0	0	0	0	0
HETERO. PLATE COUNT (MEMBRANE, CFU/ML)	124	348	323	189	189
BACKGROUND (CFU/100 ML)	3	4	4	80	80

INITIALS:

TUCSON WATER SAMPLES
ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE AF-064-A	05/03/90	05/03/90	05/03/90	05/03/90	04/25/90
	1150	1150	1150	1150	1435
(D-16-10) 08 BDD	90101380 ATL	902658 WQ	902659 WQ	902658 WQ	902471 WQ

PUMPING WATER LEVEL	184.85				7.7
PH IN FIELD (S.U.)	7.7				26.6
PH IN LAB (S.U.)	7.5				5.2
TEMPERATURE (DEGREES CENT.)	26.5				405
DISSOLVED O2 (PPM)	4.5				
CHLORINE FIELD (MG/L)	NOT ANALYZED				
FIELD CONDUCTIVITY (UMHO/CM)	415				
LAB CONDUCTIVITY (UMHO/CM)	410				
CALCULATED CONDUCTIVITY (UMHO/CM)	412				
TOTAL DIS. SOLIDS (180) (MG/L)	247				
TOTAL DIS. SOLIDS CALC (MG/L)	312				
TOTAL SUSPENDED SOLIDS (MG/L)	<0.11 V				0.78
	3.62				3.86
	1.2				
	92				
	88				
	72.4				
	141				
	141				
	-0.09				
	-1.06				
	2.31				
	0.648				
	18.2				
	21				
	0.18				
	50				
	1.5				
	29				
	3.9				
	NO.5				
	NO.1				
	3.5				
	<5				
	<0.10				
	0.051				
	<0.10				
	<0.10				

VOLUME FILTERED, LITERS

TURBIDITY, LAB

TOTAL HARDNESS (CACO3, MG/L)

HARDNESS CALC (CACO3, MG/L)

HARDNESS CALC. CALCIUM (CACO3, MG/L)

BICARBONATE ALKALINITY (CACO3, MG/L)

TOTAL ALKALINITY, CALCULATED (CACO3, MG/L)

LANGLIER INDEX

ION BALANCE, CALC.

SODIUM ADSORPTION RATIO, CALC.

FLUORIDE (MG/L)

METHOD B

CHLORIDE (MG/L)

SULFATE (MG/L)

BROMIDE (MG/L)

SODIUM (MG/L)

POTASSIUM (MG/L)

CALCIUM (MG/L)

MAGNESIUM (MG/L)

ORTHOPHOSPHATE AS P. (MG/L)

NITRITE AS NITROGEN (MG/L)

NITRATE AS NITROGEN (MG/L)

TOTAL ORGANIC HALOGENS AS CL (UG/L)

TOT. ORG. CARBON, AS C (NPOC, MG/L)

BORON (MG/L)

COPPER (MG/L)

IRON (MG/L)

WATER QUALITY LAB NUMBER

TOTAL COLI - MPN (CFU/100ML)

TOTAL COLI - FILTER (CFU/100ML)

FECAL COLIFORM (CFU/100ML)

HETERO. PLATE COUNT (MEMBRANE CFU/ML)

4,4'-DICHLOROBIPHENYL (SURROGTE%RECOVERY) METHOD %

	<2	0	0	55	
					86.4%

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE AF-064 A (SAMPLES CONTINUED) 05/03/90 05/03/90 05/03/90 05/03/90 04/25/90
1150 1150 1150 1150 1435
90101380 ATL 902658 WQ 902659 WQ 902658 WQ 902658 WQ 902471 WQ
(D-16-10) 08 BDD

ANALYTE	UNIT	CONC	DATE	TIME	NO.
**** PESTICIDES - EPA METHOD 608 **					900510
ALPHA BHC (UG/L)					NO.021
GAMMA BHC (LINDANE) (UG/L)					<0.023
BETA BHC (UG/L)					NO.021
HEPTACHLOR (UG/L)					<0.023 B
DELTA BHC (UG/L)					NO.023
ALDRIN (UG/L)					<0.022
HEPTACHLOR EPOXIDE (UG/L)					NO.024
ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L)					NO.039
4,4'-DDE / PP'-DDE (UG/L)					NO.037
DIELDRIN (UG/L)					NO.038
ENDRIN (UG/L)					NO.041
4,4'-DDD / PP'-DDD (UG/L)					NO.050
ENDOSULFAN I1/BETA ENDOSULFAN (UG/L)					NO.045
4,4'-DDT / PP'-DDT (UG/L)					NO.053
ENDRIN ALDEHYDE (UG/L)					NO.067
ENDOSULFAN SULFATE (UG/L)					NO.023
METHOXYCHLOR (UG/L)					NO.233
CHLORDANE (UG/L)					NO.174
TOXAPHENE (UG/L)					NO.303
PCB 1016 (UG/L)					NOT ANALYZD
PCB 1221 (UG/L)					NOT ANALYZD
PCB 1232 (UG/L)					NOT ANALYZD
PCB 1242 (UG/L)					NO.814
PCB 1248 (UG/L)					NOT ANALYZD
PCB 1254 (UG/L)					NOT ANALYZD
PCB 1260 (UG/L)					NO.326
**** HERBICIDES - EPA METHOD 8150 ****					900523
2,4-DICHLOROPHOENXY ACETIC ACID (UG/L)					NO.200
SILVEX/2(2,4,5-TRICHLOROPHOENXY (UG/L)					NO.051

INITIALS:

SOURCE AF-064 A

(D-16-10) 08 BDD

902471 WQ 902295 WQ 902085 WQ 90100446 ATL 901839 WQ

1435 1010 1241 1235

7.7 7.5 7.9

26.7 26.5

8.9 6.9

405 405

0.41 0.23

3.6 3.85

<0.11 V

3.5

0.21 H

92

92

74.9

140

140

0.09

0.30

2.27

0.61B

18.6

21

0.18

50

1.6

30

4.1

3.3

<5

0.11

<0.10

901839

0

0

44

0

0

386

293

0

0

293

PH IN FIELD (S.U.)

PH IN LAB (S.U.)

TEMPERATURE (DEGREES CENT.)

DISSOLVED O2 (PPM)

CHLORINE FIELD (MG/L)

FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)

LAB CONDUCTIVITY (UMHO/CM)

CALCULATED CONDUCTIVITY (UMHO/CM)

TOTAL DIS. SOLIDS (180) (MG/L)

TOTAL DIS. SOLIDS CALC (MG/L)

TOTAL SUSPENDED SOLIDS (MG/L)

VOLUME FILTERED, LITERS

TURBIDITY, LAB

TOTAL HARDNESS (CACO3, MG/L)

HARDNESS CALC (CACO3, MG/L)

HARDNESS, CALCIUM CALC. (CACO3, MG/L)

BICARBONATE ALKALINITY (CACO3, MG/L)

TOTAL ALKALINITY, CALCULATED (CACO3, MG/L)

LANGLIER INDEX

ION BALANCE, CALC.

SODIUM ADSORPTION RATIO, CALC.

FLUORIDE (MG/L)

METHOD B

CHLORIDE (MG/L)

SULFATE (MG/L)

BROMIDE (MG/L)

SODIUM (MG/L)

POTASSIUM ((MG/L)

CALCIUM (MG/L)

MAGNESIUM (MG/L)

NITRATE AS NITROGEN (MG/L)

TOTAL ORGANIC HALOGENS AS CL (UG/L)

TOT. ORG. CARBON, AS C (NPOC, MG/L)

BORON (MG/L)

IRON (MG/L)

WATER QUALITY LAB NUMBER

TOTAL COLI - FILTER (CFU/100ML)

FECAL COLIFORM (CFU/100ML)

HETERO. PLATE COUNT (MEMBRANE, CFU/ML)

INITIALS:

TUCSON WATER
ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE AF-064 A	04/02/90	04/02/90	04/02/90	03/28/90	03/28/90	03/21/90
	1235	1235	1235	1255	1255	1025
(D-16-10) 08 BDD	901839 WQ	901847 WQ	901839 WQ	901775 WQ	901775 WQ	MA

PH IN FIELD (S.U.) 8.0 7.7 8.2
 TEMPERATURE (DEGREES.CENT.) 26.4 26.5 26.1
 DISSOLVED O2 (PPM) 372 395 402
 FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM) 0 0 0
 TOTAL SUSPENDED SOLIDS (MG/L) <2 <2 1
 VOLUME FILTERED, LITERS 0 0 1
 TOTAL COLI - MPN (CFU./100ML) 0 0 99
 TOTAL COLI - FILTR (CFU./100ML) 0 0 1
 FECAL COLIFORM (CFU/100ML) 129
 HETERO. PLATE COUNT (MEMBRANE, CFU/ML) 901847 901839 901775
 BACKGROUND (CFU/100 ML) 901847
 WATER QUALITY LAB NUMBER
 4,4'-DICHLOROBIPHENYL(SURROGTF%RECOVERY)
 **** PESTICIDES - EPA METHOD 608 **
 ALPHA BHC (UG/L)
 GAMMA BHC (LINDANE) (UG/L)
 BETA BHC (UG/L)
 HEPTACHLOR (UG/L)
 DELTA BHC (UG/L)
 ALDRIN (UG/L)
 HEPTACHLOR EPOXIDE (UG/L)
 ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L)
 4,4'-DDE / PP'-DDE (UG/L)
 DIELDRIN (UG/L)
 ENDRIN (UG/L)
 4,4'-DDD / PP'-DDD (UG/L)
 ENDOSULFAN II/BETA ENDOSULFAN (UG/L)
 4,4'-DDT / PP'-DDT (UG/L)
 ENDRIN ALDEHYDE (UG/L)
 ENDOSULFAN SULFATE (UG/L)
 METHOXYCHLOR (UG/L)
 CHLORDANE (UG/L)
 TOXAPHENE (UG/L)
 PCB 1016 (UG/L)
 PCB 1221 (UG/L)
 PCB 1232 (UG/L)
 PCB 1242 (UG/L)
 PCB 1248 (UG/L)
 PCB 1254 (UG/L)
 PCB 1260 (UG/L)
 **** HERBICIDES - EPA METHOD 8150 ****
 2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)
 SILVEX/2,4,5-TRICHLOROPHENOXY (UG/L)

INITIALS:

TUCSON WATER SAMPLES
ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

	03/21/90	03/14/90	03/07/90	03/07/90
SOURCE AF-064 A	1025	1140	1110	1100
(D-16-10) O8 BDD	901643 WQ	901538 WQ	901538 WQ	901366 WQ
PH IN FIELD (S.U.)	7.8	7.6	7.8	7.8
TEMPERATURE (DEGREES CENT.)	26.6	25.1	25.6	26.2
DISSOLVED O2 (PPM)	7.6	5.2	401	385
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)	408	405	380	385
TOTAL SUSPENDED SOLIDS (MG/L)	0.31	0.28	<0.10	V
VOLUME FILTERED, LITERS	3.85	3.9	4	4
WATER QUALITY LAB NUMBER		901538		901366
R2AM INCUBATION TEMPERATURE DEGREES C	35		35	
R2AM INCUBATION TIME IN HOURS	48		48	
TOTAL COLI - FILTER (CFU/100ML)	0		0	
FECAL COLIFORM (CFU/100ML)	0		0	
HETERO. PLATE COUNT (MEMBRANE, CFU/ML)	43		59	
BACKGROUND (CFU/100 ML)	14			

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE AF-064 A	03/07/90	02/28/90	02/28/90	02/28/90	02/20/90	02/20/90	02/20/90
	1110	1220	1220	1220	0940	0940	0940
(D-16-10) 08 BDD	901366 WQ	MA 901158 WQ	MA 901158 WQ	901158 WQ	MA 900931 WQ	MA 900931 WQ	900931 WQ

PH IN FIELD (S.U.)	7.4	7.6	8.0	8.0			
TEMPERATURE (DEGREES CENT.)	24.0	26.2	25.2	25.2			
DISSOLVED O2 (PPM)		4.1					
CHLORINE FIELD (MG/L)		418	378	378			
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)	375	0.19					
TOTAL SUSPENDED SOLIDS (MG/L)		3.86					
VOLUME FILTERED, LITERS							
WATER QUALITY LAB NUMBER	901158						
TOTAL COLI. - FILTR (CFU./100ML)	0	0	0	0			
FECAL COLIFORM (CFU/100ML)	0	0	0	0			
HETERO. PLATE COUNT (MEMBRANE, CFU/ML)	0	0	0	0			
BACKGROUND (CFU/100 ML)	5	3	3	3			

INITIALS:

TUCSON WATER
ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	02/20/90	02/13/90	02/13/90	02/13/90	02/13/90
AF-064 A	0940	1100	1100	1100	1100
(D-16-10) 08 BDD	265601 AT	13431 BCL	MA	900824 WQ	900824 WQ
	0940	1100	1100	1100	1100
	900931 WQ			900825 WQ	900824 WQ

PH IN FIELD (S.U.)	7.9	7.7	7.9	7.9	7.9
PH IN LAB (S.U.)	8.1				
TEMPERATURE (DEGREES CENT.)	25.0	25.0	25.0	25.0	25.0
DISSOLVED O2 (PPM)	6.7	6.7	6.7	6.7	6.7
CHLORINE FIELD (MG/L)	NO.05	NO.05	NO.05	NO.05	NO.05
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)	385	385	385	385	385
LAB CONDUCTIVITY (UMHO/CM)	425	425	425	425	425
CALCULATED CONDUCTIVITY (UMHO/CM)	421	421	421	421	421
TOTAL DIS. SOLIDS(180) (MG/L)	248	248	248	248	248
TOTAL DIS. SOLIDS CALC (MG/L)	316	316	316	316	316
TOTAL SUSPENDED SOLIDS (MG/L)	0.68	0.68	0.68	0.68	0.68
VOLUME FILTERED, LITERS	3.7	3.7	3.7	3.7	3.7
TURBIDITY, LAB	1.1	1.1	1.1	1.1	1.1
TOTAL HARDNESS (CACO3, MG/L)	96.5	96.5	96.5	96.5	96.5
HARDNESS CALC. (CACO3, MG/L)	96	96	96	96	96
HARDNESS CALCIUM CALC. (CACO3, MG/L)	77.4	77.4	77.4	77.4	77.4
BICARBONATE ALKALINITY (CACO3, MG/L)	146	142	141 R	142	142
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L)	146	142	142	142	142
LANGLIER INDEX	0.76	0.09	0.09	0.09	0.09
ION BALANCE, CALC.	2.39	1.29	1.29	1.29	1.29
SODIUM ADSORPTION RATIO, CALC.	0.54	2.36	2.36	2.36	2.36
FLUORIDE (MG/L)	18.8	0.568	0.568	0.568	0.568
METHOD B	25	18.5	18.5	18.5	18.5
CHLORIDE (MG/L)	0.08	21	21	21	21
SULFATE (MG/L)	54	0.18	0.18	0.18	0.18
BROMIDE (MG/L)	1.5	52	52	52	52
SODIUM (MG/L)	31	1.6	1.6	1.6	1.6
POTASSIUM (MG/L)	4.6	30	30	30	30
CALCIUM (MG/L)	32	4.2	4.2	4.2	4.2
MAGNESIUM (MG/L)	14.2	14.2	14.2	14.2	14.2
SILICA (MG/L)	NO.1	NO.1	NO.1	NO.1	NO.1
SILICON (MG/L)	NO.1	NO.1	NO.1	NO.1	NO.1
ORTHOPHOSPHATE AS P. (MG/L)	3.5	3.5	3.5	3.5	3.5
NITRATE AS NITROGEN (MG/L)	<1.0	<1.0	<1.0	<1.0	<1.0
NITRATE AS NITROGEN (MG/L)	<1.0	<1.0	<1.0	<1.0	<1.0
AMMONIA AS NITROGEN (MG/L)	NS	NS	NS	NS	NS
TOTAL ORGANIC HALOGENS AS CL (UG/L)	0.14	0.14	0.14	0.14	0.14
TOT. ORG. CARBON, AS C (NPOC, MG/L)	NO.1	NO.1	NO.1	NO.1	NO.1
BORON (MG/L)	NO.010	NO.010	NO.010	NO.010	NO.010
ARSENIC (MG/L)	<0.005	<0.005	<0.005	<0.005	<0.005
BARIUM (MG/L)	NO.100	NO.100	NO.100	NO.100	NO.100
	0.0590	0.0590	0.0590	0.0590	0.0590
	0.057 Y	0.057 Y	0.057 Y	0.057 Y	0.057 Y

INITIALS:

TUCSON WATER SAMPLES
ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE AF-064 A (SAMPLES CONTINUED) 02/20/90 02/13/90 02/13/90 02/13/90 02/13/90 02/13/90
0940 0940 1100 1100 1100 1100
265601 AT 900931 WQ 13431 BCL MA 900824 WQ 900825 WQ 900824 WQ 900824 WQ

(D-16-10) 08 BDD
NO. 005
NO. 010 T
NO. 050
NO. 005
NO. 010
NO. 0002
NO. 002
0.249
NO. 010

CADMIUM (MG/L) <0.0002
CHROMIUM (MG/L) 0.0012

IRON (MG/L) <0.1
LEAD (MG/L) <0.002

MANGANESE (MG/L) <0.05

MERCURY (MG/L) <0.0005HT
METHOD H <0.005

SELENIUM (MG/L) <0.005

STRONTIUM (MG/L) 0.24

ZINC (MG/L) <0.02

TOTAL COLI. - MPN (CFU./100ML)
FECAL COLIFORM (CFU/100ML)
HETERO. PLATE COUNT (MEMBRANE, CFU/ML)
WATER QUALITY LAB NUMBER
WQ REPORT NUMBER FOR QA
ENDRIN-KETONE(UG/L)
ISODRIN (SURROGATE % RECOVERY)
METHOD % 76%

*** PESTICIDES - EPA METHOD 608 ***
ALPHA BHC (UG/L) <0.05
GAMMA BHC (LINDANE) (UG/L) <0.05
BETA BHC (UG/L) <0.05
HEPTACHLOR (UG/L) <0.05
DELTA BHC (UG/L) <0.05
ALDRIN (UG/L) <0.05
HEPTACHLOR EPOXIDE (UG/L) <0.05
ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L) <0.05
4,4'-DDE / PP'-DDE (UG/L) <0.1
DIELDRIN (UG/L) <0.1
ENDRIN (UG/L) <0.1
4,4'-DDD / PP'-DDD (UG/L) <0.1
ENDOSULFAN II/BETA ENDOSULFAN (UG/L) <0.1
4,4'-DDT / PP'-DDT (UG/L) <0.1
ENDRIN ALDEHYDE (UG/L) <0.1
ENDOSULFAN SULFATE (UG/L) <0.1
METHOXYCHLOR (UG/L) <0.5
CHLORDANE (UG/L) <0.5

INITIALS:

NOT ANALYZD 900824

900324
NO. 021
NO. 023
NO. 021
NO. 023
NO. 023
NO. 022
NO. 024
NO. 039
NO. 037
NO. 038
NO. 041
NO. 050
NO. 045
NO. 053
NO. 067
NO. 023
NO. 233
NO. 333

<2
<2
55 Z

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE AF-064 A (SAMPLES CONTINUED)	02/20/90	02/19/90	02/13/90	02/13/90	02/13/90	02/13/90
	0940	0940	1100	1100	1100	1100
(D-16-10) 08 BDD	265601 AT	900931 WQ	13431 BCL	MA	900824 WQ	900824 WQ

TOXAPHENE (UG/L)	<1.0	N1.400				
PCB 1016 (UG/L)	<0.5	NOT ANALYZD				
PCB 1221 (UG/L)	<0.5	NOT ANALYZD				
PCB 1232 (UG/L)	<0.5	NOT ANALYZD				
PCB 1242 (UG/L)	<0.5	NO. 244				
PCB 1248 (UG/L)	<0.5	NO. 690				
PCB 1254 (UG/L)	<0.5	NO. 185				
PCB 1260 (UG/L)	<0.5	NO. 326				
**** HERBICIDES - EPA METHOD 8150 ****		900328				
2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)	<0.4	NO. 26				
SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L)	<0.2	NO. 05				

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE AF-064 A 02/13/90 10/27/89 10/27/89 05/12/89 11/26/86 1100 0000 0000 1107 0855 900825 WQ 90825 WQ ATL 896192 WQ 896192 WQ 892731 WQ 861062 WQ (D-16-10) 08 BDD

ANALYSIS DATE (YYMMDD) NT ANAL (Z) NT ANAL (Z) PH IN FIELD (S.U.) 7.9 7.7 26 414 444 249 PH IN LAB (S.U.) 7.7 26 414 444 249 TEMPERATURE (DEGREES CENT.) 238 Y FIELD CONDUCTIVITY (UMHD/CM AT FIELD TEM) 312 312 91 90 R 91 74.9 139 147 0.11 1.33 2.37 CALCULATED CONDUCTIVITY (UMHD/CM) 0.53B 18.6 20 0.19 52 1.5 30 4.0 58B 2.3B 31B 4.3B TOTAL DIS. SOLIDS (180) (MG/L) 1.5 3.6 H

TOTAL DIS. SOLIDS CALC (MG/L) 333 101 TOTAL HARDNESS (CACO3, MG/L) 95 77.4 147 147 0.06 2.59 HARDNESS CALC. (CACO3, MG/L) 91 74.9 139 147 0.11 1.33 2.37 HARDNESS. CALCIUM CALC. (CACO3, MG/L) 0.53B 18.6 20 0.19 52 1.5 30 4.0 58B 2.3B 31B 4.3B BICARBONATE ALKALINITY (CACO3, MG/L) 1.5 3.6 H TOTAL ALKALINITY. CALCULATED (CACO3, MG/L) 1.5 3.6 H LANGIER INDEX 1.5 3.6 H ION BALANCE, CALC. 1.5 3.6 H SODIUM ADSORPTION RATIO, CALC. 1.5 3.6 H FLUORIDE (MG/L) 1.5 3.6 H METHOD B 1.5 3.6 H CHLORIDE (MG/L) 1.5 3.6 H SULFATE (MG/L) 1.5 3.6 H BROMIDE (MG/L) 1.5 3.6 H SODIUM (MG/L) 1.5 3.6 H METHOD B 1.5 3.6 H POTASSIUM ((MG/L) 1.5 3.6 H METHOD B 1.5 3.6 H CALCIUM (MG/L) 1.5 3.6 H METHOD B 1.5 3.6 H MAGNESIUM (MG/L) 1.5 3.6 H METHOD B 1.5 3.6 H SILICA (MG/L) 1.5 3.6 H ORTHOPHOSPHATE AS P. (MG/L) 1.5 3.6 H

NITRITE AS NITROGEN (MG/L) NO. 5 H NITRATE AS NITROGEN (MG/L) NO. 1 H TOTAL KJELDAHL NITROGEN (MG/L) 3.6 H KJELDAHL AMMONIA (MG/L) 3.6 H BORON (MG/L) <0.005 ARSENIC (MG/L) 0.0517 BARIUM (MG/L) <0.0002 CADMIUM (MG/L) 0.0012 CHROMIUM (MG/L) <0.1 COPPER (MG/L) <0.1

INITIALS:

TUCSON WATER
ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE AF-064 A (SAMPLES CONTINUED)	02/13/90	10/27/89	10/27/89	05/12/89	11/30/86
	1100	0000	0000	1107	0855
(D-16-10) 08 BDD	900825 WQ	ATL	896192 WQ	892731 WQ	861062 WQ

IRON (MG/L)	<0.1
LEAD (MG/L)	<0.005
MANGANESE (MG/L)	<0.05
MERCURY (MG/L)	<0.0005 T
SELENIUM (MG/L)	<0.005
SILVER (MG/L)	<0.0005
STRONTIUM (MG/L)	<0.005
ZINC (MG/L)	<0.02

NOT ANALYZD

896192

WATER QUALITY LAB NUMBER	
TOTAL COLI - FILTER (CFU/100ML)	0
FECAL COLIFORM (CFU/100ML)	0
BACKGROUND (CFU/100 ML)	15

NT ANAL (Z)
NT ANAL (Z)

**** VCC'S - EPA METHOD 502.2 ****
**** HERBICIDES - EPA METHOD 8150 ****

INITIALS:

TUCSON WATER SAMPLES
ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	WR	157 A	12/11/90	109294 ATL	12/11/90	1007	907441 WQ	12/11/90	1007	907442 WQ	12/11/90	1007	907442 WQ	12/11/90	1007	907442 WQ
(D-16-10) 08 BDB																
PUMPING TIME (HR, MIN):																

FLOW RATE (GPM)	24.4
STATIC WATER LEVEL	144.98
PUMPING WATER LEVEL	147.95
PH IN FIELD (S.U.)	7.6
PH IN LAB (S.U.)	7.4
TEMPERATURE (DEGREES CENT.)	23.5
DISSOLVED O2 (PPM)	6.8
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)	575
LAB CONDUCTIVITY (UMHO/CM)	453
CALCULATED CONDUCTIVITY (UMHO/CM)	676
TOTAL DIS. SOLIDS(180) (MG/L)	381 Y
TOTAL DIS. SOLIDS CALC (MG/L)	478
TOTAL SUSPENDED SOLIDS (MG/L)	1.1
VOLUME FILTERED, LITERS	3.8
TURBIDITY, LAB	1.4
TOTAL HARDNESS (CACO3, MG/L)	144
HARDNESS CALC. (CACO3, MG/L)	144 R
HARDNESS, CALCIUM CALC. (CACO3, MG/L)	157
BICARBONATE ALKALINITY (CACO3, MG/L)	129.8
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L)	183
LANGLIER INDEX	183
ION BALANCE, CALC.	0.09
SODIUM ADSORPTION RATIO, CALC.	1.89
FLUORIDE (MG/L)	2.63

METHOD B	
CHLORIDE (MG/L)	0.398
SULFATE (MG/L)	36.9
BROMIDE (MG/L)	47
SODIUM (MG/L)	0.39
POTASSIUM (MG/L)	76
CALCIUM (MG/L)	1.9
MAGNESIUM (MG/L)	52
SILICON (MG/L)	6.7
ORTHOPHOSPHATE AS P. (MG/L)	14
NITRITE AS NITROGEN (MG/L)	NO.5
NITRATE AS NITROGEN (MG/L)	NO.1
TOTAL ORGANIC HALOGENS AS CL (UG/L)	7.6
TOT. ORG. CARBON, AS C (NPOC, MG/L)	N5
BORON (MG/L)	0.29

IRON (MG/L)	0.12
WATER QUALITY LAB NUMBER	907442
ATL REPORT NUMBER FOR QA	109300
TOTAL COLI. - MPN (CFU./100ML)	<2
TOTAL COLI. - FILTR (CFU./100ML)	0 X
HETERO. PLATE COUNT (MEMBRANE, CFU/ML)	18

INITIALS:

TUCSON WATER
ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	12/11/90	12/11/90	12/11/90	12/11/90	12/11/90	12/11/90	12/11/90
WR-157 A (SAMPLES CONTINUED)	1007	1007	1007	1007	1007	1007	1007
	109294 ATL	907441 WQ	907442 WQ	907441 WQ	907442 WQ	109294 ATL	907442 WQ
	0020	0020	0020	0020	0020	0020	0020
(D-16-10) O8 BDB							
PUMPING TIME (HR, MIN):							

>800 X

BACKGROUND (CFU/100 ML)	86.041
4,4'-DICHLOROBIPHENYL(SURROGTE%RECOVERY)	901218
*** PESTICIDES - EPA METHOD 608 **	
ALPHA BHC (UG/L)	NO.011
GAMMA BHC (LINDANE) (UG/L)	NO.012
BETA BHC (UG/L)	NO.011
HEPTACHLOR (UG/L)	NO.012
DELTA BHC (UG/L)	NO.011
ALDRIN (UG/L)	NO.012
HEPTACHLOR EPOXIDE (UG/L)	NO.019
ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L)	NO.019
4,4'-DDE / PP'-DDE (UG/L)	NO.019
DIELDRIN (UG/L)	NO.021
ENDRIN (UG/L)	NO.025
4,4'-DDD / PP'-DDD (UG/L)	NO.022
ENDOSULFAN II/BETA ENDOSULFAN (UG/L)	NO.025
4,4'-DDT / PP'-DDT (UG/L)	NO.034
ENDRIN ALDEHYDE (UG/L)	NO.012
ENDOSULFAN SULFATE (UG/L)	NO.117
METHOXYCHLOR (UG/L)	NO.508
CHLORDANE (UG/L)	NO.544
TOXAPHENE (UG/L)	NOT ANALYZD
PCB 1016 (UG/L)	NOT ANALYZD
PCB 1221 (UG/L)	NOT ANALYZD
PCB 1232 (UG/L)	NOT ANALYZD
PCB 1242 (UG/L)	NO.407
PCB 1248 (UG/L)	NOT ANALYZD
PCB 1254 (UG/L)	NOT ANALYZD
PCB 1260 (UG/L)	NOT ANALYZD
DIMETHYL PHTHALATE (UG/L)	NO.325
DIETHYL PHTHALATE (UG/L)	NO.592
HEXACHLOROBENZENE (UG/L)	NO.568
DI-N-BUTYL PHTHALATE (UG/L)	NO.046
BENZYL BUTYL PHTHALATE (UG/L)	NO.320
BIS (2-ETHYLHEXYL) PHTHALATE (UG/L)	NO.110
DI-N-OCTYL PHTHALATE (UG/L)	NO.344
*** HERBICIDES - EPA METHOD 8150 ****	
2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)	8150
4(2,4-DICHLOROPHENOXY) BUTYRATE (UG/L)	<1.0
(2,4,5-TRICHLOROPHENOXY) ACETATE (UG/L)	<0.5
SILVEX/2(2,4,5-TRICHLOROPHENOXY) (UG/L)	<0.1
DALAPON/2,2-DICHLOROPROPANONATE (UG/L)	<5.0
DICAMBA/3,6-DICHLORO-2-METHOXY (UG/L)	<0.5
DICHLOROPROP/2(2,4-DICHLOROPHENOXY) (UG/L)	<1.0
DINOSEB/2-SEC-BUTYL-4,6-DINITRO (UG/L)	<0.1
MCPA/2-METHYL-4-CHLOROPHENOXY (UG/L)	<200

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	WR-157 A (SAMPLES CONTINUED)	12/11/90	1007	109294	ATL	12/11/90	1007	907442	WQ	12/11/90	1007	907442	WQ	12/11/90	1007	109294	ATL	907442	WQ	12/11/90	1007	907442	WQ	
	(D-16-10) 08 BDB																							
	PUMPING TIME (HR, MIN):																							

MCPP/MECOPROP/2 (4-CHLORO-2-METH. (UG/L)

<200

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	WR	157 A	10/09/90	0911	10/09/90	0911	10/09/90	0911	10/09/90	0911	10/09/90	0911	08/07/90
(D-16-10) 08 BDB			107186	ATL	906062	WQ	906063	WQ	906062	WQ	906062	WQ	104716
PUMPING TIME (HR./MIN)			0015		0015		0015		0015		0015		0020

FLOW RATE (GPM)	26.7	26.7
STATIC WATER LEVEL	139.90	139.90
PUMPING WATER LEVEL	142.45	142.45
PH IN FIELD (S.U.)	7.4	7.4
PH IN LAB (S.U.)	7.5	7.5
TEMPERATURE (DEGREES CENT.)	24.2	24.2
DISSOLVED O2 (PPM)	8.6	8.6
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)	610	610
LAB CONDUCTIVITY (UMHO/CM)	650	650
CALCULATED CONDUCTIVITY (UMHO/CM)	686	686
TOTAL DIS. SOLIDS (180) (MG/L)	409	409
TOTAL DIS. SOLIDS CALC (MG/L)	489	489
TOTAL SUSPENDED SOLIDS (MG/L)	0.6	0.6
VOLUME FILTERED, LITERS	3.5	3.5
TURBIDITY, LAB	1.9	1.9
TOTAL HARDNESS (CACO3, MG/L)	157	157
HARDNESS CALC (CACO3, MG/L)	150	150
HARDNESS, CALCIUM CALC (CACO3, MG/L)	122.4	122.4
BICARBONATE ALKALINITY (CACO3, MG/L)	187	187
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L)	187	187
LANGLIER INDEX	-0.11	-0.11
ION BALANCE, CALC.	-0.82	-0.82
SODIUM ADSORPTION RATIO, CALC.	2.73	2.73
FLUORIDE (MG/L)	0.378	0.378
METHOD B	37.9	37.9
CHLORIDE (MG/L)	50	50
SULFATE (MG/L)	0.43	0.43
BROMIDE (MG/L)	77	77
SODIUM (MG/L)	1.8	1.8
POTASSIUM ((MG/L)	49	49
CALCIUM (MG/L)	6.8	6.8
MAGNESIUM (MG/L)	16	16
SILICON (MG/L)	NO. 5	NO. 5
ORTHOPHOSPHATE AS P. (MG/L)	NO. 1	NO. 1
NITRITE AS NITROGEN (MG/L)	8.7	8.7
NITRATE AS NITROGEN (MG/L)	8	8
TOTAL ORGANIC HALOGENS AS CL (UG/L)	0.35	0.35
TOT. ORG. CARBON, AS C (NPDC, MG/L)		
BORON (MG/L)		

IRON (MG/L)	<0.05 T	0.15	904487
WATER QUALITY LAB NUMBER		906062	104723
ATL REPORT NUMBER FOR QA		107191	104717 D
			104722 R
			104718 S

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	MR	157 A (SAMPLES CONTINUED)	10/09/90	10/09/90	10/09/90	10/09/90	10/09/90	10/09/90	08/07/90
			0911	0911	0911	0911	0911	0911	1035
		107186 ATL	906062 WQ	906063 WQ	906062 WQ	906063 WQ	906062 WQ	906063 WQ	104716 ATL
			0015	0015	0015	0015	0015	0015	0020

(D-16-10) 08 BDB
PUMPING TIME (HR, MIN):

TOTAL COLI - MPN (CFU./100ML)
 TOTAL COLI - FILTR (CFU./100ML)
 FECAL COLIFORM (CFU/100ML)
 HETERO. PLATE COUNT (MEMBRANE, CFU/ML)
 BACKGROUND (CFU/100 ML)
 4,4'-DICHLOROBIPHENYL(SURROGIE%RECDVRY)
 METHOD %

*** PESTICIDES - EPA METHOD 608 **

- ALPHA BHC (UG/L)
- GAMMA BHC (LINDANE) (UG/L)
- BETA BHC (UG/L)
- HEPTACHLOR (UG/L)
- DELTA BHC (UG/L)
- ALDRIN (UG/L)
- HEPTACHLOR EPOXIDE (UG/L)
- ENDOSULFAN I/ALPHA (UG/L)
- 4,4'-DDE / PP'-DDE (UG/L)
- DIELDIN (UG/L)
- ENDRIN (UG/L)
- 4,4'-DDD / PP'-DDD (UG/L)
- ENDOSULFAN II/BETA (UG/L)
- 4,4'-DDT / PP'-DDT (UG/L)
- ENDRIN ALDEHYDE (UG/L)
- ENDOSULFAN SULFATE (UG/L)
- METHOXYCHLOR (UG/L)
- CHLORDANE (UG/L)
- TOXAPHENE (UG/L)
- PCB 1016 (UG/L)
- PCB 1221 (UG/L)
- PCB 1232 (UG/L)
- PCB 1242 (UG/L)
- PCB 1254 (UG/L)
- PCB 1260 (UG/L)
- DIMETHYL PHTHALATE (UG/L)
- DIETHYL PHTHALATE (UG/L)
- HEXACHLOROBENZENE (UG/L)
- DI-N-BUTYL PHTHALATE (UG/L)
- BENZYL BUTYL PHTHALATE (UG/L)
- BIS (2-ETHYLHEXYL) PHTHALATE (UG/L)
- DI-N-OCTYL PHTHALATE (UG/L)
- *** HERBICIDES - EPA METHOD 8150 ***
- 2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)
- (2,4,5-TRICHLOROPHENOXY) ACETATE (UG/L)
- SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L)

<2
<2
85

- 100%
- 901015
- NO.011
- NO.012
- NO.011
- NO.012
- NO.011
- NO.012
- NO.011
- NO.012
- NO.019
- NO.019
- NO.019
- NO.021
- NO.025
- NO.022
- NO.026
- NO.034
- NO.012
- NO.117
- NO.508
- NO.544
- NOT ANALYZD
- NOT ANALYZD
- NOT ANALYZD
- NO.407
- NOT ANALYZD
- NOT ANALYZD
- NO.326
- N1.48
- N1.42
- NO.046
- NO.800
- NO.275
- NO.860
- N1.68
- 901106
- NO.072
- NO.033
- NO.022

INITIALS:

TUCSON WATER SAMPLES
ANALYSIS OF WATER
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	WR-157 A	08/07/90	08/07/90	08/07/90	08/07/90	08/07/90	08/07/90	08/07/90
		1035	1035	1035	1035	1035	1035	1035
		104717 ATL	904489 WQ	904489 WQ	904489 WQ	904489 WQ	904489 WQ	904490 WQ
		0020	0020	0020	0020	0020	0020	0020
	(D-16-10) 08 BDB							
	PUMPING TIME (HR, MIN)							

FLOW RATE (GPM)	26
STATIC WATER LEVEL	141.5
PUMPING WATER LEVEL	144.6
PH IN FIELD (S.U.)	7.5
PH IN LAB (S.U.)	7.5
TEMPERATURE (DEGREES CENT.)	24.0
DISSOLVED O2 (PPM)	9.0
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)	690
LAB CONDUCTIVITY (UMHO/CM)	800
CALCULATED CONDUCTIVITY (UMHO/CM)	763
TOTAL DIS. SOLIDS (180) (MG/L)	444 H
TOTAL DIS. SOLIDS CALC (MG/L)	527
TOTAL SUSPENDED SOLIDS (MG/L)	0.63

VOLUME FILTERED, LITERS	<0.5 V
TURBIDITY, LAB	0.8
TOTAL HARDNESS (CACO3, MG/L)	0.5
HARDNESS CALC. (CACO3, MG/L)	172
HARDNESS, CALCIUM CALC. (CACO3, MG/L)	175
BICARBONATE ALKALINITY (CACO3, MG/L)	142.3
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L)	188
LANGLIER INDEX	187
ION BALANCE, CALC.	0.04
SODIUM ADSORPTION RATIO, CALC.	1.84
FLUORIDE (MG/L)	2.79

METHOD B	
CHLORIDE (MG/L)	0.348
SULFATE (MG/L)	45.2
BROMIDE (MG/L)	57
SODIUM (MG/L)	0.54
POTASSIUM ((MG/L)	85
CALCIUM (MG/L)	2.0
MAGNESIUM (MG/L)	57
SILICON (MG/L)	8.0
ORTHOPHOSPHATE AS P (MG/L)	16
NITRITE AS NITROGEN (MG/L)	NO.5
NITRATE AS NITROGEN (MG/L)	NO.1
TOTAL ORGANIC HALOGENS AS CL (UG/L)	11
TOT. ORG. CARBON, AS C (NPOC, MG/L)	5.6
BORON (MG/L)	0.37
IRON (MG/L)	<0.05

WATER QUALITY LAB NUMBER	904489
ATL REPORT NUMBER FOR QA	104722 R
	104716 D
	104718 S

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	DATE	TIME	LOCATION	TIME	DATE	LOCATION	TIME	DATE	LOCATION
WR-157 A (SAMPLES CONTINUED)	08/07/90	1035	08/07/90	1035	08/07/90	1035	08/07/90	1035	08/07/90
	104717 ATL	0020	904487 WQ	0020	904488 WQ	0020	904489 WQ	0020	904490 WQ

(D-16-10) 08 BDB
PUMPING TIME (HR. MIN):

TOTAL COLI. - MPN (CFU./100ML)

TOTAL COLI. - FILTR (CFU./100ML)

RETERO. PLATE COUNT (MEMBRANE. CFU/ML)

BACKGROUND (CFU/100 ML)

NT ANAL (Z)

NT ANAL (Z)

NT ANAL (Z)

0 X

65

67 A

220 X

INITIALS:

SOURCE	08/07/90	08/07/90	07/05/90	07/05/90	07/05/90	07/05/90
WR-157 A	1035	1035	1147	1147	1147	1147
(D-16-10) O8 BDB	904487 WQ	904489 WQ	103369 ATL	903870 WQ	903869 WQ	903870 WQ
PUMPING TIME (HR,MIN):	0020	0020	0020	0020	0020	0020
FLOW RATE (GPM)				26	139.54	
STATIC WATER LEVEL				142.44		
PUMPING WATER LEVEL				7.5		
PH IN FIELD (S.U.)				7.4		
PH IN LAB (S.U.)				24.4		
TEMPERATURE (DEGREES CENT.)				9.4		
DISSOLVED O2 (PPM)				720		
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)				730		
LAB CONDUCTIVITY (UMHO/CM)				782		
CALCULATED CONDUCTIVITY (UMHO/CM)				462 Y		
TOTAL DIS. SOLIDS (180) (MG/L)				542		
TOTAL DIS. SOLIDS CALC (MG/L)				0.37		
TOTAL SUSPENDED SOLIDS (MG/L)				3.7		
VOLUME FILTERED, LITERS				0.2		
TURBIDITY, LAB				184		
TOTAL HARDNESS (CACO3, MG/L)				177		
HARDNESS CALC (CACO3, MG/L)				142.9		
HARDNESS, CALCIUM CALC (CACO3, MG/L)				188		
BICARBONATE ALKALINITY (CACO3, MG/L)				188		
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L)				0.06		
LANGLIER INDEX				-0.99		
ION BALANCE, CALC.				2.68		
SODIUM ADSORPTION RATIO, CALC.				0.338		
FLUORIDE (MG/L)				49.6		
METHOD B				60		
CHLORIDE (MG/L)				0.63		
SULFATE (MG/L)				82		
BROMIDE (MG/L)				2.1		
SODIUM (MG/L)				57		
POTASSIUM ((MG/L)				8.4		
CALCIUM (MG/L)				15		
MAGNESIUM (MG/L)				NO.5		
SILICON (MG/L)				NO.10		
ORTHOPHOSPHATE AS P. (MG/L)				12		
NITRITE AS NITROGEN (MG/L)				5		
NITRATE AS NITROGEN (MG/L)				0.39		
TOTAL ORGANIC HALOGENS AS CL (UG/L)				0.16		
TOT. ORG. CARBON, AS C (NPOC, MG/L)						
BORON (MG/L)						
IRON (MG/L)						
WATER QUALITY LAB NUMBER						
TOTAL COLI - MPN (CFU/100ML)						
TOTAL COLI - FILTR (CFU/100ML)						
HETERO. PLATE COUNT (MEMBRANE, CFU/ML)						
BACKGROUND (CFU/100 ML)						
4,4'-DICHLOROBIPHENYL (SURROGTE%RECOVERY)	129%					
METHOD %						
INITIALS						

<2

0
32
180

116%

129%

903870

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE WR-157-A (SAMPLES CONTINUED)	08/07/90	08/07/90	07/05/90	07/05/90	07/05/90	07/05/90
(D-16-10) 08 BDB	1035	1035	1147	1147	1147	1147
PUMPING TIME (HR,MIN):	904487 WQ	904489 WQ	103369 ATL	903870 WQ	903869 WQ	903870 WQ
	0020	0020	0020	0020	0020	0020

**** PESTICIDES - EPA METHOD 608 **	900813	900813
ALPHA BHC (UG/L)	NO.021	NO.021
GAMMA BHC (LINDANE) (UG/L)	NO.023	NO.023
BETA BHC (UG/L)	NO.021	NO.021
HEPTACHLOR (UG/L)	NO.023	NO.023
DELTA BHC (UG/L)	NO.023	NO.023
ALDRIN (UG/L)	NO.022	NO.022
HEPTACHLOR EPOXIDE (UG/L)	NO.024	NO.024
ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L)	NO.039	NO.039
4,4'-DDE / PP'-DDE (UG/L)	NO.037	NO.037
DIELDRIN (UG/L)	NO.038	NO.038
ENDRIN (UG/L)	NO.041	NO.041
4,4'-DDD / PP'-DDD (UG/L)	NO.050	NO.050
ENDOSULFAN II/BETA ENDOSULFAN (UG/L)	NO.045	NO.045
4,4'-DDT / PP'-DDT (UG/L)	NO.053	NO.053
ENDRIN ALDEHYDE (UG/L)	NO.067	NO.067
ENDOSULFAN SULFATE (UG/L)	NO.023	NO.023
METHOXYCHLOR (UG/L)	NO.174	NO.174
CHLORDANE (UG/L)	NO.303	NO.303
TOXAPHENE (UG/L)	NOT ANALYZD	NOT ANALYZD
PCB 1016 (UG/L)	NOT ANALYZD	NOT ANALYZD
PCB 1221 (UG/L)	NOT ANALYZD	NOT ANALYZD
PCB 1232 (UG/L)	NOT ANALYZD	NOT ANALYZD
PCB 1242 (UG/L)	NO.814	NO.814
PCB 1248 (UG/L)	NOT ANALYZD	NOT ANALYZD
PCB 1254 (UG/L)	NOT ANALYZD	NOT ANALYZD
PCB 1260 (UG/L)	NO.326	NO.326
**** HERBICIDES - EPA METHOD 8150 ****	900814	900814
2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)	NO.180	NO.180
(2,4,5-TRICHLOROPHENOXY) ACETATE (UG/L)	NO.082	NO.082
SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L)	NO.051	NO.051

INITIALS:

TUCSON WATER
ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE: WR-157 A
 (D-16-10) 08 BDB
 PUMPING TIME (HR, MIN): 103369 ATL 102516 ATL 903262 WQ 903262 WQ 903262 WQ 903262 WQ 101381 ATL
 07/05/90 06/04/90 06/04/90 06/04/90 06/04/90 05/03/90
 1147 0907 0907 0907 0907 0943
 0020 0015 0015 0015 0015 0015

FLOW RATE (GPM) 27.2
 STATIC WATER LEVEL 139.92
 PUMPING WATER LEVEL 143.08
 PH IN FIELD (S.U.) 7.6
 PH IN LAB (S.U.) 7.3
 TEMPERATURE (DEGREES CENT.) 24.5
 DISSOLVED O2 (PPM) 7.5

CHLORINE, FIELD (MG/L) NOT ANALYZD
 FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM) 710
 LAB CONDUCTIVITY (UMHO/CM) 740

CALCULATED CONDUCTIVITY (UMHO/CM) 740 R
 TOTAL DIS. SOLIDS(180) (MG/L) 815
 TOTAL DIS. SOLIDS CALC (MG/L) 470 Y
 TOTAL SUSPENDED SOLIDS (MG/L) 560
 VOLUME FILTERED, LITERS 0.6
 TURBIDITY, LAB 3.2
 TOTAL HARDNESS (CACO3, MG/L) 0.3
 HARDNESS CALC. (CACO3, MG/L) 194
 HARDNESS, CALCIUM CALC. (CACO3, MG/L) 180
 BICARBONATE ALKALINITY (CACO3, MG/L) 144.8
 TOTAL ALKALINITY, CALCULATED (CACO3, MG/L) 189
 LANGLIER INDEX 0.17
 ION BALANCE CALC. -0.85
 SODIUM ADSORPTION RATIO, CALC. 2.82
 FLUORIDE (MG/L)

METHOD B
 CHLORIDE (MG/L) 0.31B
 SULFATE (MG/L) 56.0
 BROMIDE (MG/L) 56
 SODIUM (MG/L) 0.71
 POTASSIUM ((MG/L) 87
 CALCIUM (MG/L) 2.1
 MAGNESIUM (MG/L) 58
 SILICON (MG/L) 8.5
 ORTHOPHOSPHATE AS P. (MG/L) 16
 NITRITE AS NITROGEN (MG/L) NO.5
 NITRATE AS NITROGEN (MG/L) NO.1
 TOTAL ORGANIC HALOGENS AS CL (UG/L) 14
 TOT. ORG. CARBON, AS C (NPOC, MG/L) 8
 BORON (MG/L) 0.86
 COPPER (MG/L) 1.6
 IRON (MG/L) <0.10
 R2AM INCUBATION TEMPERATURE DEGREES C <0.10
 R2AM INCUBATION TIME IN HOURS <0.10
 TOTAL COLI. - MPN (CFU./100ML) 35
 <2

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	WR-157 A (SAMPLES CONTINUED)	07/05/90	06/04/90	06/04/90	06/04/90	06/04/90	06/04/90	05/03/90
		1147	0907	0907	0907	0907	0907	0943
(D-16-10) 08 BDB	103369 ATL	102516 ATL	903262 WQ	903262 WQ	903262 WQ	903262 WQ	903262 WQ	101381 ATL
PUMPING TIME (HR, MIN)	0020	0015	0015	0015	0015	0015	0015	0015

TOTAL COLI - FILTR (CFU/100ML)
 HETERO. PLATE COUNT (MEMBRANE, CFU/ML)
 BACKGROUND (CFU/100 ML)
 WATER QUALITY LAB NUMBER
 ATL REPORT NUMBER FOR QA

*** PESTICIDES - EPA METHOD 608 ***

ALPHA BHC (UG/L)	<0.01	903870	NO.021
GAMMA BHC (LINDANE) (UG/L)	<0.01	103374	NO.023
BETA BHC (UG/L)	<0.01	103375 R	NO.021
HEPTACHLOR (UG/L)	<0.01	608	NO.023
DELTA BHC (UG/L)	<0.05		NO.023
ALDRIN (UG/L)	<0.01		NO.022
HEPTACHLOR EPOXIDE (UG/L)	<0.05		NO.024
ENDOSULFAN I/ALPHA (UG/L)	<0.05		NO.039
4,4'-DDE / PP'-DDE (UG/L)	<0.01		NO.037
DFELDRIN (UG/L)	<0.01		NO.038
ENDRIN (UG/L)	<0.05		NO.041
4,4'-DDD / PP'-DDD (UG/L)	<0.05		NO.050
ENDOSULFAN II/BETA (UG/L)	<0.05		NO.045
4,4'-DDT / PP'-DDT (UG/L)	<0.02		NO.053
ENDRIN ALDEHYDE (UG/L)	<0.05		NO.067
ENDOSULFAN SULFATE (UG/L)	<0.20		NO.023
METHOXYCHLOR (UG/L)	<0.05		NO.174
CHLORDANE (UG/L)	<0.20		NO.303
TOXAPHENE (UG/L)			NOT ANALYZD
PCB 1016 (UG/L)			NOT ANALYZD
PCB 1221 (UG/L)			NOT ANALYZD
PCB 1232 (UG/L)			NO.814
PCB 1242 (UG/L)	<0.20		NOT ANALYZD
PCB 124B (UG/L)	<0.20		NOT ANALYZD
PCB 1254 (UG/L)			NO.326
PCB 1260 (UG/L)			900720

*** HERBICIDES - EPA METHOD 8150 ***

2,4-DICHLOROPHENOX Y ACETIC ACID (UG/L)	<1.0	NO.180 X
4(2,4-DICHLOROPHENOX Y) BUTYRATE (UG/L)	<1.0	
(2,4,5-TRICHLOROPHENOX Y) ACETATE (UG/L)	<0.50	
SILVEX/2(2,4,5-TRICHLOROPHENOX Y) (UG/L)	<0.10	NO.082 X
DALAPON/2,2-DICHLOROPROPANEDATE (UG/L)	<5.0	NO.051 X
DICAMBA/3,6-DICHLORO-2-METHOXY (UG/L)	<0.50	
DICHLOROPROP/2(2,4-DICHLOROPHENOX Y) (UG/L)	<1.0	
DINoseb/2+SEC-BUTYL-4,6-DINITRO (UG/L)	<0.10	
MCPA/2-METHYL-4-CHLOROPHENOX Y (UG/L)	<200	

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE WR-157 A (SAMPLES CONTINUED)	07/05/90	06/04/90	06/04/90	06/04/90	06/04/90	05/03/90
	1147	0907	0907	0907	0907	0943
(D-16-10) 08 BDB	103369 ATL	102516 ATL	903262 WQ	903262 WQ	903263 WQ	101381 ATL
PUMPING TIME (HR, MIN):	0020	0015	0015	0015	0015	0015

MCPP/MECOPROP/2(4-CHLORO-2-METH: (UG/L) <400

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

01/28/93

SOURCE WR-157 A

(D-16-10) 08 BDB

PUMPING TIME (HR, MIN):

05/03/90	05/03/90	05/03/90	04/02/90	04/02/90
0943	0943	0943	1140	1134
902660 WQ	902661 WQ	902660 WQ	29701 BCL	100447 ATL
0015	0015	0015	0021	0015
				901840 WQ
				0015

FLOW RATE (GPM) 24.9

STATIC WATER LEVEL 142.00

PUMPING WATER LEVEL 144.83

PH IN FIELD (S.U.) 7.6

TEMPERATURE (DEGREES CENT.) 7.5

DISSOLVED O2 (PPM) 24.1

CHLORINE FIELD (MG/L) 6.5

FIELD CONDUCTIVITY (UMHO/CM) 680

LAB CONDUCTIVITY (UMHO/CM) 700

CALCULATED CONDUCTIVITY (UMHO/CM) 779

TOTAL DIS. SOLIDS(180) (MG/L) 454 Y

TOTAL DIS. SOLIDS CALC (MG/L) 548

VOLUME FILTERED, LITERS 0.54

TURBIDITY, LAB 3.6

TOTAL HARDNESS (CACO3, MG/L) 182

HARDNESS CALC. (CACO3, MG/L) 181 R

HARDNESS, CALCIUM CALC. (CACO3, MG/L) 179

BICARBONATE ALKALINITY (CACO3, MG/L) 144.8

TOTAL ALKALINITY, CALCULATED (CACO3, MG/L) 200

LANGLIER INDEX 0.48

ION BALANCE CALC. -0.46

SODIUM ADSORPTION RATIO, CALC. 2.70

FLUORIDE (MG/L) 0.34B

METHOD B

CHLORIDE (MG/L) 44.8

SULFATE (MG/L) 56

BROMIDE (MG/L) 0.57

SODIUM ((MG/L) 83

POTASSIUM ((MG/L) 2.1

CALCIUM (MG/L) 58

MAGNESIUM (MG/L) 8.2

ORTHOPHOSPHATE AS P. (MG/L) NO.5

NITRITE AS NITROGEN (MG/L) NO.1

NITRATE AS NITROGEN (MG/L) 11.7

TOTAL ORGANIC HALOGENS AS CL (UG/L) <5

TOT. ORG. CARBON, AS C (NPOC, MG/L) 0.39

BORON (MG/L)

COPPER (MG/L) <0.10

IRON (MG/L) <0.10

WATER QUALITY LAB NUMBER

INITIALS:

NOT ANALYZD

7.8

7.4

22.5

6.6

NO.05

600

640

703

485

517

392 Y

508

0.30

3.05

0.94

156

156

124.8

212

212

0.31

-3.31

2.65

0.40

34.3

48

0.47

76

1.4

50

7.5

9.3

NO.1

NO.1

<0.05 T

901840 D

<0.10

7.8

7.4

22.5

6.6

NO.05

600

640

703

485

517

392 Y

508

0.30

3.05

0.94

156

156

124.8

212

212

0.31

-3.31

2.65

0.40

34.3

48

0.47

76

1.4

50

7.5

9.3

NO.1

NO.1

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212

0.31

-3.31

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48

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76

1.4

50

7.5

9.3

NO.1

NO.1

<0.05 T

901840 D

<0.10

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508

0.30

3.05

0.94

156

156

124.8

212

212

0.31

-3.31

2.65

0.40

34.3

48

0.47

76

1.4

50

7.5

9.3

NO.1

NO.1

<0.05 T

901840 D

<0.10

7.8

7.4

22.5

6.6

NO.05

600

640

703

485

517

392 Y

508

0.30

3.05

0.94

156

156

124.8

212

212

0.31

-3.31

2.65

0.40

34.3

48

0.47

76

1.4

50

7.5

9.3

NO.1

NO.1

<0.05 T

901840 D

<0.10

Table 2
Availability of Baseline Data on Constituents of Interest*

Date	Well Number				
	AF-64	WR-157A	WR-158A	WR-159A	WR-160A
11/26/86	EC*, Cl, NO ₃ -N, SO ₄				
05/12/89	EC*, Cl, SO ₄				
06/27/89 or 06/29/89		EC*, Cl, SO ₄			EC*,SO ₄ , NO ₃ -N, TOC, Cl
07/05/89 or 07/07/89			EC*, SO ₄ , NO ₃ -N, TOC, Cl.	EC*, TOC	
10/27/89		EC*, EC, NO ₃ -N, TOC, Cl, SO ₄	EC*, EC, NO ₃ -N, TOC, Cl, SO ₄	EC*, EC, NO ₃ -N, TOC, Cl, SO ₄	EC*,EC, NO ₃ -N, TOC, Cl, SO ₄

Electrical Conductivity (EC = field, EC = lab), Nitrate as Nitrogen (NO₃-N), Total Organic Carbon (TOC), Chloride (Cl), and Sulfate (SO₄) from water samples taken at the source well and monitoring wells prior to recharge activities commencing in February 1990.

Testing Results

The responsibility of collection and analysis of water quality samples was shared by Tucson Water and Errol L. Montgomery & Associates. With exception of parameter analyses performed in the field and of duplicate samples sent to BC Laboratories (Bakersfield, CA) and Analytical Technologies, Inc. (Tempe, AZ), the core of laboratory analyses were conducted and reported by the Tucson Water Quality Laboratory (Tucson, AZ).

For this study, nitrate ($\text{NO}_3\text{-N}$), total organic carbon (TOC), chloride (Cl), and sulfate (SO_4) concentrations, along with Electrical Conductivity (EC) measurements, were specifically examined to determine the impact of recharge water on resident groundwater. A brief discussion of the rationale for choosing these parameters and constituents is given in the following paragraphs.

EC is a measure of the ability of a solution to conduct an electrical current, a property attributable to the ionic species in solution. Although electrical conductivity measurements cannot be used to obtain accurate quantitative estimates of individual ion concentrations, total ion concentrations, or total dissolved solids (TDS), they are useful as general indicators of water quality and changes in water quality (i.e., the higher the electrical conductivity, the higher the concentration of ions in solution) (Freeze and Cherry, 1979). At the Brawley Wash Surface Recharge site, an EC increase in samples taken at the source well or monitoring wells during the recharge event would indicate that ions were leached from the soil and entering the groundwater flow regime. Conversely, little change in the EC measurement taken at the source well or monitor wells during recharge would suggest that recharge water was not affecting resident groundwater.

TOC gives some indication of the biological activity occurring in the vadose zone. According to Aiken et al. (1985), organic carbon can be found in vast concentrations within the vadose zone as dissolved or particulate matter. Because of its solubility, it can be easily leached from the vadose zone by surface recharged water. Furthermore, since the test basins undergo dry cycles when the basin surface is exposed to the atmosphere, more organic carbon is produced by both the chemical and the biological environments (Wilson, 1991).

According to Todd (1980), return flows (i.e., drainage to surface channels or groundwater) from irrigated agriculture are three to ten times more saline than the water that was originally applied to the fields. This increase in salinity results from the addition of salts by dissolution during irrigation processes, from salts added as fertilizers or soil amendments, or from concentration of salts by evaporation. Major cations and anions that may leach from the soil and percolate into the groundwater include calcium, magnesium, sodium, bicarbonate, sulfate, chloride, and nitrate. At the Brawley Wash site, significant levels of nitrate ($\text{NO}_3\text{-N}$), along with sulfate and chloride, are likely to have been left in the soil from past farming practices.

SOURCE	WR-157 A (SAMPLES CONTINUED)	05/03/90	05/03/90	05/03/90	04/02/90	04/02/90
		0943	0943	0943	1134	1134
		902660 WQ	902660 WQ	902660 WQ	100447 ATL	901840 WQ
		0015	0015	0015	0015	0015
(D-16-10) 08 BDB						
PUMPING TIME (HR, MIN):						

ATL REPORT NUMBER FOR QA
 BC LAB REPORT NUMBER FOR QA
 TOTAL COLI - MPN (CFU/100ML) 2
 TOTAL COLI - FILTR (CFU/100ML) <2
 FECAL COLIFORM (CFU/100ML) 121

HETERO. PLATE COUNT (MEMBRANE, CFU/ML)
 BACKGROUND (CFU/100 ML)
 WATER QUALITY LAB NUMBER
 4,4'-DICHLOROBIPHENYL(SURROGTE%RECOVERY)

METHOD %
 *** PESTICIDES - EPA METHOD 608 **
 ALPHA BHC (UG/L) 100%
 GAMMA BHC (LINDANE) (UG/L) 900510
 BETA BHC (UG/L) NO.021
 HEPTACHLOR (UG/L) NO.021
 DELTA BHC (UG/L) <0.023
 ALDRIN (UG/L) NO.023 B
 HEPTACHLOR EPOXIDE (UG/L) NO.023
 ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L) NO.022
 4,4'-DDE / PP'-DDE (UG/L) NO.024
 DIELDRIN (UG/L) NO.039
 ENDRIN (UG/L) NO.037
 4,4'-DDD / PP'-DDD (UG/L) NO.088
 ENDOSULFAN II/BETA ENDOSULFAN (UG/L) NO.041
 4,4'-DDT / PP'-DDT (UG/L) NO.050
 ENDRIN ALDEHYDE (UG/L) NO.045
 ENDOSULFAN SULFATE (UG/L) NO.053
 METHOXYCHLOR (UG/L) NO.067
 CHLORDANE (UG/L) NO.023
 TOXAPHENE (UG/L) NO.233
 PCB 1016 (UG/L) NO.174
 PCB 1221 (UG/L) NO.303
 PCB 1232 (UG/L) NOT ANALYZD
 PCB 1242 (UG/L) NOT ANALYZD
 PCB 1248 (UG/L) NOT ANALYZD
 PCB 1254 (UG/L) NOT ANALYZD
 PCB 1260 (UG/L) NOT ANALYZD
 *** HERBICIDES - EPA METHOD 8150 ***
 2,4-DICHLOROPHENOXY ACETIC ACID (UG/L) 900523
 SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L) NO.200
 NO.051

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE WR-157 A 04/02/90 04/02/90 10/27/89 10/27/89 10/27/89 06/27/89
(D-16-10) OB BDB 1134 1134 0947 0947 0947 1840
PUMPING TIME (HR MIN) 901840 WQ 901840 WQ 896193 WQ 896193 WQ 896193 WQ 893567 WQ
0015 0015 0017 0017 0017 1100

PH IN FIELD (S.U.) 7.6 7.4 7.5 R 7.7
PH IN LAB (S.U.) 7.5 R 24 7.5

TEMPERATURE (DEGREES CENT.) 23.9
DISSOLVED O2 (PPM) 24
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM) 520
LAB CONDUCTIVITY (UMHO/CM) 580
CALCULATED CONDUCTIVITY (UMHO/CM) 663
TOTAL DIS. SOLIDS(180) (MG/L) 396 380 R 494

TOTAL DIS. SOLIDS CALC (MG/L) 494
TOTAL SUSPENDED SOLIDS (MG/L) 0.7
VOLUME FILTERED, LITERS 3
TURBIDITY, LAB 0.7
TOTAL HARDNESS (CACO3, MG/L) 158

METHOD C 148C
HARDNESS CALC. (CACO3, MG/L) 152
HARDNESS, CALCIUM CALC. (CACO3, MG/L) 122.4
BICARBONATE ALKALINITY (CACO3, MG/L) 212 211 R 212

TOTAL ALKALINITY, CALCULATED (CACO3, MG/L) 212
LANGIER INDEX 0.14
ION BALANCE, CALC. -0.09
SODIUM ADSORPTION RATIO, CALC. 2.68

FLUORIDE (MG/L) 0.34B
METHOD B 28.2 37 37
CHLORIDE (MG/L) 0.31 0.44
SULFATE (MG/L) 7.6 7.7
BROMIDE (MG/L) 1.8 1.8
SODIUM (MG/L) 49 50
POTASSIUM ((MG/L)) 7.1 6.9
CALCIUM (MG/L) 22
MAGNESIUM (MG/L) 8.1

SILICA (MG/L) NO.5 H
ORTHOPHOSPHATE AS P. (MG/L) NO.1 H
NITRITE AS NITROGEN (MG/L)
NITRATE AS NITROGEN (MG/L) 9.8 H

TOTAL KJELDAHL NITROGEN (MG/L) <0.2
KJELDAHL AMMONIA (MG/L) <0.1
TOTAL ORGANIC HALOGENS AS CL (UG/L)
TOT. ORG. CARBON, AS C (NPOC, MG/L) <0.05

BORON (MG/L) <0.005
ARSENIC (MG/L) 0.0997
BARIUM (MG/L) <0.005

INITIALS: NT ANAL (Z) <6
<0.0934

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	WR-157 A (SAMPLES CONTINUED)	04/02/90	10/27/89	10/27/89	10/27/89	10/27/89	06/27/89
	1134	1134	0947	0947	0947	0947	1840
	901840 WQ	901840 WQ	949901 ATL	896193 WQ	896193 WQ	896193 WQ	893567 WQ
	0015	0015	0017	0017	0017	0017	1100
	(D-16-10) 08 BDB						
	PUMPING TIME (HR, MIN):						

CADMIUM (MG/L)		<0.0002					<0.0002
CHROMIUM (MG/L)		0.0017					0.0018
COPPER (MG/L)							<0.1
METHOD D							
IRON (MG/L)		NO. 10D					0.350
LEAD (MG/L)		<0.1					0.0050
MANGANESE (MG/L)		<0.10D					<0.05
MERCURY (MG/L)		<0.002					<0.0005 T
SELENIUM (MG/L)		<0.05					<0.005
SILVER (MG/L)		0.0005 T					<0.0005
STRONTIUM (MG/L)		<0.005					<0.0005
ZINC (MG/L)		0.39					<0.02

WATER QUALITY LAB NUMBER		896193					
TOTAL COLI. - MPN (CFU./100ML)	<2						
TOTAL COLI. - FILTR (CFU./100ML)	<2						
FECAL COLIFORM (CFU./100ML)							
HETERO. PLATE COUNT (MEMBRANE, CFU/ML)	69						
BACKGROUND (CFU/100 ML)							
WQ REPORT NUMBER FOR QA							

4,4'-DICHLOROBIPHENYL(SURROGTE%RECOVERY)							
**** PESTICIDES - EPA METHOD 608 **							
ALPHA BHC (UG/L)		NOT ANALYZD					NOT ANALYZD
GAMMA BHC (LINDANE) (UG/L)		900419					NOT ANALYZD
BETA BHC (UG/L)		NO.021					891030
HEPTACHLOR (UG/L)		NO.023					NO.023
DELTA BHC (UG/L)		NO.031					NO.023
ALDRIN (UG/L)		NO.023					NO.023
HEPTACHLOR EPOXIDE (UG/L)		NO.022					NO.022
ENDOSULFAN I/ALPHA (UG/L)		NO.024					NO.024
4,4'-DDE / PP'-DDE (UG/L)		NO.039					NO.039
ENDRIN (UG/L)		NO.037					NO.037
4,4'-DDD / PP'-DDD (UG/L)		NO.038					NO.038
ENDOSULFAN II/BETA (UG/L)		NO.041					NO.041
4,4'-DDT / PP'-DDT (UG/L)		NO.050					NO.050
ENDRIN ALDEHYDE (UG/L)		NO.045					NO.045
METHOXYCHLOR (UG/L)		NO.053					NO.053
CHLORDANE (UG/L)		NO.067					NO.067
TOXAPHENE (UG/L)		NO.023					NO.023
PCB 1015 (UG/L)		NO.233					NO.233
PCB 1221 (UG/L)		NO.174					NO.174
PCB 1232 (UG/L)		NO.303					NO.303
PCB 1242 (UG/L)		NOT ANALYZD					NOT ANALYZD
PCB 1248 (UG/L)		NOT ANALYZD					NOT ANALYZD
INITIALS:		NO.814					NO.814
		NOT ANALYZD					NOT ANALYZD

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE WR-157 A (SAMPLES CONTINUED)	04/02/90	10/27/89	10/27/89	10/27/89	06/27/89
	1134	0947	0947	0947	1840
(D-16-10) 08 BDB	901840 WQ	949901 ATL	896193 WQ	896193 WQ	893567 WQ
PUMPING TIME (HR, MIN):	0015	0017	0017	0017	1100

PCB 1254 (UG/L)
 PCB 1260 (UG/L)
 *** HERBICIDES - EPA METHOD 8150 ***
 2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)
 SILVEX/2,4,5-TRICHLOROPHENOXY (UG/L)

NOT ANALYZD
 NO. 326
 900425
 NO. 200
 NO. 051

NOT ANALYZD
 NO. 326
 891102
 NO. 2
 NO. 05

INITIALS:

TUCSON WATER
ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	WR-158-A	12/11/90	12/11/90	12/11/90	12/11/90	12/11/90	12/11/90	12/11/90	12/11/90
(D-16-10) 08 BCD	1142	1142	1142	1142	1142	1142	1142	1142	1142
PUMPING TIME (HR, MIN)	109295 ATL	907444 WQ	907443 WQ	907444 WQ	907443 WQ	907444 WQ	907443 WQ	907444 WQ	907444 WQ
	0020	0020	0020	0020	0020	0020	0020	0020	0020

FLOW RATE (GPM)	28								
STATIC WATER LEVEL	141.63								
PUMPING WATER LEVEL	143.11								
PH IN FIELD (S.U.)	7.7								
PH IN LAB (S.U.)	7.3								
TEMPERATURE (DEGREES CENT.)	23.4								
DISSOLVED O2 (PPM)	7.4								
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)	650								
LAB CONDUCTIVITY (UMHO/CM)	650								
CALCULATED CONDUCTIVITY (UMHO/CM)	773								
TOTAL DIS. SOLIDS (180) (MG/L)	444								
TOTAL DIS. SOLIDS CALC (MG/L)	536								
TOTAL SUSPENDED SOLIDS (MG/L)	0.55								
VOLUME FILTERED, LITERS	3.8								
TURBIDITY, LAB	1.2								
TOTAL HARDNESS (CACO3, MG/L)	160								
HARDNESS CALC. (CACO3, MG/L)	168								
HARDNESS, CALCIUM CALC (CACO3, MG/L)	137.3								
BICARBONATE ALKALINITY (CACO3, MG/L)	179								
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L)	179								
LANGLIER INDEX	0.20								
ION BALANCE, CALC.	1.64								
SODIUM ADSORPTION RATIO, CALC.	2.99								
FLUORIDE (MG/L)	0.498								
METHOD B	35.6								
CHLORIDE (MG/L)	75								
SULFATE (MG/L)	0.48								
BROMIDE (MG/L)	89								
SODIUM (MG/L)	2.0								
POTASSIUM ((MG/L)	55								
CALCIUM (MG/L)	7.4								
MAGNESIUM (MG/L)	14								
SILICON (MG/L)	NO.5								
ORTHOPHOSPHATE AS P. (MG/L)	NO.1								
NITRITE AS NITROGEN (MG/L)	12								
NITRATE AS NITROGEN (MG/L)	NS								
TOTAL ORGANIC HALOGENS AS CL (UG/L)	0.41								
TOT. ORG. CARBON, AS C (NPOC, MG/L)	<0.05								
BORON (MG/L)	0.20								
IRON (MG/L)	907444								
WATER QUALITY LAB NUMBER	109300								
ATL REPORT NUMBER FOR QA	82								
TOTAL COLI - MPN (CFU/100ML)	0								
TOTAL COLI - FILTR (CFU/100ML)	0								
HETERO. PLATE COUNT (MEMBRANE, CFU/ML)	0								
BACKGROUND (CFU/100 ML)	0								

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	NR-158 A (SAMPLES CONTINUED)	12/11/90	12/11/90	12/11/90	12/11/90	12/11/90	12/11/90
		1142	1142	1142	1142	1142	1142
		109295 ATL	907444 WQ	907443 WQ	907444 WQ	109295 ATL	907444 WQ
		0020	0020	0020	0020	0020	0020
	(D-16-10) 08 BCD						
	PUMPING TIME (HR, MIN):						

4,4'-DICHLOROBIPHENYL(SURROGIE%RECOVERY)

*** PESTICIDES - EPA METHOD 608 **

ALPHA BHC (UG/L)

GAMMA BHC (LINDANE) (UG/L)

BETA BHC (UG/L)

HEPTACHLOR (UG/L)

DELTA BHC (UG/L)

ALDRIN (UG/L)

HEPTACHLOR EPOXIDE (UG/L)

ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L)

4,4'-DDE / PP'-DDE (UG/L)

DIELDRIN (UG/L)

ENDRIN (UG/L)

4,4'-DDD / PP'-DDD (UG/L)

ENDOSULFAN II/BETA ENDOSULFAN (UG/L)

4,4'-DDT / PP'-DDT (UG/L)

ENDRIN ALDEHYDE (UG/L)

ENDOSULFAN SULFATE (UG/L)

METHOXYCHLOR (UG/L)

CHLORDANE (UG/L)

TOXAPHENE (UG/L)

PCB 1016 (UG/L)

PCB 1221 (UG/L)

PCB 1232 (UG/L)

PCB 1242 (UG/L)

PCB 1248 (UG/L)

PCB 1254 (UG/L)

PCB 1260 (UG/L)

DIMETHYL PHTHALATE (UG/L)

DIETHYL PHTHALATE (UG/L)

HEXACHLOROBENZENE (UG/L)

DI-N-BUTYL PHTHALATE (UG/L)

BENZYL BUTYL PHTHALATE (UG/L)

BIS (2-ETHYLHEXYL) PHTHALATE (UG/L)

DI-N-OCTYLPHTHALATE (UG/L)

*** HERBICIDES - EPA METHOD 8150 ***

2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)

4(2,4-DICHLOROPHENOXY) BUTYRATE (UG/L)

(2,4,5-TRICHLOROPHENOXY) ACETATE (UG/L)

SILVEX/2(2,4,5-TRICHLOROPHENOXY) (UG/L)

DALAPON/2,2-DICHLOROPROPANATE (UG/L)

DICAMBA/3,6-DICHLORO-2-METHOXY (UG/L)

DICHLOROPROP/2(2,4-DICHLOROPHENOXY) (UG/L)

DINoseb/2-SEC-BUTYL-4,6-DINITRO (UG/L)

MCPA/2-METHYL-4-CHLOROPHENOXY (UG/L)

MCPP/Mecoprop/2(4-CHLORO-2-METH (UG/L)

INITIALS:

84.827
901218

NO.011

NO.012

NO.011

NO.012

NO.011

NO.011

NO.012

NO.012

NO.019

NO.019

NO.019

NO.021

NO.025

NO.022

NO.026

NO.034

NO.012

NO.117

NO.508

NO.544

NOT ANALYZD

NOT ANALYZD

NOT ANALYZD

NO.407

NOT ANALYZD

NO.326

NO.592

NO.568

NO.046

NO.320

NO.110

NO.344

NO.672

8150

<1.0

<1.0

<0.5

<0.1

<5.0

<0.5

<1.0

<0.1

<200

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE WR-158-A 10/09/90 1237 10/09/90 10/09/90 10/09/90 10/09/90 08/07/90
(D-16-10) 08 BCD 1237 1237 1237 1237 1237 1129
PUMPING TIME (HR. MIN): 107187 ATL 906064 WQ 906065 WQ 906064 WQ 906064 WQ 104719 ATL
0020 0020 0020 0020 0020 0020

FLOW RATE (GPM) 28
STATIC WATER LEVEL 132.63
PUMPING WATER LEVEL 133.96
PH IN FIELD (S.U.) 7.3
PH IN LAB (S.U.) 7.6
TEMPERATURE (DEGREES CENT.) 24.3
DISSOLVED O2 (PPM) 8.5
FIELD CONDUCTIVITY (UMHO/CM) 695
LAB CONDUCTIVITY (UMHO/CM) 710
CALCULATED CONDUCTIVITY (UMHO/CM) 748
TOTAL DIS. SOLIDS (180) (MG/L) 298
TOTAL DIS. SOLIDS CALC (MG/L) 527
TOTAL SUSPENDED SOLIDS (MG/L) 0.2
VOLUME FILTERED, LITERS 3.5
TURBIDITY, LAB 1.5
TOTAL HARDNESS (CACO3, MG/L) 158
HARDNESS CALC. (CACO3, MG/L) 151
HARDNESS, CALCIUM CALC. (CACO3, MG/L) 122.4
BICARBONATE ALKALINITY (CACO3, MG/L) 185
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L) 185
LANGIER INDEX -0.20
ION BALANCE, CALC. -1.36
SODIUM ADSORPTION RATIO, CALC. 3.08
FLUORIDE (MG/L) 0.508
METHOD B
CHLORIDE (MG/L) 35.5
SULFATE (MG/L) 76
BROMIDE (MG/L) 0.42
SODIUM (MG/L) 87
POTASSIUM (MG/L) 1.8
CALCIUM (MG/L) 49
MAGNESIUM (MG/L) 7.0
SILICON (MG/L) 16
ORTHOPHOSPHATE, AS P. (MG/L) NO.5
NITRITE AS NITROGEN (MG/L) NO.1
NITRATE AS NITROGEN (MG/L) 10
TOTAL ORGANIC HALOGENS AS CL (UG/L) 6
TOT. ORG. CARBON, AS C (NPDC, MG/L) 0.42
BORON (MG/L) <0.05 T

IRON (MG/L) 0.11
WATER QUALITY LAB NUMBER 906064
ATL REPORT NUMBER FOR QA 107191

TOTAL COLI. - MPN (CFU./100ML)
TOTAL COLI. - FILTR (CFU./100ML)
INITIALS:

TUCSON WATER SAMPLES
ANALYSIS OF WATER
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	WR-158 A (SAMPLES CONTINUED)	10/09/90	10/09/90	10/09/90	10/09/90	10/09/90	10/09/90	08/07/90
		1237	1237	1237	1237	1237	1237	1129
		0020	0020	0020	0020	0020	0020	104719 ATL
		107187 ATL	906064 WQ	906065 WQ	906064 WQ	906065 WQ	906064 WQ	0020
		0020	0020	0020	0020	0020	0020	0020

(D-16-10) 08 BCD
PUMPING TIME (HR, MIN):

FECAL COLIFORM (CFU/100ML)
HETERO. PLATE COUNT (MEMBRANE, CFU/ML)
BACKGROUND (CFU/100 ML)
4,4'-DICHLOROBIPHENYL(SURROGTE%/RECOVERY)

METHOD %

**** PESTICIDES - EPA METHOD 608 **

ALPHA BHC (UG/L)
GAMMA BHC (LINDANE) (UG/L)
BETA BHC (UG/L)
HEPTACHLOR (UG/L)
DELTA BHC (UG/L)
ALDRIN (UG/L)
HEPTACHLOR EPOXIDE (UG/L)
ENDOSULFAN I/ALPHA (UG/L)
4,4'-DDE / PP'-DDE (UG/L)
DIELDRIN (UG/L)
ENDRIN (UG/L)
4,4'-DDD / PP'-DDD (UG/L)
ENDOSULFAN II/BETA (UG/L)
4,4'-DDT / PP'-DDT (UG/L)
ENDRIN ALDEHYDE (UG/L)
ENDOSULFAN SULFATE (UG/L)

METHOXYCHLOR (UG/L)
CHLORDANE (UG/L)
TOXAPHENE (UG/L)
PCB 1016 (UG/L)
PCB 1221 (UG/L)
PCB 1232 (UG/L)
PCB 1242 (UG/L)
PCB 1248 (UG/L)
PCB 1254 (UG/L)
PCB 1260 (UG/L)
DIMETHYL PHTHALATE (UG/L)
DIETHYL PHTHALATE (UG/L)
HEXACHLOROBENZENE (UG/L)
DI-N-BUTYL PHTHALATE (UG/L)
BENZYL BUTYL PHTHALATE (UG/L)
BIS (2-ETHYLHEXYL) PHTHALATE (UG/L)
DI-N-OCTYLPHTHALATE (UG/L)

**** HERBICIDES - EPA METHOD 8150 ****
2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)
(2,4,5-TRICHLOROPHENOXY) ACETATE (UG/L)
SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L)

<2
93

94.018%
901015
NO.011
NO.012
NO.011
NO.011
NO.012
NO.011
NO.012
NO.019
NO.019
NO.019
NO.021
NO.025
NO.022
NO.026
NO.034
NO.012
NO.117
NO.508
NO.544
NOT ANALYZD
NOT ANALYZD
NOT ANALYZD
NO.407
NOT ANALYZD
NOT ANALYZD
NO.326
N1.48
N1.42
NO.046
NO.800
NO.275
NO.860
N1.68
901016
NO.072
NO.033
NO.022

INITIALS:

TUCSON WATER SAMPLES
 ANALYSIS OF WATER
 CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE WR-158-A

(D-16-10) 08 BCD
 PUMPING TIME (HR, MIN):

DATE	TIME	WQ	ATL	ATL	DATE	TIME	WQ	ATL	ATL
08/07/90	1129	90492	0020	0020	08/07/90	1129	90493	0026	0020
08/07/90	1129	90492	0020	0020	08/07/90	1129	90492	0020	0020
07/05/90	1244	103370	0020	0020	07/05/90	1244	103371	0020	0020

FLOW RATE (GPM) 25.5
 STATIC WATER LEVEL 136.56
 PUMPING WATER LEVEL 137.26
 PH IN FIELD (S.U.) 7.4
 PH IN LAB (S.U.) 7.5
 TEMPERATURE (DEGREES CENT.) 24.1
 DISSOLVED O2 (PPM) 11.3
 FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM) 800
 LAB CONDUCTIVITY (UMHO/CM) 960
 CALCULATED CONDUCTIVITY (UMHO/CM) 920
 TOTAL DIS. SOLIDS(180) (MG/L) 538HY
 METHOD H 544RY
 METHOD R 612
 TOTAL DIS. SOLIDS CALC (MG/L) <0.5 V
 TOTAL SUSPENDED SOLIDS (MG/L) 0.39

VOLUME FILTERED, LITERS 0.8
 TURBIDITY, LAB 1.1
 TOTAL HARDNESS (CACO3, MG/L) 198
 200 R
 HARDNESS CALC. (CACO3, MG/L) 198
 HARDNESS, CALCIUM CALC. (CACO3, MG/L) 159.8
 BICARBONATE ALKALINITY (CACO3, MG/L) 168
 TOTAL ALKALINITY, CALCULATED (CACO3, MG/L) 168
 LANGLIER INDEX -0.06
 ION BALANCE, CALC. 0.45
 SODIUM ADSORPTION RATIO, CALC. 3.06
 FLUORIDE (MG/L) 0.44B

METHOD B
 CHLORIDE (MG/L) 57.9
 SULFATE (MG/L) 82
 BROMIDE (MG/L) 0.86
 SODIUM (MG/L) 99
 POTASSIUM (MG/L) 2.2
 CALCIUM (MG/L) 64
 MAGNESIUM (MG/L) 9.2
 SILICON (MG/L) 15
 ORTHOPHOSPHATE AS P. (MG/L) NO.5
 NITRITE AS NITROGEN (MG/L) NO.1
 NITRATE AS NITROGEN (MG/L) 21
 TOTAL ORGANIC HALOGENS AS CL (UG/L) <5
 TOT. ORG. CARBON, AS C (NPOC, MG/L) 0.58
 BORON (MG/L) 0.23
 IRON (MG/L)
 WATER QUALITY LAB NUMBER
 TOTAL COLI. - MPN (CFU./100ML) 903872
 903874

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	WR-158 A (SAMPLES CONTINUED)	08/07/90	08/07/90	08/07/90	08/07/90	07/05/90	07/05/90
		1129	1129	1129	1244	1244	1244
		904492 WQ	904492 WQ	904493 WQ	904492 WQ	103370 ATL	103371 ATL
		0020	0020	0026	0020	0020	0020
	(D-16-10) 08 BCD						
	PUMPING TIME (HR, MIN):						

TOTAL COLI - FILTR (CFU/100ML) 0 X
 HETERO. PLATE COUNT (MEMBRANE, CFU/ML) 602 X
 BACKGROUND (CFU/100 ML) 202 X
 4,4'-DICHLOROBIPHENYL(SURROGTE%RECOVRY)

METHOD %	*** PESTICIDES - EPA METHOD 608 **	129%
ALPHA BHC (UG/L)		900819
GAMMA BHC (LINDANE) (UG/L)		NO.021
BETA BHC (UG/L)		NO.023
HEPTACHLOR (UG/L)		NO.021
DELTA BHC (UG/L)		NO.023
ALDRIN (UG/L)		NO.022
HEPTACHLOR EPOXIDE (UG/L)		NO.024
ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L)		NO.039
4,4'-DDE / PP'-DDE (UG/L)		NO.037
DIELDRIN (UG/L)		NO.038
ENDRIN (UG/L)		NO.041
4,4'-DDD / PP'-DDD (UG/L)		NO.050
ENDOSULFAN II/BETA ENDOSULFAN (UG/L)		NO.045
4,4'-DDT / PP'-DDT (UG/L)		NO.053
ENDRIN ALDEHYDE (UG/L)		NO.067
ENDOSULFAN SULFATE (UG/L)		NO.023
METHOXYCHLOR (UG/L)		NO.174
CHLORDANE (UG/L)		NO.303
TOXAPHENE (UG/L)		NOT ANALYZD
PCB 1016 (UG/L)		NOT ANALYZD
PCB 1221 (UG/L)		NOT ANALYZD
PCB 1232 (UG/L)		NOT ANALYZD
PCB 1242 (UG/L)		NO.814
PCB 1248 (UG/L)		NOT ANALYZD
PCB 1254 (UG/L)		NOT ANALYZD
PCB 1260 (UG/L)		NO.326
*** HERBICIDES - EPA METHOD 8150 ***		900814
2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)		NO.180
(2,4,5-TRICHLOROPHENOXY) ACETATE (UG/L)		NO.082
SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L)		NO.051

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	WR-158 A	07/05/90	07/05/90	07/05/90	07/05/90	07/05/90	07/05/90	07/05/90
		1244	1244	1244	1244	1244	1244	1244
		903873 WQ	903874 WQ	903875 WQ	903871 WQ	903872 WQ	903873 WQ	903874 WQ
		0020	0020	0020	0020	0020	0020	0020
(D-16-10) O8 BCD								
PUMPING TIME (HR, MIN):								

PH IN FIELD (S.U.)	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
PH IN LAB (S.U.)								
TEMPERATURE (DEGREES CENT.)	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5
DISSOLVED O2 (PPM)	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)	880	880	880	880	880	880	880	880
LAB CONDUCTIVITY (UMHO/CM)	880	880	880	880	880	880	880	880
CALCULATED CONDUCTIVITY (UMHO/CM)	885	885	885	885	885	885	885	885
TOTAL DIS. SOLIDS (180) (MG/L)	600 Y	600 Y	600 Y	600 Y	600 Y	600 Y	600 Y	600 Y
TOTAL DIS. SOLIDS CALC (MG/L)	647	647	647	647	647	647	647	647
TOTAL SUSPENDED SOLIDS (MG/L)	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
VOLUME FILTERED, LITERS	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
TURBIDITY LAB	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
TOTAL HARDNESS (CACO3, MG/L)	218	218	218	218	218	218	218	218
HARDNESS CALC. (CACO3, MG/L)	211	211	211	211	211	211	211	211
HARDNESS CALC. (CACO3, MG/L)	169.8	169.8	169.8	169.8	169.8	169.8	169.8	169.8
BICARBONATE ALKALINITY (CACO3, MG/L)	160	160	160	160	160	160	160	160
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L)	160	160	160	160	160	160	160	160
LANGLIER INDEX	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
ION BALANCE, CALC.	-1.06	-1.06	-1.06	-1.06	-1.06	-1.06	-1.06	-1.06
SODIUM ADSORPTION RATIO, CALC.	3.03	3.03	3.03	3.03	3.03	3.03	3.03	3.03
FLUORIDE (MG/L)	0.44B	0.44B	0.44B	0.44B	0.44B	0.44B	0.44B	0.44B
METHOD B	70.7	70.7	70.7	70.7	70.7	70.7	70.7	70.7
CHLORIDE (MG/L)	80	80	80	80	80	80	80	80
SULFATE (MG/L)	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
BROMIDE (MG/L)	101	101	101	101	101	101	101	101
SODIUM (MG/L)	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
POTASSIUM ((MG/L)	68	68	68	68	68	68	68	68
CALCIUM (MG/L)	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
MAGNESIUM (MG/L)	14	14	14	14	14	14	14	14
SILICON (MG/L)	NO.5	NO.5	NO.5	NO.5	NO.5	NO.5	NO.5	NO.5
ORTHOPHOSPHATE AS P. (MG/L)	NO.10	NO.10	NO.10	NO.10	NO.10	NO.10	NO.10	NO.10
NITRATE AS NITROGEN (MG/L)	27	27	27	27	27	27	27	27
NITRITE AS NITROGEN (MG/L)	5	5	5	5	5	5	5	5
TOTAL ORGANIC HALOGENS AS CL (UG/L)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
TOT. ORG. CARBON, AS C (NPOC, MG/L)								
TOTAL COLI - MPN (CFU./100ML)								
TOTAL COLI - FILTER (CFU./100ML)								
HETERO. PLATE COUNT (MEMBRANE, CFU/ML)								
METHOD B (CFU/100 ML)								
BACKGROUND								

INITIALS:

620B >200 X

740B >200 X

0 X

0 X

<2

<2

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	WR-158 A	07/05/90	1244	103370 ATL	06/04/90	1043	903264 WQ	06/04/90	1043	903264 WQ
	(D-16-10) 08 BCD									
	PUMPING TIME (HR, MIN):									

FLOW RATE (GPM) 2B 134.64
 STATIC WATER LEVEL NOT ANALYZD
 PUMPING WATER LEVEL 7.5
 PH IN FIELD (S.U.) 7.3
 PH IN LAB (S.U.) 7.1 R
 24.6
 8.4

TEMPERATURE (DEGREES CENT.) NOT ANALYZD
 DISSOLVED O2 (PPM) 1030
 CHLORINE FIELD (MG/L) 950
 FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM) 1127 R
 LAB CONDUCTIVITY (UMHO/CM) 684 Y
 CALCULATED CONDUCTIVITY (UMHO/CM) 712 R
 TOTAL DIS. SOLIDS(180) (MG/L) 2.8
 TOTAL DIS. SOLIDS CALC (MG/L) 3.5
 TOTAL SUSPENDED SOLIDS (MG/L) 1.2
 VOLUME FILTERED, LITERS 252
 TURBIDITY, LAB 250 R

TOTAL HARDNESS (CACO3, MG/L) 239
 HARDNESS CALC. (CACO3, MG/L) 189.8
 HARDNESS, CALCIUM CALC. (CACO3, MG/L) 131
 BICARBONATE ALKALINITY (CACO3, MG/L) 131 R
 131 R
 0.01 R
 -0.18 R
 3.18

TOTAL ALKALINITY, CALCULATED (CACO3, MG/L) 0.42B
 LANGLIER INDEX 104
 ION BALANCE, CALC. 54
 SODIUM ADSORPTION RATIO, CALC. 1.1 Z
 FLUORIDE (MG/L) 113
 METHOD B 2.4
 CHLORIDE (MG/L) 76
 SULFATE (MG/L) 12
 BROMIDE (MG/L) 16

SODIUM ((MG/L)) NO.5
 POTASSIUM ((MG/L)) NO.1
 CALCIUM (MG/L) 43
 MAGNESIUM (MG/L) 7
 SILICON (MG/L) 1.09
 ORTHOPHOSPHATE AS P. (MG/L)
 NITRITE AS NITROGEN (MG/L)
 NITRATE AS NITROGEN (MG/L)
 TOTAL ORGANIC HALOGENS AS CL (UG/L)
 TOT. ORG. CARBON, AS C (NPOC, MG/L) 0.071
 BORON (MG/L)
 COPPER (MG/L)
 IRON (MG/L)
 R2AM INCUBATION TEMPERATURE DEGREES C

INITIALS: <0.10
 <0.10

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

Table with columns: SOURCE, DATE, TIME, LOCATION, and other identifiers. Includes entries for SOURCE WR-158-A and PUMPING TIME.

R2AM INCUBATION TIME IN HOURS
TOTAL COLI. - MPN (CFU./100ML)
TOTAL COLI. - FILTR (CFU./100ML)
HETERO. PLATE COUNT (MEMBRANE, CFU/ML)
BACKGROUND (CFU/100 ML)
WATER QUALITY LAB NUMBER
ATL REPORT NUMBER FOR QA

Main data table with columns: PESTICIDES - EPA METHOD 508, chemical names (e.g., ALPHA BHC, GAMMA BHC), units (UG/L), and values. Includes a list of initialials at the bottom.

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE WR-158 A (SAMPLES CONTINUED)	07/05/90	06/04/90	06/04/90	06/04/90	06/04/90	06/04/90
(D-16-10) 08 BCD	1244	1043	1043	1043	1043	1043
PUMPING TIME (HR, MIN)	103370	102517	903264	903264	903265	903264
	ATL	ATL	WQ	WQ	WQ	WQ
	0020	0020	0020	0020	0020	0020

DICAMBA/3,6-DICHLORO-2-METHOXY	(UG/L)	<0.50
DICHLOROPROP/2(2,4-DICHLOROPHENO	(UG/L)	<1.0
DINOSB/2-SEC-BUTYL-4,6-DINITRO	(UG/L)	<0.10
MCPA/2-METHYL-4-CHLOROPHENOX	(UG/L)	<200
MCP/MECOPROP/2(4-CHLORO-2-METH	(UG/L)	<200

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE WR-15B.A	05/03/90	05/03/90	05/03/90	05/03/90	04/02/90
	1122	1122	1122	1122	1014
(D-16-10) O8 BCD	101382 ATL	902662 WQ	902663 WQ	100448 ATL	901841 WQ
PUMPING TIME (HR, MIN):	0020	0020	0020	0020	0020

FLOW RATE (GPM) 28.3
 STATIC WATER LEVEL 138.09
 PUMPING WATER LEVEL 139.65
 PH IN FIELD (S.U.) 7.6
 PH IN LAB (S.U.) 7.5
 TEMPERATURE (DEGREES CENT.) 24.5
 DISSOLVED O2 (PPM) 8.9
 CHLORINE FIELD (MG/L) NOT ANALYZD
 FIELD CONDUCTIVITY (UMHO/CM) 920
 LAB CONDUCTIVITY (UMHO/CM) 950
 CALCULATED CONDUCTIVITY (UMHO/CM) 1033 V
 TOTAL DIS. SOLIDS (180) (MG/L) 602 Y
 TOTAL DIS. SOLIDS CALC (MG/L) 654 V
 TOTAL SUSPENDED SOLIDS (MG/L) 0.15
 VOLUME FILTERED, LITERS 3.64
 TURBIDITY, LAB 1.4

TOTAL HARDNESS (CACO3, MG/L) 219
 HARDNESS CALC. (CACO3, MG/L) 221
 HARDNESS, CALCIUM CALC. (CACO3, MG/L) 179.8
 BICARBONATE ALKALINITY (CACO3, MG/L) 115
 TOTAL ALKALINITY, CALCULATED (CACO3, MG/L) 115
 LANGLIER INDEX 0.03
 ION BALANCE, CALC. 0.11 V

SODIUM ADSORPTION RATIO, CALC. 3.01
 FLUORIDE (MG/L) 0.35B
 METHOD-B
 CHLORIDE (MG/L) 104
 SULFATE (MG/L) 14
 BROMIDE (MG/L) 2.0
 SODIUM (MG/L) 103
 POTASSIUM (MG/L) 2.3
 CALCIUM (MG/L) 72
 MAGNESIUM (MG/L) 10.0
 ORTHOPHOSPHATE AS P. (MG/L) NO.5
 NITRITE AS NITROGEN (MG/L) NO.1
 NITRATE AS NITROGEN (MG/L) 47 V
 TOTAL ORGANIC HALOGENS AS CL (UG/L) <5
 TOT. ORG. CARBON, AS C (NPOC, MG/L) 0.65
 BORON (MG/L) 0.056

INITIALS: <0.05 T

8.0
7.6
23
6.1
NO.05
422
450
480
282 Y
372
0.40
3.05
0.29 H
86
84 R
86
69.9
174
174
0.21
0.26
3.24
0.70B
20.5
12
0.29
69
1.6
28
3.9
5.5
NS
0.16

TUCSON WATER SAMPLES
ANALYSIS OF WATER SAMPLES
- CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE WR-158 A (SAMPLES CONTINUED) 05/03/90 05/03/90 05/03/90 04/02/90 04/02/90
 1122 1122 1122 1014 1014
 101382 ATL 902662 WQ 902662 WQ 100448 ATL 901841 WQ
 0020 0020 0020 0020 0020
 (D-16-10) 08 BCD
 PUMPING TIME (HR, MIN):

COPPER (MG/L) <0.10
 IRON (MG/L) <0.10
 WATER QUALITY LAB NUMBER 902662 902662 902662 901841 901841
 TOTAL COLI - MPN (CFU/100ML) <2
 TOTAL COLI - FILTR (CFU/100ML) 0
 FECAL COLIFORM (CFU/100ML) 0
 HETERO PLATE COUNT (MEMBRANE, CFU/ML) 90
 BACKGROUND (CFU/100 ML) 54
 4,4'-DICHLOROBIPHENYL (SURROGTE%RECOVERY)

METHOD %
 *** PESTICIDES - EPA METHOD 608 **
 ALPHA BHC (UG/L)
 GAMMA BHC (LINDANE) (UG/L)
 BETA BHC (UG/L)
 HEPTACHLOR (UG/L)
 DELTA BHC (UG/L)
 ALDRIN (UG/L)
 HEPTACHLOR EPOXIDE (UG/L)
 ENDOSULFAN I/ALPHA (UG/L)
 4,4'-DDE / PP'-DDE (UG/L)
 DIELDRIN (UG/L)
 ENDRIN (UG/L)
 4,4'-DDD / PP'-DDD (UG/L)
 ENDOSULFAN I/BETA (UG/L)
 4,4'-DDT / PP'-DDT (UG/L)
 ENDRIN ALDEHYDE (UG/L)
 ENDOSULFAN SULFATE (UG/L)
 METHOXYCHLOR (UG/L)
 CHLORDANE (UG/L)
 TOXAPHENE (UG/L)
 PCB 1016 (UG/L)
 PCB 1221 (UG/L)
 PCB 1232 (UG/L)
 PCB 1242 (UG/L)
 PCB 1248 (UG/L)
 PCB 1254 (UG/L)
 PCB 1260 (UG/L)
 *** HERBICIDES - EPA METHOD 8150 ***
 2,4-DICHLOROPHOXY ACETIC ACID (UG/L)
 SILVEX/2(2,4,5-TRICHLOROPHOXY (UG/L)

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE WR-158.A (D-16-10) O8 BCD PUMPING TIME (HR, MIN):

PH IN FIELD (S.U.) 7.7
PH IN LAB (S.U.) 7.6
TEMPERATURE (DEGREES CENT.) 24.9
DISSOLVED O2 (PPM) NOT ANALYZD
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM) 415
LAB CONDUCTIVITY (UMHO/CM) 440
CALCULATED CONDUCTIVITY (UMHO/CM) 456
TOTAL DIS. SOLIDS(180) (MG/L) 296
TOTAL DIS. SOLIDS CALC (MG/L) 362
TOTAL SUSPENDED SOLIDS (MG/L) 0.21
VOLUME FILTERED, LITERS 3
TURBIDITY, LAB 0.5
TURBIDITY, FIELD 0.5 R

TOTAL HARDNESS (CACO3, MG/L) 81
METHOD C 80C
HARDNESS CALC. (CACO3, MG/L) 83
HARDNESS, CALCIUM CALC. (CACO3, MG/L) 67.4
BICARBONATE ALKALINITY (CACO3, MG/L) 179
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L) 179
LANGLIER INDEX -0.06
ION BALANCE, CALC. 0.82
SODIUM ADSORPTION RATIO, CALC. 3.19
FLUORIDE (MG/L) 0.72B
METHOD B 14.4

CHLORIDE (MG/L) 12
SULFATE (MG/L) 0.18
BROMIDE (MG/L) 67
SODIUM (MG/L) 1.4
POTASSIUM ((MG/L) 27
CALCIUM (MG/L) 3.9
MAGNESIUM (MG/L) 22
SILICA (MG/L) <0.2
ORTHOPHOSPHATE AS P- (MG/L) <0.1
NITRITE AS NITROGEN (MG/L) 0.056
NITRATE AS NITROGEN (MG/L) 0.005
TOTAL KjELDAHL NITROGEN (MG/L) 0.051
KjELDAHL AMMONIA (MG/L) 0.0002
TOTAL ORGANIC HALOGENS AS CL (UG/L) 0.0014
TOT. ORG. CARBON, AS C (NPOC, MG/L) NO. 10D

BORON (MG/L) <0.005
ARSENIC (MG/L) 0.0551
BARIUM (MG/L) <0.0002
CADMIUM (MG/L) 0.0014
CHROMIUM (MG/L) NO. 10D
COPPER (MG/L) <0.1

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

07/28/93

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SOURCE WR-158 A (SAMPLES CONTINUED) 04/02/90 10/27/89 10/27/89 10/27/89 07/06/89
(D-16-10) 08 BCD 1014 1226 1226 1226
PUMPING TIME (HR, MIN): 901841 WQ 901841 WQ 949902 ATL 896194 WQ 896194 WQ 893710 WQ
0020 0020 0020 0020 0020

IRON (MG/L) <0.1
METHOD D
LEAD (MG/L) <0.100
MANGANESE (MG/L) <0.002
MERCURY (MG/L) <0.05
SELENIUM (MG/L) 0.0006 T
SILVER (MG/L) <0.005
STRONTIUM (MG/L) 0.181
ZINC (MG/L) 0.120

WATER QUALITY LAB NUMBER 896194
TOTAL COLI - MPN (CFU/100ML) <2
TOTAL COLI - FILTER (CFU/100ML) <2
FECAL COLIFORM (CFU/100ML) <2

HETERO. PLATE COUNT (MEMBRANE, CFU/ML) 137

BACKGROUND (CFU/100 ML)
WQ REPORT NUMBER FOR QA
4,4'-DICHLOROBIPHENYL(SURROGTE/RECOVERY)
**** PESTICIDES - EPA METHOD 608 **

ALPHA BHC (UG/L)
GAMMA BHC (LINDANE) (UG/L)
BETA BHC (UG/L)
HEPTACHLOR (UG/L)
DELTA BHC (UG/L)
ALDRIN (UG/L)
HEPTACHLOR EPOXIDE (UG/L)
ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L)
4,4'-DDE / PP'-DDE (UG/L)
DIELDRIN (UG/L)
ENDRIN (UG/L)
4,4'-DDD / PP'-DDD (UG/L)
ENDOSULFAN II/BETA ENDOSULFAN (UG/L)
4,4'-DDT / PP'-DDT (UG/L)
ENDRIN ALDEHYDE (UG/L)
ENDOSULFAN SULFATE (UG/L)
METHOXYCHLOR (UG/L)
CHLORDANE (UG/L)
TOXAPHENE (UG/L)
PCB 1016 (UG/L)
PCB 1221 (UG/L)
PCB 1232 (UG/L)
PCB 1242 (UG/L)
PCB 1248 (UG/L)
PCB 1254 (UG/L)
PCB 1260 (UG/L)
**** HERBICIDES - EPA METHOD 8150 ****

INITIALS:

NOT ANALYZD 900419
NO. 021
NO. 023
NO. 021
NO. 023
NO. 023
NO. 022
NO. 024
NO. 039
NO. 037
NO. 038
NO. 041
NO. 050
NO. 045
NO. 053
NO. 067
NO. 023
NO. 233
NO. 174
NO. 303
NOT ANALYZD
NOT ANALYZD
NOT ANALYZD
NO. 814
NOT ANALYZD
NOT ANALYZD
NO. 326
900425

0 X
0 X
>200 X

<0.1
<0.002
<0.05
<0.0005 T
<0.0005
<0.002

NOT ANALYZD 891030
NO. 021
NO. 021
NO. 023
NO. 022
NO. 024
NO. 039
NO. 037
NO. 038
NO. 041
NO. 050
NO. 045
NO. 053
NO. 067
NO. 023
NO. 233
NO. 174
NO. 303
NOT ANALYZD
NOT ANALYZD
NOT ANALYZD
NO. 814
NOT ANALYZD
NOT ANALYZD
NO. 326
891102

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	WR-158-A (SAMPLES CONTINUED)	04/02/90	04/02/90	10/27/89	10/27/89	10/27/89	10/27/89	10/27/89	07/05/89
		1014	1014	1226	1226	1226	1226	1226	1800
		901841 WQ	901841 WQ	949902 ATL	896194 WQ	896194 WQ	896194 WQ	896194 WQ	893710 WQ
		0020	0020	0020	0020	0020	0020	0020	1100

(D-16-10) 08 BCD
PUMPING TIME (HR. MIN):

2,4-DICHLOROPHENOXY ACETIC ACID (UG/L) NO.200
SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L) NO.051

NO.2
NO.05

INITIALS:

TUCSON WATER SAMPLES
ANALYSIS OF WATER
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	WR-159 A	12/11/90	12/11/90	12/11/90	12/11/90	12/11/90	12/11/90	12/11/90	12/11/90
		1045	1045	1045	1045	1045	1045	1045	1045
		0020	0020	0020	0020	0020	0020	0020	0020
		109296 ATL	109297 ATL	907445 WQ	907446 WQ	907448 WQ	907449 WQ	907445 WQ	907445 WQ
		0020	0020	0020	0020	0020	0020	0020	0020

(D-16-10) 08 BDB
PUMPING TIME (HR./MIN):

FLOW RATE (GPM)	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4
STATIC WATER LEVEL	144.91	144.91	144.91	144.91	144.91	144.91	144.91	144.91	144.91
PUMPING WATER LEVEL	149.75	149.75	149.75	149.75	149.75	149.75	149.75	149.75	149.75
PH IN FIELD (S.U.)	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
PH IN LAB (S.U.)	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1
TEMPERATURE (DEGREES CENT.)	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3
DISSOLVED O2 (PPM)	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)	440	440	440	440	440	440	440	440	440
LAB CONDUCTIVITY (UMHO/CM)	410	410	410	410	410	410	410	410	410
CALCULATED CONDUCTIVITY (UMHO/CM)	503	503	503	503	503	503	503	503	503
TOTAL DIS. SOLIDS (TSD) (MG/L)	286	286	286	286	286	286	286	286	286
TOTAL DIS. SOLIDS (TSD) (MG/L)	369	369	369	369	369	369	369	369	369
TOTAL SUSPENDED SOLIDS (MG/L)	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
VOLUME FILTERED, LITERS	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
TURBIDITY, LAB	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
TOTAL HARDNESS (CACD3, MG/L)	98	98	98	98	98	98	98	98	98
HARDNESS CALC. (CACD3, MG/L)	104	104	104	104	104	104	104	104	104
HARDNESS, CALCIUM CALC. (CACD3, MG/L)	84.9	84.9	84.9	84.9	84.9	84.9	84.9	84.9	84.9
BICARBONATE ALKALINITY (CACD3, MG/L)	156	156	156	156	156	156	156	156	156
TOTAL ALKALINITY, CALCULATED (CACD3, MG/L)	156	156	156	156	156	156	156	156	156
LANGLIER INDEX	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
ION BALANCE, CALC.	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77
SODIUM ADSORPTION RATIO, CALC.	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77
FLUORIDE (MG/L)	0.43B	0.43B	0.43B	0.43B	0.43B	0.43B	0.43B	0.43B	0.43B
METHOD B	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7
CHLORIDE (MG/L)	30	30	30	30	30	30	30	30	30
SULFATE (MG/L)	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
BROMIDE (MG/L)	65	65	65	65	65	65	65	65	65
SODIUM (MG/L)	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
POTASSIUM (MG/L)	37	37	37	37	37	37	37	37	37
CALCIUM (MG/L)	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
MAGNESIUM (MG/L)	14	14	14	14	14	14	14	14	14
SILICON (MG/L)	NO. 5	NO. 5	NO. 5	NO. 5	NO. 5	NO. 5	NO. 5	NO. 5	NO. 5
ORTHOPHOSPHATE AS P. (MG/L)	NO. 1	NO. 1	NO. 1	NO. 1	NO. 1	NO. 1	NO. 1	NO. 1	NO. 1
NITRITE AS NITROGEN (MG/L)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
NITRATE AS NITROGEN (MG/L)	N5	N5	N5	N5	N5	N5	N5	N5	N5
TOTAL ORGANIC HALOGENS AS CL (UG/L)	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
TOT. ORG. CARBON, AS C (NPOC, MG/L)	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
BORON (MG/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
IRON (MG/L)	907448	907448	907448	907448	907448	907448	907448	907448	907448
WATER QUALITY LAB NUMBER	907445 D	907445 D	907445 D	907445 D	907445 D	907445 D	907445 D	907445 D	907445 D
ATL REPORT NUMBER FOR QA	109300	109300	109300	109300	109300	109300	109300	109300	109300
	109297 D	109297 D	109297 D	109297 D	109297 D	109297 D	109297 D	109297 D	109297 D
	109298 S	109298 S	109298 S	109298 S	109298 S	109298 S	109298 S	109298 S	109298 S
TOTAL COLI. - MPN (CFU./100ML)									
INITIALS:									

TUCSON WATER ANALYSIS OF WATER SAMPLES
 CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE WR-159-A
 12/11/90 1045 907446 WQ 0020 12/11/90 1045 907448 WQ 0020 12/11/90 1045 907446 WQ 0020 12/11/90 1045 907448 WQ 0020
 (D-16-10) OB BDB 12/11/90 1045 907448 WQ 0020 12/11/90 1045 907446 WQ 0020 12/11/90 1045 907448 WQ 0020
 PUMPING TIME (HR. MIN): 12/11/90 1045 907447 WQ 0020 12/11/90 1045 907446 WQ 0020 12/11/90 1045 907448 WQ 0020

TOTAL COLI. - MPN (CFU/100ML) 0 0 0
 TOTAL COLI. - FILTR (CFU/100ML) 0 0 0
 HETERO. PLATE COUNT (MEMBRANE, CFU/ML) 0 0 0
 METHOD B
 BACKGROUND (CFU/100 ML) 1908
 WATER QUALITY LAB NUMBER 0
 ATL REPORT NUMBER FOR QA 907448 D 109300 109298 D 109298 S

4,4'-DICHLOROBIPHENYL(SURROGTE%RECOVERY)
 *** PESTICIDES - EPA METHOD 608 **
 ALPHA BHC (UG/L)
 GAMMA BHC (LINDANE) (UG/L)
 BETA BHC (UG/L)
 HEPTACHLOR (UG/L)
 DELTA BHC (UG/L)
 ALDRIN (UG/L)
 HEPTACHLOR EPOXIDE (UG/L)
 ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L)
 4,4'-DDE / PP'-DDE (UG/L)
 DIELDRIN (UG/L)
 ENDRIN (UG/L)
 4,4'-DD / PP'-DDD (UG/L)
 ENDOSULFAN II/BETA ENDOSULFAN (UG/L)
 4,4'-DDT / PP'-DDT (UG/L)
 ENDRIN ALDEHYDE (UG/L)
 ENDOSULFAN SULFATE (UG/L)
 METHOXYCHLOR (UG/L)
 CHLORDANE (UG/L)
 TOXAPHENE (UG/L)
 PCB 1016 (UG/L)
 PCB 1221 (UG/L)
 PCB 1232 (UG/L)
 PCB 1242 (UG/L)
 PCB 1248 (UG/L)
 PCB 1254 (UG/L)
 PCB 1260 (UG/L)
 DIMETHYL PHTHALATE (UG/L)
 DIETHYL PHTHALATE (UG/L)
 HEXACHLOROBENZENE (UG/L)
 DI-N-BUTYL PHTHALATE (UG/L)
 BENZYL BUTYL PHTHALATE (UG/L)
 BIS (2-ETHYLHEXYL) PHTHALATE (UG/L)
 DI-N-OCTYLPHTHALATE (UG/L)
 *** HERBICIDES - EPA METHOD 8150 ****

INITIALS:

8150 8150 8150

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE WR-159 A (SAMPLES CONTINUED) 12/11/90 1045 907446 WQ 0020 12/11/90 1045 907447 WQ 0020 12/11/90 1045 907448 WQ 0020 12/11/90 1045 907448 WQ 0020 12/11/90 1045 907446 WQ 0020 12/11/90 1045 907448 WQ 0020 12/11/90 1045 907446 WQ 0020 12/11/90 1045 907448 WQ 0020 12/11/90 1045 907446 WQ 0020 12/11/90 1045 907448 WQ 0020 12/11/90 1045 907446 WQ 0020 12/11/90 1045 907448 WQ 0020

(D-16-10) 08 BDB PUMPING TIME (HR,MIN):

- 2,4-DICHLOROPHENOXY ACETIC ACID (UG/L) <1.0
4(2,4-DICHLOROPHENOXY) BUTYRATE (UG/L) <1.0
(2,4,5-TRICHLOROPHENOXY) ACETATE (UG/L) <0.5
SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L) <0.1
DALAPON/2,2-DICHLOROPROPANATE (UG/L) <5.0
DICAMBA/3,5-DICHLORO-2-METHOXY (UG/L) <0.5
DICHLOROPROP/2(2,4-DICHLOROPHENO (UG/L) <1.0
DINOSEB/2-SEC-BUTYL-4,6-DINITRO (UG/L) <0.1
MCPA/2-METHYL-4-CHLOROPHENOXY (UG/L) <200
MCP/2-METHYL-4-CHLORO-2-METH (UG/L) <200

INITIALS:

TUCSON WATER SAMPLES
 ANALYSIS OF WATER
 CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	WR	159	A	10/09/90	10/09/90	10/09/90	10/09/90	10/09/90	10/09/90	10/09/90	10/09/90	08/07/90
(D-16-10)	08	BDB		0955	0955	0955	0955	0955	0955	0955	0955	0848
PUMPING TIME (HR, MIN)				107188	ATL	906066	WQ	906067	WQ	906066	WQ	104720
				0020		0020		0020		0020		0028

FLOW RATE (GPM)	25
STATIC WATER LEVEL	138.67
PUMPING WATER LEVEL	143.34
PH IN FIELD (S.U.)	7.6
PH IN LAB (S.U.)	7.6
TEMPERATURE (DEGREES CENT.)	23.6
DISSOLVED O2 (PPM)	8.6
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)	440
LAB CONDUCTIVITY (UMHO/CM)	490
CALCULATED CONDUCTIVITY (UMHO/CM)	498
TOTAL DIS. SOLIDS (180) (MG/L)	298
TOTAL DIS. SOLIDS CALC (MG/L)	372
TOTAL SUSPENDED SOLIDS (MG/L)	2.6
VOLUME FILTERED, LITERS	3.1
TURBIDITY, LAB	5.0
TOTAL HARDNESS (CACO3, MG/L)	104
HARDNESS CALC. (CACO3, MG/L)	101
HARDNESS, CALCIUM CALC. (CACO3, MG/L)	82.4
BICARBONATE ALKALINITY (CACO3, MG/L)	162
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L)	162
LANGLIER INDEX	-0.14
ION BALANCE, CALC.	-1.27
SODIUM ADSORPTION RATIO, CALC.	2.68
FLUORIDE (MG/L)	0.46B
METHOD B	22.9
CHLORIDE (MG/L)	31
SULFATE (MG/L)	31
BROMIDE (MG/L)	62
SODIUM (MG/L)	1.5
POTASSIUM ((MG/L)	33
CALCIUM (MG/L)	4.5
MAGNESIUM (MG/L)	16
SILICON (MG/L)	NO.5
ORTHOPHOSPHATE AS P. (MG/L)	NO.1
NITRITE AS NITROGEN (MG/L)	4.3
NITRATE AS NITROGEN (MG/L)	<5
TOTAL ORGANIC HALOGENS AS CL (UG/L)	0.25
TOT. ORG. CARBON, AS C (NPOC, MG/L)	
BORON (MG/L)	

IRON (MG/L)	<0.05
WATER QUALITY LAB NUMBER	906066
ATL REPORT NUMBER FOR QA	107191

TOTAL COLI. - MPN (CFU./100ML)	
TOTAL COLI. - FILTR (CFU./100ML)	<2
INITIALS:	0

904494
 104722
 104723 R

TUCSON WATER SAMPLES
ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE WR-159-A (SAMPLES CONTINUED)	10/09/90	10/09/90	10/09/90	10/09/90	10/09/90	10/09/90	10/09/90	08/07/90
	0955	0955	0955	0955	0955	0955	0955	0848
(D-16-10) 08 BDB	107188 ATL	906066 WQ	906067 WQ	906066 WQ	906067 WQ	906066 WQ	906066 WQ	104720 ATL
PUMPING TIME (HR, MIN):	0020	0020	0020	0020	0020	0020	0020	0038

FECAL COLIFORM (CFU/100ML)
 HETERO. PLATE COUNT (MEMBRANE, CFU/ML)
 BACKGROUND (CFU/100 ML)
 4,4'-DICHLOROBIPHENYL (SURROGTE%RECOVRY)

METHOD %
 *** PESTICIDES - EPA METHOD 608 **
 ALPHA BHC (UG/L)
 GAMMA BHC (LINDANE) (UG/L)
 BETA BHC (UG/L)
 HEPTACHLOR (UG/L)
 DELTA BHC (UG/L)
 ALDRIN (UG/L)
 HEPTACHLOR EPOXIDE (UG/L)
 ENDOSULFAN I / ALPHA ENDOSULFAN (UG/L)
 4,4'-DDE / PP'-DDE (UG/L)
 DIELDRIN (UG/L)
 ENDRIN (UG/L)
 4,4'-DDD / PP'-DDD (UG/L)
 ENDOSULFAN II / BETA ENDOSULFAN (UG/L)
 4,4'-DDT / PP'-DDT (UG/L)
 ENDRIN ALDEHYDE (UG/L)
 ENDOSULFAN SULFATE (UG/L)
 METHOXYCHLOR (UG/L)
 CHLORDANE (UG/L)
 TOXAPHENE (UG/L)
 PCB 1016 (UG/L)
 PCB 1221 (UG/L)
 PCB 1232 (UG/L)
 PCB 1242 (UG/L)
 PCB 1248 (UG/L)
 PCB 1254 (UG/L)
 PCB 1260 (UG/L)
 DIMETHYL PHTHALATE (UG/L)
 DIETHYL PHTHALATE (UG/L)
 HEXACHLOROBENZENE (UG/L)
 DI-N-BUTYL PHTHALATE (UG/L)
 BENZYL BUTYL PHTHALATE (UG/L)
 BIS (2-ETHYLHEXYL) PHTHALATE (UG/L)
 DI-N-OCTYL PHTHALATE (UG/L)
 *** HERBICIDES - EPA METHOD 8150 ***
 2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)
 (2,4,5-TRICHLOROPHENOXY) ACETATE (UG/L)
 SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L)

<2
83

0

90%
 901015
 NO.011
 NO.012
 NO.011
 NO.012
 NO.011
 NO.012
 NO.019
 NO.019
 NO.019
 NO.021
 NO.025
 NO.022
 NO.026
 NO.034
 NO.012
 NO.117
 NO.508
 NO.544
 NOT ANALYZD
 NOT ANALYZD
 NOT ANALYZD
 NO.407
 NOT ANALYZD
 NOT ANALYZD
 NO.326
 N1.48
 N1.42
 NO.046
 NO.800
 NO.275
 NO.860
 N1.68
 901106
 NO.072
 NO.093
 NO.032

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	WR-159 A	08/07/90	08/07/90	08/07/90	07/05/90	07/05/90	07/05/90
(D-16-10) O8 BDB	0848	0848	0848	0848	1110	1110	1110
PUMPING TIME (HR, MIN):	0028	0028	0028	0028	0020	0020	0020
	904494 WQ	904494 WQ	904494 WQ	103373 ATL	903876 WQ	903877 WQ	903877 WQ

FLOW RATE (GPM)	22						31
STATIC WATER LEVEL	140.69						137.70
PUMPING WATER LEVEL							143.30
PH IN FIELD (S.U.)	7.6				7.6		7.6
PH IN LAB (S.U.)	7.6				7.6		7.6
TEMPERATURE (DEGREES. CENT.)	23.1				23.9		23.9
DISSOLVED O2 (PPM)	8.3				8.4		8.4
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)	495				530		530
LAB CONDUCTIVITY (UMHO/CM)	600				530		530
CALCULATED CONDUCTIVITY (UMHO/CM)	560				530		530
TOTAL DIS. SOLIDS(180) (MG/L)	324 H						592
TOTAL DIS. SOLIDS CALC. (MG/L)	410						346 Y
TOTAL SUSPENDED SOLIDS (MG/L)	4.1						437
VOLUME FILTERED, LITERS	0.8						4.5
TURBIDITY LAB	2.8						2.7
TOTAL HARDNESS (CACO3, MG/L)	116						0.3
HARDNESS CALC. (CACO3, MG/L)	117						131
HARDNESS. CALCIUM CALC. (CACO3, MG/L)	94.9						124
BICARBONATE ALKALINITY (CACO3, MG/L)	171						99.9
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L)	171						183
LANGLIER INDEX	-0.07						-0.01
ION BALANCE, CALC.	1.41						-1.22
SODIUM ADSORPTION RATIO, CALC.	2.86						2.78
FLUORIDE (MG/L)							
METHOD B							
CHLORIDE (MG/L)	0.39B						0.37B
SULFATE (MG/L)	24.9						26.9
BROMIDE (MG/L)	38						43
SODIUM (MG/L)	0.25						0.29
POTASSIUM ((MG/L)	71						71
CALCIUM (MG/L)	1.7						1.7
MAGNESIUM (MG/L)	38						40
SILICON (MG/L)	5.3						5.8
ORTHOPHOSPHATE AS P. (MG/L)	16						14
NITRITE AS NITROGEN (MG/L)	NO.5						NO.5
NITRATE AS NITROGEN (MG/L)	NO.1						NO.10
TOTAL ORGANIC HALOGENS AS CL (UG/L)	5.1						5.6
TOT. ORG. CARBON, AS C (NPDC, MG/L)	<5						N5
BORON (MG/L)	0.21						0.27
IRON (MG/L)	0.14						0.22
WATER QUALITY LAB NUMBER							
TOTAL COLI. - MPN (CFU./100ML)	<2						903877
TOTAL COLI. - FILTR (CFU./100ML)							
HETERO. PLATE COUNT (MEMBRANE, CFU/ML)	181						181
4,4'-DICHLOROBIPHENYL(SURROGTE,%RECOVERY)							125%
METHOD %							
INITIALS:							

NT ANAL (Z)

UCSUN WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE WR-159 A (SAMPLES CONTINUED) 08/07/90 08/07/90 08/07/90 07/05/90 07/05/90 07/05/90
(D-16-10) 08 BDB 0848 0848 0848 1110 1110 1110
PUMPING TIME (HR, MIN) 904494 WQ 904494 WQ 904494 WQ 103373 ATL 903876 WQ 903877 WQ
0028 0028 0028 0020 0020 0020

*** PESTICIDES - EPA METHOD 608 ***

- ALPHA BHC (UG/L) 900813
GAMMA BHC (LINDANE) (UG/L) NO.021
BETA BHC (UG/L) NO.023
HEPTACHLOR (UG/L) NO.021
DELTA BHC (UG/L) NO.023
ALDRIN (UG/L) NO.023
HEPTACHLOR EPOXIDE (UG/L) NO.022
ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L) NO.024
4,4'-DDE / PP'-DDE (UG/L) NO.039
DIELDRIN (UG/L) NO.037
ENDRIN (UG/L) NO.041
4,4'-DDD / PP'-DDD (UG/L) NO.050
ENDOSULFAN II/BETA ENDOSULFAN (UG/L) NO.045
4,4'-DDT / PP'-DDT (UG/L) NO.053
ENDRIN ALDEHYDE (UG/L) NO.067
ENDOSULFAN SULFATE (UG/L) NO.023
METHOXYCHLOR (UG/L) NO.233
CHLORDANE (UG/L) NO.174
TOXAPHENE (UG/L) NO.303
PCB 1016 (UG/L) NOT ANALYZD
PCB 1221 (UG/L) NOT ANALYZD
PCB 1232 (UG/L) NOT ANALYZD
PCB 1242 (UG/L) NO.814
PCB 1248 (UG/L) NOT ANALYZD
PCB 1254 (UG/L) NOT ANALYZD
PCB 1260 (UG/L) NOT ANALYZD
*** HERBICIDES - EPA METHOD 8150 ***
2,4-DICHLOROPHENOXY ACETIC ACID (UG/L) 900814
(2,4,5-TRICHLOROPHENOXY) ACETATE (UG/L) NO.180
SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L) NO.082
NO.051

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	07/05/90	07/05/90	06/04/90	06/04/90	06/04/90
WR-159 A	1110	1110	0955	0955	0955
	903876 WQ	103373 ATL	102518 ATL	903268 WQ	903268 WQ
	0020	0020	0020	0020	0020
(D-16-10) 08 BDB					
PUMPING TIME (HR, MIN)					

FLOW RATE (GPM)	25	138.65	144.34	7.7	7.7
STATIC WATER LEVEL					
PUMPING WATER LEVEL					
PH IN FIELD (S.U.)					
PH IN LAB (S.U.)					
TEMPERATURE (DEGREES CENT.)					
DISSOLVED O2 (PPM)					
CHLORINE FIELD (MG/L)					
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)					
LAB CONDUCTIVITY (UMHO/CM)					
CALCULATED CONDUCTIVITY (UMHO/CM)					
TOTAL DIS. SOLIDS (180) (MG/L)					
TOTAL DIS. SOLIDS CALC (MG/L)					
TOTAL SUSPENDED SOLIDS (MG/L)					
VOLUME FILTERED, LITERS					
TURBIDITY, LAB					

TOTAL HARDNESS (CACO3, MG/L)	620	600	685	378	Y
HARDNESS CALC. (CACO3, MG/L)					
HARDNESS, CALCIUM CALC. (CACO3, MG/L)					
BICARBONATE ALKALINITY (CACO3, MG/L)					
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L)					
LANGLIER INDEX					
ION BALANCE, CALC.					
SODIUM ADSORPTION RATIO, CALC.					
FLUORIDE (MG/L)					

METHOD B					
CHLORIDE (MG/L)	0.34B	31.5	53	0.30	80
SULFATE (MG/L)					
BROMIDE (MG/L)					
SODIUM (MG/L)					
POTASSIUM (MG/L)					
CALCIUM (MG/L)					
MAGNESIUM (MG/L)					
SILICON (MG/L)					
ORTHOPHOSPHATE AS P. (MG/L)					
NITRITE AS NITROGEN (MG/L)					
NITRATE AS NITROGEN (MG/L)					
TOTAL ORGANIC HALOGENS AS CL (UG/L)					
TOT. ORG. CARBON, AS C (NPOC, MG/L)					
BORON (MG/L)					
COPPER (MG/L)					
IRON (MG/L)					

WO REPORT NUMBER FOR QA					
TOTAL COLI. - MPN (CFU./100ML)					
TOTAL COLI. - FILTR (CFU./100ML)					
INITIALS:					

903268 D 903268 D 903266 D

<0.05 <0.05 <0.05

<0.10 <0.12

0.34B 31.3 53 0.30 80 1.9 48 7.1 16 NO.5 NO.1 NO.1 6.7 <5 0.64

0.34B 31.5 53 0.30 80 1.9 48 7.1 16 NO.5 NO.1 NO.1 6.7 <5 0.64

903268 D 903268 D 903266 D

<2

O R

TUCSON WATER SAMPLES
ANALYSIS OF WATER SAMPLES
-CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	MR-159-A (SAMPLES CONTINUED)	07/05/90	07/05/90	06/04/90	06/04/90	06/04/90	06/04/90
		1110	1110	0955	0955	0955	0955
		903876 WQ	903877 WQ	102518 ATL	102519 ATL	903266 WQ	903268 WQ
		0020	0020	0020	0020	0020	0020
	(D-16-10) 08 BDB						
	PUMPING TIME (HR, MIN):						

TOTAL COLI. - FILTR (CFU./100ML) 0 X
 HETERO. PLATE COUNT (MEMBRANE, CFU/ML) 490B
 METHOD B 570BR
 >200 R
 >200 X

BACKGROUND (CFU/100 ML) 903877 903266 903268
 WATER QUALITY LAB NUMBER 103374
 ATL REPORT NUMBER FOR QA 103375 R

**** PESTICIDES - EPA METHOD 608 **

- ALPHA BHC (UG/L) <0.01
- GAMMA BHC (LINDANE) (UG/L) <0.01
- BETA BHC (UG/L) <0.01
- HEPTACHLOR (UG/L) <0.05
- DELTA BHC (UG/L) <0.01
- ALDRIN (UG/L) <0.05
- HEPTACHLOR EPOXIDE (UG/L) <0.05
- ENDOSULFAN I/ALPHA (UG/L) <0.01
- 4,4'-DDE / PP'-DDE (UG/L) <0.01
- ENDRIN (UG/L) <0.05
- 4,4'-DDD / PP'-DDD (UG/L) <0.05
- ENDOSULFAN II/BETA (UG/L) <0.02
- 4,4'-DDT / PP'-DDT (UG/L) <0.05
- ENDOSULFAN SULFATE (UG/L) <0.20
- CHLORDANE (UG/L) <0.05
- TOXAPHENE (UG/L) <0.20
- PCB 1242 (UG/L) <0.20
- PCB 1254 (UG/L) <0.20
- 8150 <1.0
- **** HERBICIDES - EPA METHOD 8150 ****
- 2,4-DICHLOROPHENOXY ACETIC ACID (UG/L) <1.0
- 4(2,4-DICHLOROPHENOXY) BUTYRATE (UG/L) <0.50
- 4(2,4,5-TRICHLOROPHENOXY) ACETATE (UG/L) <0.10
- SILVEX/2(2,4,5-TRICHLOROPHENOXY) (UG/L) <5.0
- DALAPON/2,2-DICHLOROPROPANATE (UG/L) <0.50
- DICAMBA/3,6-DICHLORO-2-METHOXY (UG/L) <1.0
- DICHLOROPROP/2(2,4-DICHLOROPHENOXY) (UG/L) <1.0
- DINoseb/2-SEC-BUTYL-4,6-DINITRO.. (UG/L) <0.10
- MCPA/2-METHYL-4-CHLOROPHENOXY.. (UG/L) <200
- MCPP/MECOPROP/2(4-CHLORO-2-METH.. (UG/L) <200

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	WR-159-A	06/04/90	06/04/90	06/04/90	06/04/90	06/04/90	05/03/90
(D-16-10) 08 BDB		0955	0955	0955	0955	0955	1034
PUMPING TIME (HR. MIN):	903266 WQ	903267 WQ	903268 WQ	903269 WQ	903268 WQ	903268 WQ	101383 ATLL
	0020	0020	0020	0020	0020	0020	0020

BORON (MG/L) <0.05 902664

WATER QUALITY LAB NUMBER 35

R2AM INCUBATION TEMPERATURE DEGREES C 48

R2AM INCUBATION TIME IN HOURS <2

TOTAL COLI. - MPN (CFU./100ML) 0

TOTAL COLI. - FILTR (CFU./100ML) 0 X

HETERO. PLATE COUNT (MEMBRANE, CFU/ML) 236

BACKGROUND (CFU/100 ML) >200 X

WATER QUALITY LAB NUMBER 903269 D

*** PESTICIDES - EPA METHOD 608 ***	900611	900611
ALPHA BHC (UG/L)	NO.021	NO.021
GAMMA BHC (LINDANE) (UG/L)	NO.023	NO.023
BETA BHC (UG/L)	NO.021	NO.021
HEPTACHLOR (UG/L)	NO.023	NO.023
DELTA BHC (UG/L)	NO.023	NO.023
ALDRIN (UG/L)	NO.022	NO.022
HEPTACHLOR EPOXIDE (UG/L)	NO.024	NO.024
ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L)	NO.039	NO.039
4,4'-DDE / PP'-DDE (UG/L)	NO.037	NO.037
DIELDRIN (UG/L)	NO.038	NO.038
ENDRIN (UG/L)	NO.041	NO.041
4,4'-DDD / PP'-DDD (UG/L)	NO.050	NO.050
ENDOSULFAN II/BETA ENDOSULFAN (UG/L)	NO.045	NO.045
4,4'-DDT / PP'-DDT (UG/L)	NO.053	NO.053
ENDRIN ALDEHYDE (UG/L)	NO.067	NO.067
ENDOSULFAN SULFATE (UG/L)	NO.023	NO.023
METHOXYCHLOR (UG/L)	NO.174	NO.174
CHLORDANE (UG/L)	NO.303	NO.303
TOXAPHENE (UG/L)	NOT ANALYZD	NOT ANALYZD
PCB 1016 (UG/L)	NOT ANALYZD	NOT ANALYZD
PCB 1221 (UG/L)	NOT ANALYZD	NOT ANALYZD
PCB 1232 (UG/L)	NO.814	NO.814
PCB 1242 (UG/L)	NOT ANALYZD	NOT ANALYZD
PCB 1248 (UG/L)	NOT ANALYZD	NOT ANALYZD
PCB 1254 (UG/L)	NOT ANALYZD	NOT ANALYZD
PCB 1260 (UG/L)	NO.326	NO.326
*** HERBICIDES - EPA METHOD 8150 ***	900720	900720
2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)	NO.180 X	NO.180 X
(2,4,5-TRICHLOROPHENOXY) ACETATE (UG/L)	NO.082 X	NO.082 X
SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L)	NO.051 X	NO.051 X

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

DATE	TIME	WQ	WQ	WQ	WQ	WQ	WQ	WQ	WQ
05/03/90	1034	902664	902664	902665	902664	902664	902664	902664	902664
05/03/90	1034	0020	0020	0020	0020	0020	0020	0020	0020
05/03/90	1034	100449	100449	100449	100449	100449	100449	100449	100449
04/02/90	1055	901842	901842	901842	901842	901842	901842	901842	901842
04/02/90	1055	0020	0020	0020	0020	0020	0020	0020	0020

(D-16-10) 08 BDB
PUMPING TIME (HR, MIN):

FLOW RATE (GPM) 25.2
 STATIC WATER LEVEL 141.16
 PUMPING WATER LEVEL 145.72
 PH IN FIELD (S.U.) 7.6
 PH IN LAB (S.U.) 7.6
 TEMPERATURE (DEGREES CENT.) 24.0
 DISSOLVED O2 (PPM) 6.8
 CHLORINE FIELD (MG/L) NOT ANALYZD
 FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM) 640
 LAB CONDUCTIVITY (UMHO/CM) 750

748 R
 705
 386 Y
 517
 0.57
 3.05
 0.33 H
 162
 154
 124.8
 212
 212
 0.32
 -1.87
 2.76
 0.348
 35.2
 45
 0.35
 79 Y
 2.1 Y
 50 Y
 7.2 Y

CALCULATED CONDUCTIVITY (UMHO/CM) 795
 TOTAL DIS. SOLIDS (180) (MG/L) 440 Y
 TOTAL DIS. SOLIDS CALC (MG/L) 573
 TOTAL SUSPENDED SOLIDS (MG/L) 3.8
 VOLUME FILTERED, LITERS 3.48
 TURBIDITY, LAB 3.4
 3.2 R
 190
 187
 192.3
 237
 237
 0.26
 0.07
 2.74
 0.308
 36.2
 62
 0.42
 86

POTASSIUM ((MG/L) 2.3
 CALCIUM (MG/L) 61
 MAGNESIUM (MG/L) 8.4
 ORTHOPHOSPHATE AS P (MG/L) NO.5
 NITRITE AS NITROGEN (MG/L) NO.1
 NITRATE AS NITROGEN (MG/L) 9.0
 TOTAL ORGANIC HALOGENS AS CL (UG/L) <5
 TOT. ORG. CARBON, AS C (NPOC, MG/L) 0.41
 BORON (MG/L) <0.05 T

INITIALS:

TUCSON WATER SAMPLES
ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	WR-159 A (SAMPLES CONTINUED)	05/03/90	05/03/90	05/03/90	04/02/90	04/02/90	04/02/90
		1034	1034	1034	1055	1055	1055
		902664 WQ	902664 WQ	902664 WQ	901842 WQ	901842 WQ	901842 WQ
		0020	0020	0020	0020	0020	0020
(D-16-10) 08 BDB							
PUMPING TIME (HR, MIN):							

COPPER (MG/L)	<0.10						
IRON (MG/L)	<0.10						
TOTAL COLI. - MPN (CFU./100ML)							<2
TOTAL COLI. - FILTR (CFU./100ML)							<2
FECAL COLIFORM (CFU/100ML)							
HETERO. PLATE COUNT (MEMBRANE. CFU/ML)		411					790B

METHOD B
 BACKGROUND (CFU/100 ML) >200 X
 WATER QUALITY LAB NUMBER 902664

4,4'-DICHLOROBIPHENYL(SURROGIE%RECOVERY)
 METHOD %

*** PESTICIDES - EPA METHOD 608. **

ALPHA BHC (UG/L)							
GAMMA BHC (LINDANE) (UG/L)							
BETA BHC (UG/L)							
HEPTACHLOR (UG/L)							
DELTA BHC (UG/L)							
ALDRIN (UG/L)							
HEPTACHLOR EPOXIDE (UG/L)							
ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L)							
4,4'-DDE / PP'-DDE (UG/L)							
DIELDRIN (UG/L)							
ENDRIN (UG/L)							
4,4'-DDD / PP'-DDD (UG/L)							
ENDOSULFAN II/BETA ENDOSULFAN (UG/L)							
4,4'-DDT / PP'-DDT (UG/L)							
ENDRIN ALDEHYDE (UG/L)							
ENDOSULFAN SULFATE (UG/L)							
METHOXYCHLOR (UG/L)							
CHLORDANE (UG/L)							
TOXAPHENE (UG/L)							
PCB 1016 (UG/L)							
PCB 1221 (UG/L)							
PCB 1232 (UG/L)							
PCB 1242 (UG/L)							
PCB 1248 (UG/L)							
PCB 1254 (UG/L)							
PCB 1260 (UG/L)							

*** HERBICIDES - EPA METHOD 8150 ***
 2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)
 SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L)

INITIALS:

TUCSON WATER SAMPLES
ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	WR-159 A	04/02/90	10/27/89	10/27/89	10/27/89	07/07/89
		1055	1046	1046	1046	1130
		901842 WQ	949903 ATL	896195 WQ	896195 WQ	893753 WQ
		0020	0020	0020	0020	0430
(D-16-10) O8 BDB						
PUMPING TIME (HR, MIN)						

PH IN FIELD (S.U.)	7.6					7.9
PH IN LAB (S.U.)	7.6					7.6
TEMPERATURE (DEGREES CENT.)	24					24.5
DISSOLVED O2 (PPM)	NOT ANALYZD					
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)	495					525
LAB CONDUCTIVITY (UMHO/CM)	550					
	550 R					

CALCULATED CONDUCTIVITY (UMHO/CM)	567					325
TOTAL DIS. SOLIDS (180) (MG/L)	374					
TOTAL DIS. SOLIDS CALC (MG/L)	434					
TOTAL SUSPENDED SOLIDS (MG/L)	0.5					
VOLUME FILTERED, LITERS	3					
TURBIDITY - LAB	1.6					121
TOTAL HARDNESS (CACO3, MG/L)	124					
	124C					
	122					
HARDNESS CALC. (CACO3, MG/L)	97.4					125
HARDNESS, CALCIUM CALC (CACO3, MG/L)	200					102.4
BICARBONATE ALKALINITY (CACO3, MG/L)	200					194
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L)	200					194
LANGLIER INDEX	0.02					0.34
ION BALANCE, CALC.	0.75 Z					2.76
SODIUM ADSORPTION RATIO, CALC.	2.80					NOT ANALYZD

FLUORIDE (MG/L)	0.36R					NOT ANALYZD
METHOD B	22.2					NOT ANALYZD
CHLORIDE (MG/L)	24					NOT ANALYZD
SULFATE (MG/L)	0.26					NOT ANALYZD
BROMIDE (MG/L)	7.1					7.1
SODIUM (MG/L)	1.7					1.7
POTASSIUM ((MG/L)	39					41
CALCIUM (MG/L)	5.9					5.6
MAGNESIUM (MG/L)						

SILICA (MG/L)	22					
ORTHOPHOSPHATE AS P. (MG/L)						NOT ANALYZD
NITRITE AS NITROGEN (MG/L)						NOT ANALYZD
NITRATE AS NITROGEN (MG/L)						NOT ANALYZD
TOTAL KJELDAHL NITROGEN (MG/L)	5.3					
KJELDAHL AMMONIA (MG/L)	<0.2					
TOTAL ORGANIC HALOGENS AS CL (UG/L)	<0.1					10
TOT. ORG. CARBON, AS C (NPOC, MG/L)	<0.05					0.29

BORON (MG/L)	<0.005					<0.005
ARSENIC (MG/L)	0.0626					0.0733
BARIUM (MG/L)	<0.0002					<0.0002
CADMIUM (MG/L)	0.0015					0.0016
CHROMIUM (MG/L)						<0.1
COPPER (MG/L)						
METHOD D						

INITIALS:

NO. 10D

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

Table with columns for SOURCE, DATE, TIME, and ANALYSIS results for various parameters like BDB, WQ, and ATTL.

Table listing IRON, LEAD, MANGANESE, MERCURY, SELENIUM, SILVER, and STRONTIUM concentrations in mg/L.

Table listing WATER QUALITY LAB NUMBER, TOTAL COLI, FECAL COLIFORM, and BACKGROUND concentrations in CFU/100 ML.

Table listing various pesticides and herbicides (e.g., DDT, DDE, DDD) with their respective EPA method numbers and concentrations in ug/L.

INITIALS: 0 X, 0 X, >200 X

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	WR-159-A (SAMPLES CONTINUED)	04/02/90	10/27/89	10/27/89	10/27/89	10/27/89	07/07/89
		1055	1046	1046	1046	1046	1130
		901842 WQ	949903 ATL	896195 WQ	896195 WQ	896195 WQ	893753 WQ
		0020	0020	0020	0020	0020	0430

(D-16-10) 08 BDB
PUMPING TIME (HR, MIN):

SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L) NO.051

NO.05

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

Table with 5 columns: SOURCE, DATE, TIME, ID, and LOCATION. Includes entries for SOURCE WR 160-A, (D-16-10) 08 BCA, and PUMPING TIME (HR, MIN).

Table with 5 columns: Parameter, Value, Date, Time, and Location. Includes parameters like FLOW RATE (GPM), STATIC WATER LEVEL, PUMPING WATER LEVEL, PH IN FIELD (S.U.), TEMPERATURE (DEGREES CENT.), DISSOLVED O2 (PPM), FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM), LAB CONDUCTIVITY (UMHO/CM), CALCULATED CONDUCTIVITY (UMHO/CM), and TOTAL DIS. SOLIDS (180) (MG/L).

Table with 5 columns: Parameter, Value, Date, Time, and Location. Includes parameters like METHOD R, TOTAL DIS. SOLIDS CALC (MG/L), TOTAL SUSPENDED SOLIDS (MG/L), VOLUME FILTERED, LITERS, TURBIDITY, LAB, TOTAL HARDNESS (CACO3, MG/L), HARDNESS, CALC. (CACO3, MG/L), HARDNESS, CALCIUM CALC. (CACO3, MG/L), BICARBONATE ALKALINITY (CACO3, MG/L), CARBONATE ALKALINITY (CACO3, MG/L), TOTAL ALKALINITY, CALCULATED (CACO3, MG/L), LANGLIER INDEX, and ION BALANCE, CALC.

Table with 5 columns: Parameter, Value, Date, Time, and Location. Includes parameters like SODIUM ADSORPTION RATIO, CALC., FLUORIDE (MG/L), METHOD R, CHLORIDE (MG/L), SULFATE (MG/L), BROMIDE (MG/L), SODIUM (MG/L), POTASSIUM ((MG/L)), CALCIUM (MG/L), MAGNESIUM (MG/L), SILICON (MG/L), ORTHOPHOSPHATE AS P. (MG/L), NITRITE AS NITROGEN (MG/L), NITRATE AS NITROGEN (MG/L), TOTAL ORGANIC HALOGENS AS CL (UG/L), TOT. ORG. CARBON, AS C (NPOC, MG/L), BORON (MG/L), and IRON (MG/L).

Table with 5 columns: Parameter, Value, Date, Time, and Location. Includes parameters like SODIUM ADSORPTION RATIO, CALC., FLUORIDE (MG/L), CHLORIDE (MG/L), SULFATE (MG/L), BROMIDE (MG/L), SODIUM (MG/L), POTASSIUM ((MG/L)), CALCIUM (MG/L), MAGNESIUM (MG/L), SILICON (MG/L), ORTHOPHOSPHATE AS P. (MG/L), NITRITE AS NITROGEN (MG/L), NITRATE AS NITROGEN (MG/L), TOTAL ORGANIC HALOGENS AS CL (UG/L), TOT. ORG. CARBON, AS C (NPOC, MG/L), BORON (MG/L), and IRON (MG/L).

INITIALS: 907451 109300

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	12/11/90	12/11/90	12/11/90	12/11/90	12/11/90	12/11/90	12/11/90
WR-160 A (SAMPLES CONTINUED)	107031 BCL	109299 ATL	907450 WQ	907451 WQ	907450 WQ	907451 WQ	109299 ATL
	1230	1230	1230	1230	1230	1230	1230
	0020	0020	0020	0020	0020	0020	0020
(D-16-10) 08 BCA							
PUMPING TIME (HR, MIN)							

TOTAL COLI. - MPN (CFU/100ML) <2
 TOTAL COLI. - FILTR (CFU/100ML) 0
 HETERO. PLATE COUNT (MEMBRANE, CFU/ML) 3508
 METHOD B Q

- BACKGROUND (CFU/100 ML) 8150
 *** HERBICIDES - EPA METHOD 8150 ***
 2,4-DICHLOROPHENOXY ACETIC ACID (UG/L) <1.0
 4(2,4-DICHLOROPHENOXY) BUTYRATE (UG/L) <0.5
 (2,4,5-TRICHLOROPHENOXY) ACETATE (UG/L) <0.1
 SILVEX/2(2,4,5-TRICHLOROPHENOXY) (UG/L) <8.0
 DALAPON/2,2-DICHLOROPROPANEDATE (UG/L) <0.5
 DICAMBA/3,6-DICHLORO-2-METHOXY (UG/L) <1.0
 DICHLOROPROP/2(2,4-DICHLOROPHENOXY) (UG/L) <0.1
 DINOSEB/2-SEC-BUTYL-4,6-DINITRO (UG/L) <200
 MCPA/2-METHYL-4-CHLOROPHENOXY... (UG/L) <200
 MCPP/MECOPROP/2(4-CHLORO-2-METH... (UG/L) <200

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

Table with columns for SOURCE, DATE, TIME, LOCATION, and SAMPLE ID. Includes entries like 12/11/90 1230 907451 WQ and 10/09/90 1047 906068 WQ.

Table with columns for parameter name, value, and sample ID. Parameters include FLOW RATE (GPM), STATIC WATER LEVEL, PUMPING WATER LEVEL, PH IN FIELD (S.U.), etc.

Table with columns for parameter name, value, and sample ID. Parameters include TEMPERATURE (DEGREES CENT.), DISSOLVED O2 (PPM), FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM), LAB CONDUCTIVITY (UMHO/CM), etc.

Table with columns for parameter name, value, and sample ID. Parameters include CALCULATED CONDUCTIVITY (UMHO/CM), TOTAL DIS. SOLIDS (180) (MG/L), TOTAL DIS. SOLIDS CALC (MG/L), etc.

Table with columns for parameter name, value, and sample ID. Parameters include VOLUME FILTERED, LITERS, TURBIDITY, LAB, TOTAL HARDNESS (CACO3, MG/L), HARDNESS CALC (CACO3, MG/L), etc.

Table with columns for parameter name, value, and sample ID. Parameters include HARDNESS, CALCIUM CALC (CACO3, MG/L), BICARBONATE ALKALINITY (CACO3, MG/L), CARBONATE ALKALINITY (CACO3, MG/L), etc.

Table with columns for parameter name, value, and sample ID. Parameters include TOTAL ALKALINITY, CALCULATED (CACO3, MG/L), LANGLIER INDEX, ION BALANCE, CALC., SODIUM ADSORPTION RATIO, CALC., FLUORIDE (MG/L), etc.

Table with columns for parameter name, value, and sample ID. Parameters include CHLORIDE (MG/L), SULFATE (MG/L), BROMIDE (MG/L), SODIUM (MG/L), POTASSIUM ((MG/L), CALCIUM (MG/L), MAGNESIUM (MG/L), SILICON (MG/L), etc.

Table with columns for parameter name, value, and sample ID. Parameters include ORTHOPHOSPHATE AS P. (MG/L), NITRITE AS NITROGEN (MG/L), NITRATE AS NITROGEN (MG/L), TOTAL ORGANIC HALOGENS AS CL (UG/L), TOT. ORG. CARBON, AS C (NPOC, MG/L), BORON (MG/L), IRON (MG/L), WATER QUALITY LAB NUMBER, etc.

ATL REPORT NUMBER FOR QA 906068 107191
TOTAL COLI. - MPN (CFU./100ML)
TOTAL COLI. - FILTR (CFU./100ML)
INITIALS: <2 0

TUCSON WATER SAMPLES
ANALYSIS OF WATER
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE WR-160 A (SAMPLES CONTINUED)	12/11/90	10/09/90	10/09/90	10/09/90	10/09/90	10/09/90
	1230	1047	1047	1047	1047	1047
(D-16-10) 08 BCA						
PUMPING TIME (HR, MIN):	907451 WQ	89561 BCL	107189 ATL	906069 WQ	906069 WQ	906069 WQ
	0020	0020	0020	0020	0020	0020

186

FECAL COLIFORM (CFU/100ML)	80.378
HETERO. PLATE COUNT (MEMBRANE, CFU/ML)	901218
BACKGROUND (CFU/100 ML)	NO.011
4,4'-DICHOROBIPHENYL(SURROGTE%RECOVERY)	NO.012
**** PESTICIDES - EPA METHOD 508 **	NO.011
ALPHA BHC (UG/L)	NO.012
GAMMA BHC (LINDANE) (UG/L)	NO.011
BETA BHC (UG/L)	NO.012
HEPTACHLOR (UG/L)	NO.011
DELTA BHC (UG/L)	NO.012
ALDRIN (UG/L)	NO.011
HEPTACHLOR EPOXIDE (UG/L)	NO.012
ENDOSULFAN I/ALPHA (UG/L)	NO.019
4,4'-DDE / PP'-DDE (UG/L)	NO.019
DIELDRIN (UG/L)	NO.021
ENDRIN (UG/L)	NO.025
4,4'-DDD / PP'-DDD (UG/L)	NO.022
ENDOSULFAN II/BETA (UG/L)	NO.026
4,4'-DDT / PP'-DDT (UG/L)	NO.034
ENDRIN ALDEHYDE (UG/L)	NO.012
ENDOSULFAN SULFATE (UG/L)	NO.117
METHOXYCHLOR (UG/L)	NO.508
CHLORDANE (UG/L)	NO.544
TOXAPHENE (UG/L)	NOT ANALYZD
PCB 1016 (UG/L)	NOT ANALYZD
PCB 1221 (UG/L)	NOT ANALYZD
PCB 1232 (UG/L)	NOT ANALYZD
PCB 1242 (UG/L)	NOT ANALYZD
PCB 1248 (UG/L)	NO.407
PCB 1254 (UG/L)	NOT ANALYZD
PCB 1260 (UG/L)	NOT ANALYZD
DIMETHYL PHTHALATE (UG/L)	NO.326
DIETHYL PHTHALATE (UG/L)	NO.592
HEXACHLOROBENZENE (UG/L)	NO.568
DI-N-BUTYL PHTHALATE (UG/L)	NO.046
BENZYL BUTYL PHTHALATE (UG/L)	NO.320
BIS-(2-ETHYLHEXYL) PHTHALATE (UG/L)	NO.110
DI-N-OCTYL PHTHALATE (UG/L)	NO.344
	NO.672

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	DATE	TIME	LAB	PROJECT	DATE	TIME	LAB	PROJECT
SR-160 A	10/09/90	1047	08/07/90	08/07/90	08/07/90	1217	08/07/90	08/07/90
(D-16-10) 08 BCA	906068 WQ	0020	104721 BCL	104721 ATL	904496 WQ	0020	904497 WQ	904496 WQ
PUMPING TIME (HR, MIN):								

FLOW RATE (GPM)	23.5
STATIC WATER LEVEL	135.50
PUMPING WATER LEVEL	141.05
PH IN FIELD (S.U.)	7.5
PH IN LAB (S.U.)	7.5
TEMPERATURE (DEGREES CENT.)	23.2
DISSOLVED O2 (PPM)	9.0
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)	510
LAB CONDUCTIVITY (UMHO/CM)	540
CALCULATED CONDUCTIVITY (UMHO/CM)	583
TOTAL DIS. SOLIDS(180) (MG/L)	338 H
TOTAL DIS. SOLIDS.CALC (MG/L)	416
TOTAL SUSPENDED SOLIDS (MG/L)	0.81
VOLUME FILTERED, LITERS	0.8
TURBIDITY, LAB	0.8
TOTAL HARDNESS (CACO3, MG/L)	142
HARDNESS.CALC. (CACO3, MG/L)	139
HARDNESS, CALCIUM.CALC. (CACO3, MG/L)	112.4
BICARBONATE ALKALINITY (CACO3, MG/L)	164
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L)	164
LANGLIER INDEX	-0.12
ION BALANCE, CALC.	1.17
SODIUM ADSORPTION RATIO, CALC.	2.36
FLUORIDE (MG/L)	0.46B
METHOD B	27.6
CHLORIDE (MG/L)	47
SULFATE (MG/L)	0.28
BROMIDE (MG/L)	64
SODIUM (MG/L)	1.7
POTASSIUM ((MG/L)	45
CALCIUM (MG/L)	6.4
MAGNESIUM (MG/L)	16
SILICON (MG/L)	NO.5
ORTHOPHOSPHATE AS P. (MG/L)	NO.1
NITRITE AS NITROGEN (MG/L)	5.5
NITRATE AS NITROGEN (MG/L)	N5
TOTAL ORGANIC HALOGENS AS CL (UG/L)	0.27
TOT. ORG. CARBON, AS C (NPOC, MG/L)	<0.05
BORON (MG/L)	
IRON (MG/L)	904496
WATER QUALITY LAB NUMBER	104722
ATL REPORT NUMBER FOR QA	104723 R
TOTAL COLI. - MPN (CFU./100ML)	
TOTAL COLI. - FILTR (CFU./100ML)	
INITIALS:	

O X 9

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE NR-160 A (SAMPLES CONTINUED)	10/09/90	08/07/90	08/07/90	08/07/90	08/07/90	08/07/90	08/07/90
	1047	0000	1217	1217	1217	1217	1217
PUMPING TIME (HR, MIN):	0020	0020	0020	0020	0020	0020	0020
	905068 WQ	69701 BCL	104721 ATL	904496 WQ	904496 WQ	904497 WQ	904496 WQ

(D-16-10) 08 BCA
 97%
 901015
 495
 >200 X

ANALYTE	UNIT	NO.	NOT ANALYZD
FECAL COLIFORM (CFU/100ML)			
HETERO PLATE COUNT (MEMBRANE, CFU/ML)			
BACKGROUND (CFU/100 ML)			
4,4'-DICHLOROBIPHENYL (SURROGTE%RECOVERY)			
METHOD %			
**** PESTICIDES - EPA METHOD 508 **			
**** PESTICIDES - EPA METHOD 505 **			
ALPHA BHC (UG/L)		NO. 011	900820
GAMMA BHC (LINDANE) (UG/L)		NO. 012	NO. 107
BETA BHC (UG/L)		NO. 011	NO. 116
HEPTACHLOR (UG/L)		NO. 012	NO. 105
DELTA BHC (UG/L)		NO. 011	NO. 116
ALDRIN (UG/L)		NO. 011	NO. 114
HEPTACHLOR EPOXIDE (UG/L)		NO. 012	NO. 112
ENDOSULFAN I/ALPHA (UG/L)		NO. 019	NO. 120
4,4'-DDE / PP'-DDE (UG/L)		NO. 019	NO. 194
DIELDRIN (UG/L)		NO. 019	NO. 189
ENDRIN (UG/L)		NO. 021	NO. 187
4,4'-DDD / PP'-DDD (UG/L)		NO. 025	NO. 206
ENDOSULFAN II/BETA (UG/L)		NO. 022	NO. 251
4,4'-DDT / PP'-DDT (UG/L)		NO. 026	NO. 225
ENDRIN ALDEHYDE (UG/L)		NO. 034	NO. 265
ENDOSULFAN SULFATE (UG/L)		NO. 012	NO. 336
METHOXYCHLOR (UG/L)		NO. 117	NO. 116
CHLORDANE (UG/L)		NO. 508	N1.165
TOXAPHENE (UG/L)		NO. 544	NOT ANALYZD
PCB 1016 (UG/L)		NOT ANALYZD	NOT ANALYZD
PCB 1221 (UG/L)		NOT ANALYZD	NOT ANALYZD
PCB 1232 (UG/L)		NOT ANALYZD	NOT ANALYZD
PCB 1242 (UG/L)		NO. 407	NOT ANALYZD
PCB 1248 (UG/L)		NOT ANALYZD	NOT ANALYZD
PCB 1254 (UG/L)		NOT ANALYZD	NOT ANALYZD
PCB 1260 (UG/L)		NO. 326	NOT ANALYZD
DIMETHYL PHTHALATE I (UG/L)		N1.48	NOT ANALYZD
DIETHYL PHTHALATE (UG/L)		N1.42	NOT ANALYZD
HEXACHLOROBENZENE (UG/L)		NO. 046	NOT ANALYZD
DI-N-BUTYL PHTHALATE (UG/L)		NO. 800	NOT ANALYZD
BENZYL BUTYL PHTHALATE (UG/L)		NO. 275	NOT ANALYZD
BIS (2-ETHYLHEXYL) PHTHALATE (UG/L)		NO. 860	NOT ANALYZD
DI-N-OCTYLPHTHALATE (UG/L)		N1.68	NOT ANALYZD
**** HERBICIDES - EPA METHOD 8150 ****		901106	900814
2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)		NO. 072	NO. 180
(2,4,5-TRICHLOROPHENOXY) ACETATE (UG/L)		NO. 033	NO. 082
SILVEX/2(2,4,5-TRICHLOROPHENOXY		NO. 022	NO. 051

INITIALS:

08/07/90 08/07/90 08/07/90

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE WR-160 A (SAMPLES CONTINUED) 07/05/90 1013 103367 ATL 903865 WQ 07/05/90 1013 903866 WQ 07/05/90 1013 903867 WQ 07/05/90 1013 903273 WQ 06/04/90 1212 903273 WQ 0100

(D-16-10) 08 BCA PUMPING TIME (HR, MIN): 103367 ATL 903865 WQ 07/05/90 1013 903866 WQ 07/05/90 1013 903867 WQ 07/05/90 1013 903273 WQ 0100

ATL REPORT NUMBER FOR QA 103374 103375 R 608

*** PESTICIDES - EPA METHOD 608 **

- ALPHA BHC (UG/L) <0.01
GAMMA BHC (LINDANE) (UG/L) <0.01
BETA BHC (UG/L) <0.01
HEPTACHLOR (UG/L) <0.05
DELTA BHC (UG/L) <0.01
ALDRIN (UG/L) <0.05
HEPTACHLOR EPOXIDE (UG/L) <0.05
ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L) <0.01
4,4'-DDE / PP'-DDE (UG/L) <0.05
DIELDRIN (UG/L) <0.05
ENDRIN (UG/L) <0.05
4,4'-DDD / PP'-DDD (UG/L) <0.02
ENDOSULFAN II/BETA ENDOSULFAN (UG/L) <0.05
4,4'-DDT / PP'-DDT (UG/L) <0.20
ENDOSULFAN SULFATE (UG/L) <0.05
CHLORDANE (UG/L) <0.20
TOXAPHENE (UG/L) <0.20
PCB 1242 (UG/L) <0.20
PCB 1254 (UG/L) 8.150
*** HERBICIDES - EPA METHOD 8150 ***
2,4-DICHLOROPHENOXY ACETIC ACID (UG/L) <1.0
4(2,4-DICHLOROPHENOXY) BUTYRATE (UG/L) <1.0
(2,4,5-TRICHLOROPHENOXY) ACETATE (UG/L) <0.50
SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L) <0.10
DALAPON/2,2-DICHLOROPROPANOATE (UG/L) <5.0
DICAMBA/3,5-DICHLORO-2-METHOXY (UG/L) <0.50
DICHLOROPROP/2(2,4-DICHLOROPHENO (UG/L) <1.0
DINOSB/2-SEC-BUTYL-4,6-DINITRO (UG/L) <0.10
MCPA/2-METHYL-4-CHLOROPHENOXY (UG/L) <200
MCP/MECOPROP/2(4-CHLORO-2-METH. (UG/L) <200

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

PARAMETER	06/04/90	06/04/90	06/04/90	06/04/90	06/04/90	06/04/90
SOURCE: WR-160 A	06/04/90	06/04/90	06/04/90	06/04/90	06/04/90	06/04/90
(D-16-10) 08 BCA	1152	1122	1122	1122	1122	1122
PUMPING TIME (HR, MIN)	903272 WQ	102520 ATL	903270 WQ	903271 WQ	903270 WQ	903271 WQ
	0040	0010	0010	0010	0010	0010

FLOW RATE (GPM)	25	25	25	25	25	25
STATIC WATER LEVEL	131.13	131.13	131.13	131.13	131.13	131.13
PUMPING WATER LEVEL	137.01	136.71	136.71	136.71	136.71	136.71
PH IN FIELD (S.U.)	7.6	7.7	7.7	7.7	7.7	7.7
PH IN LAB (S.U.)	7.4	7.4	7.4	7.4	7.4	7.4
TEMPERATURE (DEGREES CENT.)	23.5	23.3	23.3	23.3	23.3	23.3
DISSOLVED O2 (PPM)	8.1	7.9	7.9	7.9	7.9	7.9
CHLORINE, FIELD (MG/L)						
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)	680	680	680	680	680	680
LAB CONDUCTIVITY (UMHO/CM)						
CALCULATED CONDUCTIVITY (UMHO/CM)	748	746	746	746	746	746
TOTAL DIS. SOLIDS (TBO) (MG/L)	440 Y	442 Y	442 Y	442 Y	442 Y	442 Y
TOTAL DIS. SOLIDS, CALC (MG/L)	509	508	508	508	508	508
TOTAL SUSPENDED SOLIDS (MG/L)		1.3	1.3	1.3	1.3	1.3
VOLUME FILTERED, LITERS		3	3	3	3	3
TURBIDITY, LAB		1.6	1.6	1.6	1.6	1.6
TOTAL HARDNESS (CACO3, MG/L)	187	190	190	190	190	190
HARDNESS, CALC. (CACO3, MG/L)	181	181	181	181	181	181
HARDNESS, CALCIUM, CALC. (CACO3, MG/L)	144.8	144.8	144.8	144.8	144.8	144.8
BICARBONATE ALKALINITY (CACO3, MG/L)	169	170	170	170	170	170
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L)	169	170	170	170	170	170
LANGLIER INDEX	0.10	0.20	0.20	0.20	0.20	0.20
ION BALANCE, CALC.	0.31	0.34	0.34	0.34	0.34	0.34
SODIUM ADSORPTION RATIO, CALC.	2.39	2.39	2.39	2.39	2.39	2.39
FLUORIDE (MG/L)						
METHOD B						
CHLORIDE (MG/L)	0.38B	0.39B	0.39B	0.39B	0.39B	0.39B
SULFATE (MG/L)	45.3	42.9	42.9	42.9	42.9	42.9
BROMIDE (MG/L)	66	71	71	71	71	71
SODIUM (MG/L)	0.58	0.53	0.53	0.53	0.53	0.53
POTASSIUM ((MG/L)	74	74	74	74	74	74
CALCIUM (MG/L)	2.0	1.9	1.9	1.9	1.9	1.9
MAGNESIUM (MG/L)	58	58	58	58	58	58
SILICON (MG/L)	13	13	13	13	13	13
ORTHOPHOSPHATE AS P (MG/L)	NO.5	NO.5	NO.5	NO.5	NO.5	NO.5
NITRATE AS NITROGEN (MG/L)	NO.1	NO.1	NO.1	NO.1	NO.1	NO.1
NITRATE AS NITROGEN (MG/L)	11	10	10	10	10	10
TOTAL ORGANIC HALOGENS AS CL (UG/L)		<5	<5	<5	<5	<5
TOT. ORG. CARBON, AS C (NPOC, MG/L)		0.76	0.76	0.76	0.76	0.76
BORON (MG/L)		<0.05	<0.05	<0.05	<0.05	<0.05
COPPER (MG/L)		<0.10	<0.10	<0.10	<0.10	<0.10
IRON (MG/L)		<0.10	<0.10	<0.10	<0.10	<0.10
WATER QUALITY LAB NUMBER		903270	903270	903270	903270	903270
R2AM INCUBATION TEMPERATURE DEGREES C						
R2AM INCUBATION TIME IN HOURS						
TOTAL COLI. - MPN (CFU/100ML)						

INITIALS:

35
48
<2

07/28/93

TUCSON WATER
ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	DATE	TIME	LOCATION	DATE	TIME	LOCATION	DATE	TIME	LOCATION
WR-160 A (SAMPLES CONTINUED)	06/04/90	1152	06/04/90	06/04/90	1122	06/04/90	06/04/90	1122	06/04/90
	903272 WQ	0040	102520 ATLL	903270 WQ	0010	903271 WQ	903270 WQ	0010	903271 WQ
(D-16-10) O8 BCA									
PUMPING TIME (HR, MIN):									

56

- TOTAL COLI. - FILTR (CFU / 100ML)
- HETERO. PLATE COUNT (MEMBRANE, CFU/ML)
- *** PESTICIDES - EPA METHOD 608 **
- ALPHA BHC (UG/L)
- GAMMA BHC (LINDANE) (UG/L)
- BETA BHC (UG/L)
- HEPTACHLOR (UG/L)
- DELTA BHC (UG/L)
- ALDRIN (UG/L)
- HEPTACHLOR EPOXIDE (UG/L)
- ENDOSULFAN I / ALPHA ENDOSULFAN (UG/L)
- 4,4'-DDE / PP'-DDE (UG/L)
- DIELDRIN (UG/L)
- ENDRIN (UG/L)
- 4,4'-DDD / PP'-DDD (UG/L)
- ENDOSULFAN II / BETA ENDOSULFAN (UG/L)
- 4,4'-DDT / PP'-DDT (UG/L)
- ENDRIN ALDEHYDE (UG/L)
- ENDOSULFAN SULFATE (UG/L)
- METHOXYCHLOR (UG/L)
- CHLORDANE (UG/L)
- TOXAPHENE (UG/L)
- PCB 1016 (UG/L)
- PCB 1221 (UG/L)
- PCB 1232 (UG/L)
- PCB 1242 (UG/L)
- PCB 1248 (UG/L)
- PCB 1254 (UG/L)
- PCB 1260 (UG/L)
- *** HERBICIDES - EPA METHOD 8150 ***
- 2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)
- (2,4,5-TRICHLOROPHENOXY) ACETATE (UG/L)
- SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L)

- 900611
- NO. 021
- NO. 023
- NO. 021
- NO. 023
- NO. 023
- NO. 022
- NO. 024
- NO. 039
- NO. 037
- NO. 038
- NO. 041
- NO. 050
- NO. 045
- NO. 053
- NO. 087
- NO. 083
- NO. 233
- NO. 174
- NO. 303
- NOT ANALYZD
- NOT ANALYZD
- NOT ANALYZD
- NO. 814
- NOT ANALYZD
- NOT ANALYZD
- NO. 325
- MO. LIMIT
- NO. 180 X
- NO. 082 X
- NO. 051 X

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

07/28/93

SOURCE	WR-160-A	05/03/90	101384 ATL	05/03/90	101385 ATL	05/03/90	902666 WQ	05/03/90	1213	05/03/90	902666 WQ	05/03/90	1213	05/03/90	902667 WQ	05/03/90	1213	05/03/90	902668 WQ
(D-16-10) 08 BCA		1213	0010	1213	0010	1213	0010	1213	0010	1213	0010	1213	0010	1213	0010	1213	0010	1213	0010
PUMPING TIME (HR, MIN):																			

FLOW RATE (GPM)	25.6																		
STATIC WATER LEVEL	134.46																		
PUMPING WATER LEVEL	140.32																		
PH IN FIELD (S.U.)	7.6																		
PH IN LAB (S.U.)	7.6																		
TEMPERATURE (DEGREES CENT.)	23.1																		
DISSOLVED O2 (PPM)	7.8																		

CHLORINE FIELD (MG/L)	710																		
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)	800																		
LAB CONDUCTIVITY (UMHO/CM)	885																		
CALCULATED CONDUCTIVITY (UMHO/CM)	885																		
TOTAL DIS. SOLIDS (180) (MG/L)	498 Y																		

TOTAL DIS. SOLIDS CALC (MG/L)	592																		
TOTAL SUSPENDED SOLIDS (MG/L)	1.9																		
VOLUME FILTERED, LITERS	3.66																		
TURBIDITY, LAB	4.0																		
TOTAL HARDNESS (CACO3, MG/L)	227																		
HARDNESS CALC. (CACO3, MG/L)	219																		
HARDNESS, CALCIUM CALC. (CACO3, MG/L)	177.3																		
BICARBONATE ALKALINITY (CACO3, MG/L)	177																		
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L)	177																		
LANGLIER INDEX	0.20																		
ION BALANCE, CALC.	-0.49																		
SODIUM ADSORPTION RATIO, CALC.	2.38																		
FLUORIDE (MG/L)	0.33B																		

METHOD B																			
CHLORIDE (MG/L)	58.9																		
SULFATE (MG/L)	81																		
BROMIDE (MG/L)	0.77																		
SODIUM (MG/L)	81																		
POTASSIUM (MG/L)	2.1																		
CALCIUM (MG/L)	71																		
MAGNESIUM (MG/L)	10.2																		
ORTHOPHOSPHATE AS P (MG/L)	NO.5																		
NITRITE AS NITROGEN (MG/L)	NO.1																		
NITRATE AS NITROGEN (MG/L)	15.5																		
TOTAL ORGANIC HALOGENS AS CL (UG/L)	<5																		
TOT. ORG. CARBON, AS C (NPOC, MG/L)	0.54																		

BORON (MG/L)	<0.05																		
COPPER (MG/L)	<0.10																		
IRON (MG/L)	<0.10																		
WATER QUALITY LAB NUMBER	902668																		
WO REPORT NUMBER FOR QA	902668 D																		
TOTAL COLI. - MPN (CFU /100ML)	<2																		
TOTAL COLI. - FILTR (CFU /100ML)	0																		

INITIALS:

TUCSON WATER
ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE WR-160-A (SAMPLES CONTINUED)	05/03/90	05/03/90	05/03/90	05/03/90	05/03/90
	1213	1213	1213	1213	1213
(D-16-10) 08 BCA	101384 ATL	101385 ATL	902666 WQ	902667 WQ	902668 WQ
PUMPING TIME (HR. MIN):	0010	0010	0010	0010	0010

FECAL COLIFORM (CFU/100ML)
 HETERO. PLATE COUNT (MEMBRANE, CFU/ML)
 BACKGROUND (CFU/100 ML)

179 0 175

184

INITIALS:

TUCSON WATER SAMPLES
ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	WR-160 A	05/03/90	05/03/90	04/02/90	04/02/90	04/02/90	04/02/90
	1213	1213	1213	1210	1210	1210	1210
	902669 WQ	902666 WQ	902668 WQ	100450 ATL	901843 WQ	901843 WQ	901846 WQ
	0010	0010	0010	0010	0010	0010	0010
(D-16-10) 08 BCA							
PUMPING TIME (HR, MIN)							

PH IN FIELD (S.U.)	7.7						
PH IN LAB (S.U.)	7.4						
TEMPERATURE (DEGREES CENT.)	22.3						
DISSOLVED O2 (PPM)	5.6						
CHLORINE FIELD (MG/L)	NO.05						
FIELD CONDUCTIVITY (UMHO/CM)	1000						
LAB CONDUCTIVITY (UMHO/CM)	1025						
CALCULATED CONDUCTIVITY (UMHO/CM)	1160						
TOTAL DIS. SOLIDS (180) (MG/L)	628 Y						
TOTAL SUSPENDED SOLIDS (MG/L)	739						
VOLUME FILTERED, LITERS	4.1						
TURBIDITY LAB	3.5						
TOTAL HARDNESS (CACO3, MG/L)	1.8 H						
HARDNESS CALC. (CACO3, MG/L)	284						
HARDNESS CALCIUM CALC. (CACO3, MG/L)	287						
BICARBONATE ALKALINITY (CACO3, MG/L)	229.7						
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L)	176						
LANGLIER INDEX	176						
ION BALANCE, CALC.	0.38						
SODIUM ADSORPTION RATIO, CALC.	-0.77						
FLUORIDE (MG/L)	2.54						
METHOD B	0.34B						
CHLORIDE (MG/L)	99.1						
SULFATE (MG/L)	93						
BROMIDE (MG/L)	1.26						
SODIUM (MG/L)	99 Y						
POTASSIUM (MG/L)	2.7 Y						
CALCIUM (MG/L)	92 Y						
MAGNESIUM (MG/L)	14 Y						
NITRATE AS NITROGEN (MG/L)	28						
TOTAL ORGANIC HALOGENS AS CL (UG/L)	5						
TOT. ORG. CARBON, AS C (NPOC, MG/L)	0.75						
BORON (MG/L)	<0.10						
IRON (MG/L)	<0.05 T						
TOTAL COLI - MPN (CFU./100ML)	O X						
TOTAL COLI - FILTR (CFU./100ML)	O X						
FECAL COLIFORM (CFU/100ML)	O X						
HETERO PLATE COUNT (MEMBRANE, CFU/ML)	O X						
BACKGROUND (CFU/100 ML)	263 X						
WATER QUALITY LAB NUMBER	902668						
4,4'-DICHLOROBIPHENYL (SURROGTE%RECOVERY)	111%						
METHOD %	74.6%						
INITIALS:							

SOURCE	DATE	TIME	LOCATION	TIME	LOCATION	TIME	LOCATION	TIME	LOCATION
SR-160 A (SAMPLES CONTINUED)	05/03/90	1213	902669 WQ	05/03/90	1213	902668 WQ	05/03/90	1213	901843 WQ
		0010			0010			0010	
(D-16-10) 08 BCA									
PUMPING TIME (HR, MIN):									

ANALYTE	UNIT	CONC	ANALYTE	UNIT	CONC	ANALYTE	UNIT	CONC	ANALYTE	UNIT	CONC
*** PESTICIDES - EPA METHOD 608 ***											
ALPHA BHC (UG/L)		900510	ALPHA BHC (UG/L)		NO.021	DELTA BHC (UG/L)		900510	DELTA BHC (UG/L)		NO.021
GAMMA BHC (LINDANE) (UG/L)		<0.023	GAMMA BHC (LINDANE) (UG/L)		<0.023	HEPTACHLOR (UG/L)		NO.023	HEPTACHLOR (UG/L)		NO.023
BETA BHC (UG/L)		NO.021	BETA BHC (UG/L)		NO.021	DELTA BHC (UG/L)		NO.023	DELTA BHC (UG/L)		NO.023
HEPTACHLOR (UG/L)		<0.023 B	HEPTACHLOR (UG/L)		<0.023 B	ALDRIN (UG/L)		NO.022	ALDRIN (UG/L)		NO.022
DELTA BHC (UG/L)		NO.022	DELTA BHC (UG/L)		NO.022	HEPTACHLOR EPOXIDE (UG/L)		NO.024	HEPTACHLOR EPOXIDE (UG/L)		NO.024
ALDRIN (UG/L)		NO.024	ALDRIN (UG/L)		NO.024	ENDOSULFAN I/ALPHA (UG/L)		NO.039	ENDOSULFAN I/ALPHA (UG/L)		NO.039
HEPTACHLOR EPOXIDE (UG/L)		NO.039	HEPTACHLOR EPOXIDE (UG/L)		NO.039	4,4'-DDE / PP'-DDE (UG/L)		<0.037	4,4'-DDE / PP'-DDE (UG/L)		<0.037
ENDOSULFAN I/ALPHA (UG/L)		<0.037	ENDOSULFAN I/ALPHA (UG/L)		<0.037	DIELDRIN (UG/L)		NO.038	DIELDRIN (UG/L)		NO.038
4,4'-DDE / PP'-DDE (UG/L)		NO.037	4,4'-DDE / PP'-DDE (UG/L)		NO.037	ENDRIN (UG/L)		NO.041	ENDRIN (UG/L)		NO.041
DIELDRIN (UG/L)		NO.038	DIELDRIN (UG/L)		NO.038	4,4'-DDD / PP'-DDD (UG/L)		NO.050	4,4'-DDD / PP'-DDD (UG/L)		NO.050
ENDRIN (UG/L)		NO.041	ENDRIN (UG/L)		NO.041	ENDOSULFAN II/BETA (UG/L)		NO.045	ENDOSULFAN II/BETA (UG/L)		NO.045
4,4'-DDD / PP'-DDD (UG/L)		NO.050	4,4'-DDD / PP'-DDD (UG/L)		NO.050	4,4'-DDT / PP'-DDT (UG/L)		<0.053	4,4'-DDT / PP'-DDT (UG/L)		<0.053
ENDOSULFAN II/BETA (UG/L)		NO.045	ENDOSULFAN II/BETA (UG/L)		NO.045	ENDRIN ALDEHYDE (UG/L)		NO.067	ENDRIN ALDEHYDE (UG/L)		NO.067
4,4'-DDT / PP'-DDT (UG/L)		<0.053	4,4'-DDT / PP'-DDT (UG/L)		<0.053	ENDOSULFAN SULFATE (UG/L)		NO.023	ENDOSULFAN SULFATE (UG/L)		NO.023
ENDRIN ALDEHYDE (UG/L)		NO.067	ENDRIN ALDEHYDE (UG/L)		NO.067	METHOXYCHLOR (UG/L)		NO.174	METHOXYCHLOR (UG/L)		NO.174
ENDOSULFAN SULFATE (UG/L)		NO.023	ENDOSULFAN SULFATE (UG/L)		NO.023	CHLORDANE (UG/L)		NO.303	CHLORDANE (UG/L)		NO.303
METHOXYCHLOR (UG/L)		NO.023	METHOXYCHLOR (UG/L)		NO.023	TOXAPHENE (UG/L)		NOT ANALYZD	TOXAPHENE (UG/L)		NOT ANALYZD
CHLORDANE (UG/L)		NO.174	CHLORDANE (UG/L)		NO.174	PCB 1016 (UG/L)		NOT ANALYZD	PCB 1016 (UG/L)		NOT ANALYZD
TOXAPHENE (UG/L)		NO.303	TOXAPHENE (UG/L)		NO.303	PCB 1221 (UG/L)		NOT ANALYZD	PCB 1221 (UG/L)		NOT ANALYZD
PCB 1016 (UG/L)		NOT ANALYZD	PCB 1016 (UG/L)		NOT ANALYZD	PCB 1232 (UG/L)		NOT ANALYZD	PCB 1232 (UG/L)		NOT ANALYZD
PCB 1221 (UG/L)		NOT ANALYZD	PCB 1221 (UG/L)		NOT ANALYZD	PCB 1242 (UG/L)		NOT ANALYZD	PCB 1242 (UG/L)		NOT ANALYZD
PCB 1232 (UG/L)		NOT ANALYZD	PCB 1232 (UG/L)		NOT ANALYZD	PCB 1248 (UG/L)		NOT ANALYZD	PCB 1248 (UG/L)		NOT ANALYZD
PCB 1242 (UG/L)		NOT ANALYZD	PCB 1242 (UG/L)		NOT ANALYZD	PCB 1254 (UG/L)		NOT ANALYZD	PCB 1254 (UG/L)		NOT ANALYZD
PCB 1248 (UG/L)		NOT ANALYZD	PCB 1248 (UG/L)		NOT ANALYZD	PCB 1260 (UG/L)		NOT ANALYZD	PCB 1260 (UG/L)		NOT ANALYZD
PCB 1254 (UG/L)		NOT ANALYZD	PCB 1254 (UG/L)		NOT ANALYZD	*** HERBICIDES - EPA METHOD 8150 ***			*** HERBICIDES - EPA METHOD 8150 ***		
PCB 1260 (UG/L)		NOT ANALYZD	PCB 1260 (UG/L)		NOT ANALYZD	2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)		900523	2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)		900523
*** HERBICIDES - EPA METHOD 8150 ***			*** HERBICIDES - EPA METHOD 8150 ***			SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L)		NO.200	SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L)		NO.200
2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)		900523	2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)		900523			NO.051			NO.051
SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L)		NO.200	SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L)		NO.200						
		NO.051			NO.051						

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

WH71WU

SOURCE WR-160 A	04/02/90	10/27/89	10/27/89	10/27/89	10/27/89	10/27/89	10/27/89
	1210	1132	1132	1132	1132	1132	1132
(D-16-10) OB BCA	901843 WQ	949904 ATL	949905 ATL	896196 WQ	896197 WQ	896196 WQ	896197 WQ
PUMPING TIME (HR. MIN)	0010	0010	0010	0010	0010	0010	0010

PH IN FIELD (S.U.)	7.7	7.7	7.7	7.7	7.7	7.7	7.7
PH IN LAB (S.U.)	7.6	7.6	7.6	7.6	7.6	7.6	7.6
TEMPERATURE (DEGREES CENT.)	24.7	24.7	24.7	24.7	24.7	24.7	24.7
DISSOLVED O2 (PPM)	520	520	520	520	520	520	520
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)	550	550	550	550	550	550	550
LAB CONDUCTIVITY (UMHO/CM)	581	581	581	581	581	581	581
CALCULATED CONDUCTIVITY (UMHO/CM)	380	380	380	380	380	380	380
TOTAL DIS. SOLIDS (180) (MG/L)	435	435	435	435	435	435	435
TOTAL DIS. SOLIDS CALC (MG/L)	0.34	0.34	0.34	0.34	0.34	0.34	0.34
TOTAL SUSPENDED SOLIDS (MG/L)	3	3	3	3	3	3	3
VOLUME FILTERED, LITERS	1.6	1.6	1.6	1.6	1.6	1.6	1.6
TURBIDITY, LAB	120	120	120	120	120	120	120
TOTAL HARDNESS (CACO3, MG/L)	119	119	119	119	119	119	119

METHOD C

HARDNESS CALC. (CACO3, MG/L) 94.9

HARDNESS, CALCIUM CALC. (CACO3, MG/L) 187

BICARBONATE ALKALINITY (CACO3, MG/L) 187

TOTAL ALKALINITY, CALCULATED (CACO3, MG/L) 0.09

LANGLIER INDEX -0.28

ION BALANCE, CALC. 2.91

SODIUM ADSORPTION RATIO, CALC. 0.43B

METHOD B

FLUORIDE (MG/L) 26.6

CHLORIDE (MG/L) 29

SULFATE (MG/L) 0.32

BROMIDE (MG/L) 73

SODIUM (MG/L) 1.7

POTASSIUM ((MG/L) 38

CALCIUM (MG/L) 5.8

MAGNESIUM (MG/L) 7.2

SILICA (MG/L) 22

NITRATE AS NITROGEN (MG/L) <0.2

TOTAL KJELDAHL NITROGEN (MG/L) <0.1

KJELDAHL AMMONIA (MG/L) <0.1

TOTAL ORGANIC HALOGENS AS CL (UG/L) <0.05

TOT. ORG. CARBON, AS C (NPDC, MG/L) <0.05

BORON (MG/L) <0.005

ARSENIC (MG/L) 0.0654

BARIUM (MG/L) <0.0002

CADMIUM (MG/L) 0.0013

CHROMIUM (MG/L) NO.10D

COPPER (MG/L) 0.180

METHOD D

IRON (MG/L) NO.10D

LEAD (MG/L) 0.0028

INITIALS:

TUCSON WATER SAMPLES
ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	WR-160 A (SAMPLES CONTINUED)	04/03/90	10/27/89	10/27/89	10/27/89	10/27/89	10/27/89	10/27/89
		1210	1132	1132	1132	1132	1132	1132
		901843 WQ	949904 ATL	949905 ATL	896196 WQ	896197 WQ	896196 WQ	896197 WQ
		0010	0010	0010	0010	0010	0010	0010
	(D-16-10) 08 BCA							
	PUMPING TIME (HR. MIN):							

		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MANGANESE (MG/L)								
MERCURY (MG/L)								
SELENIUM (MG/L)								
STRONTIUM (MG/L)								
ZINC (MG/L)								
WATER QUALITY LAB NUMBER								
WQ REPORT NUMBER FOR QA								
TOTAL COLI. - FILTR (CFU./100ML)								
FECAL COLIFORM (CFU/100ML)								
BACKGROUND (CFU/100 ML)								
4,4'-DICHLOROBIPHENYL(SURROGTE/RECOVERY)								
*** PESTICIDES - EPA METHOD 608 **								
ALPHA BHC (UG/L)		0.35	0.34	0.34	0.289	0.129	0.290	0.129
GAMMA BHC (LINDANE) (UG/L)		896196	896197	896197	896196 WQ	896197 WQ	896196 WQ	896197 WQ
BETA BHC (UG/L)		896197 D	896196 D	896196 D	0010	0010	0010	0010
HEPTACHLOR (UG/L)								
DELTA BHC (UG/L)								
ALDRIN (UG/L)								
HEPTACHLOR EPOXIDE (UG/L)								
ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L)								
4,4'-DDE / PP'-DDE (UG/L)								
DIELDRIN (UG/L)								
ENDRIN (UG/L)								
4,4'-DDP / PP'-DDD (UG/L)								
ENDOSULFAN II/BETA ENDOSULFAN (UG/L)								
4,4'-DDT / PP'-DDT (UG/L)								
ENDRIN ALDEHYDE (UG/L)								
ENDOSULFAN SULFATE (UG/L)								
METHOXYCHLOR (UG/L)								
CHLORDANE (UG/L)								
TOXAPHENE (UG/L)								
PCB 1016 (UG/L)								
PCB 1221 (UG/L)								
PCB 1232 (UG/L)								
PCB 1242 (UG/L)								
PCB 1248 (UG/L)								
PCB 1254 (UG/L)								
PCB 1260 (UG/L)								
*** HERBICIDES - EPA METHOD 8150 ***								
2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)								
SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L)								

NOT ANALYZD								
900419								
NO.021								
NO.023								
NO.023								
NO.023								
NO.022								
NO.024								
NO.039								
NO.037								
NO.038								
NO.041								
NO.050								
NO.045								
NO.053								
NO.067								
NO.023								
NO.233								
NO.174								
NO.303								
NOT ANALYZD								
NOT ANALYZD								
NOT ANALYZD								
NO.814								
NOT ANALYZD								
NOT ANALYZD								
NO.326								
900425								
NO.200								
NO.051								

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE WR-160-A 10/27/89 06/29/89
1132 1132 1810
PUMPING TIME (HR, MIN): 896196 WQ 893582 WQ
0010 0010 1100

PH IN FIELD (S.U.) 7.8
PH IN LAB (S.U.) 7.5
TEMPERATURE (DEGREES CENT.) 25.3
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM) 550
CALCULATED CONDUCTIVITY (UMHO/CM) 500
TOTAL DIS. SOLIDS (180) (MG/L) 528
TOTAL DIS. SOLIDS-CALC (MG/L) 438
TOTAL HARDNESS (CACO3, MG/L) 125
HARDNESS CALC. (CACO3, MG/L) 128
HARDNESS, CALCIUM CALC. (CACO3, MG/L) 104.9
BICARBONATE ALKALINITY (CACO3, MG/L) 177
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L) 177
LANGLIER INDEX 0.23
ION BALANCE, CALC. 0.66
SODIUM ADSORPTION RATIO, CALC. 2.81
FLUORIDE (MG/L) 0.44B
METHOD B
CHLORIDE (MG/L) 32.5
SULFATE (MG/L) 26
BROMIDE (MG/L) 0.43
SODIUM (MG/L) 73
POTASSIUM (MG/L) 1.7
CALCIUM (MG/L) 42
MAGNESIUM (MG/L) 5.6
ORTHOPHOSPHATE AS P. (MG/L) NO.5
NITRITE AS NITROGEN (MG/L) NO.1
NITRATE AS NITROGEN (MG/L) 9.3
TOTAL ORGANIC HALOGENS AS CL (UG/L) N6
TOT. ORG. CARBON, AS C (NPDC, MG/L) 0.27
ARSENIC (MG/L) <0.005
BARIUM (MG/L) 0.0002
CADMIUM (MG/L) 0.0015
CHROMIUM (MG/L) <0.1
COPPER (MG/L) <0.1
IRON (MG/L) <0.002
LEAD (MG/L) <0.05
MANGANESE (MG/L) <0.0005 T
MERCURY (MG/L) <0.005
SELENIUM (MG/L) <0.0005
SILVER (MG/L) <0.02
ZINC (MG/L) <0.02

NOT ANALYZD NOT ANALYZD
WQ REPORT NUMBER FOR QA 891030
4.4-DICHLOROBIPHENYL(SURROGTE/RECOVERY) 891030
***** PESTICIDES - EPA METHOD 608 ** NO.021
ALPHA BHC (UG/L) NO.021
GAMMA BHC (LINDANE) (UG/L) NO.023

INITIALS:

WH71WU

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE: WR-160 A. (SAMPLES CONTINUED) 10/27/89 10/27/89 06/29/89
1132 1132 1810
(D-16-10) 08 BCA 896196 WQ 896197 WQ 893582 WQ
PUMPING TIME (HR. MIN): 00:10 00:10 1100

ANALYTE	UNIT	NO.	STATUS
BETA BHC	(UG/L)	NO. 021	
HEPTACHLOR	(UG/L)	NO. 023	
DELTA BHC	(UG/L)	NO. 023	
ALDRIN	(UG/L)	NO. 022	
HEPTACHLOR EPOXIDE	(UG/L)	NO. 024	
ENDOSULFAN I/ALPHA	(UG/L)	NO. 039	
4,4'-DDE / PP'-DDE	(UG/L)	NO. 037	
DIELDRIN	(UG/L)	NO. 038	
ENDRIN	(UG/L)	NO. 041	
4,4'-DDD / PP'-DDD	(UG/L)	NO. 050	
ENDOSULFAN II/BETA	(UG/L)	NO. 045	
4,4'-DDT / PP'-DDT	(UG/L)	NO. 053	
ENDRIN ALDEHYDE	(UG/L)	NO. 067	
ENDOSULFAN SULFATE	(UG/L)	NO. 023	
METHOXYCHLOR	(UG/L)	NO. 233	
CHLORDANE	(UG/L)	NO. 174	
TOXAPHENE	(UG/L)	NO. 303	
PCB 1016	(UG/L)	NOT ANALYZD	
PCB 1221	(UG/L)	NOT ANALYZD	
PCB 1232	(UG/L)	NOT ANALYZD	
PCB 1242	(UG/L)	NO. 814	
PCB 1248	(UG/L)	NOT ANALYZD	
PCB 1254	(UG/L)	NOT ANALYZD	
PCB 1260	(UG/L)	NO. 326	
*** HERBICIDES - EPA METHOD 8150 ***		891102	
2,4-DICHLOROPHENOXY ACETIC ACID	(UG/L)	NO. 20	
SILVEX/2(2,4,5-TRICHLOROPHENOXY	(UG/L)	NO. 05	

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE WR-160-B	10/09/90	10/09/90	10/09/90	10/09/90	10/09/90	07/05/90
	1020	1020	1020	1020	1020	0844
(D-16-10) 08 BCA	906071 WQ	107190 ATL	906070 WQ	906071 WQ	906070 WQ	103368 ATL
PUMPING TIME (HR. MIN):	0210	0210	0210	0210	0210	

FLOW RATE (GPM)	68.4	NOT ANALYZD
STATIC WATER LEVEL	8.9	NOT ANALYZD
PUMPING WATER LEVEL	8.7	
PH IN FIELD (S.U.)	26.0	
PH IN LAB (S.U.)	6.5	
TEMPERATURE (DEGREES CENT.)	435	
DISSOLVED O2 (PPM)	390	
FIELD CONDUCTIVITY (UMHO/CM)	258 Y	
LAB CONDUCTIVITY (UMHO/CM)	338	
CALCULATED CONDUCTIVITY (UMHO/CM)	84	
TOTAL DIS. SOLIDS(180) (MG/L)	0.4	
TOTAL DIS. SOLIDS CALC (MG/L)	62	
TOTAL SUSPENDED SOLIDS (MG/L)	71	
VOLUME FILTERED, LITERS	71 R	
TURBIDITY, LAB	720	
TOTAL HARDNESS (CACO3, MG/L)	73	
METHOD C	67.4	
HARDNESS, CALC. (CACO3, MG/L)	94.9	
HARDNESS, CALCIUM CALC. (CACO3, MG/L)	9.2	
BICARBONATE ALKALINITY (CACO3, MG/L)	104	
CARBONATE ALKALINITY (CACO3, MG/L)	0.93	
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L)	5.53 X	
LANGLIER INDEX	2.45	
IGN BALANCE, CALC.		
SODIUM ADSORPTION RATIO, CALC.		
FLUORIDE (MG/L)	0.628	
METHOD B	20.0	
CHLORIDE (MG/L)	87	
SULFATE (MG/L)	0.18	
BROMIDE (MG/L)	48	
SODIUM (MG/L)	21	
POTASSIUM ((MG/L)	27	
CALCIUM (MG/L)	1.3	
MAGNESIUM (MG/L)	<10	
SILICON (MG/L)	NO.5	
ORTHOPHOSPHATE AS P. (MG/L)	0.1	
NITRITE AS NITROGEN (MG/L)	1.4	
NITRATE AS NITROGEN (MG/L)	12	
TOTAL ORGANIC HALOGENS AS CL (UG/L)	0.87	
TOT. ORG. CARBON, AS C (NPOC, MG/L)		
BORON (MG/L)	0.082 T	

IRON ((MG/L) 20
 WATER QUALITY LAB NUMBER 906070
 ATL REPORT NUMBER FOR QA 107190

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	WR-160 B (SAMPLES CONTINUED)	10/09/90	10/09/90	10/09/90	10/09/90	10/09/90	10/09/90	07/05/90
		1020	1020	1020	1020	1020	1020	0844
		906071 WQ	107190 ATL	906070 WQ	906071 WQ	906070 WQ	906070 WQ	103368 ATL
		0210	0210	0210	0210	0210	0210	

(D-16-10) 08 BCA
PUMPING TIME (HR, MIN): 24
R2AM INCUBATION TIME IN HOURS: <2
TOTAL COLI - MPN (CFU./100ML)
TOTAL COLI - FILTER (CFU./100ML) 0 X
FECAL COLIFORM (CFU/100ML)
HETERO PLATE COUNT (MEMBRANE, CFU/ML)
NORMALIZED MPC, DILUTION 1 CFU/ML
BACKGROUND (CFU/100 ML) >200 X
4,4'-DICHLOROBIPHENYL(SURROGTE%RECDVRY)

METHOD %
**** PESTICIDES - EPA METHOD 608 **

ALPHA BHC (UG/L)	901015
GAMMA BHC (LINDANE) (UG/L)	NO. 011
BETA BHC (UG/L)	NO. 012
HEPTACHLOR (UG/L)	NO. 011
DELTA BHC (UG/L)	NO. 011
ALDRIN (UG/L)	NO. 012
HEPTACHLOR EPOXIDE (UG/L)	NO. 019
ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L)	NO. 019
4,4'-DDE / PP'-DDE (UG/L)	NO. 019
DIELDRIN (UG/L)	NO. 021
ENDRIN (UG/L)	NO. 025
4,4'-DDD / PP'-DDD (UG/L)	NO. 022
ENDOSULFAN II/BETA ENDOSULFAN (UG/L)	NO. 026
4,4'-DDT / PP'-DDT (UG/L)	NO. 034
ENDRIN ALDEHYDE (UG/L)	NO. 012
ENDOSULFAN SULFATE (UG/L)	NO. 117
METHOXYCHLOR (UG/L)	NO. 508
CHLORDANE (UG/L)	NO. 544
TOXAPHENE (UG/L)	NOT ANALYZD
PCB 1016 (UG/L)	NOT ANALYZD
PCB 1221 (UG/L)	NOT ANALYZD
PCB 1232 (UG/L)	NO. 407
PCB 1242 (UG/L)	NOT ANALYZD
PCB 1248 (UG/L)	NOT ANALYZD
PCB 1254 (UG/L)	NO. 326
PCB 1260 (UG/L)	N1.48
DIMETHYL PHTHALATE (UG/L)	N1.42
DIETHYL PHTHALATE (UG/L)	NO. 046
HEXACHLOROBENZENE (UG/L)	NO. 800
DI-N-BUTYL PHTHALATE (UG/L)	NO. 275
BENZYL BUTYL PHTHALATE (UG/L)	NO. 860
BIS (2-ETHYLHEXYL) PHTHALATE (UG/L)	N1.68
DI-N-OCTYL PHTHALATE (UG/L)	901106
**** HERBICIDES - EPA METHOD 8150 ****	NO. 072
2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)	NO. 033
(2,4,5-TRICHLOROPHENOXY) ACETATE (UG/L)	

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE WR-160-B (SAMPLES CONTINUED)	10/09/90	10/09/90	10/09/90	10/09/90	10/09/90	07/05/90
	1020	1020	1020	1020	1020	0844
(D-16-10) OB BCA	906071 WQ	107190 ATL	906070 WQ	906071 WQ	906070 WQ	103368 ATL
PUMPING TIME (HR, MIN):		0210	0210	0210	0210	

NO.022

SILVEX/2(2,4,5-TRICHLOROPHENOXY) (UG/L)

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	DATE	TIME	LOCATION	LAB	ANALYST	STATUS
WR-160 B	07/05/90	0844	903867 WQ	0844	0844	NOT ANALYZD
(D-16-10) 08 BCA	07/05/90	0844	903868 WQ	0844	0844	NOT ANALYZD
PUMPING TIME (HR./MIN)	07/05/90	0844	903867 WQ	0844	0844	NOT ANALYZD
	07/05/90	0844	903868 WQ	0844	0844	NOT ANALYZD
	07/05/90	0844	103368 ATL	0844	0844	NOT ANALYZD
	06/04/90	0920	102515 ATL	0920	0920	NOT ANALYZD
	06/04/90	0920	903260 WQ	0920	0920	NOT ANALYZD

FLOW RATE (GPM)	NOT ANALYZD	63.29	NOT ANALYZD
STATIC WATER LEVEL	NOT ANALYZD	63.29	NOT ANALYZD
PUMPING WATER LEVEL	NOT ANALYZD	63.29	NOT ANALYZD
PH IN FIELD (S.U.)	8.7	8.7	9.0
PH IN LAB (S.U.)	8.5	8.5	8.6
TEMPERATURE (DEGREES CENT.)	28.2	28.2	30.0
DISSOLVED O2 (PPM)	9.3	9.3	3.8
CHLORINE FIELD (MG/L)			NOT ANALYZD
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)	415	415	440
LAB CONDUCTIVITY (UMHO/CM)	400	400	400
CALCULATED CONDUCTIVITY (UMHO/CM)	462	462	441
TOTAL DIS. SOLIDS (180) (MG/L)	268 Y	268 Y	246 Y
TOTAL DIS. SOLIDS CALC (MG/L)	299	299	299
TOTAL SUSPENDED SOLIDS (MG/L)	13.5	13.5	8.6
VOLUME FILTERED, LITERS	1.1	1.1	0.93
TURBIDITY, LAB	14	14	11
TOTAL HARDNESS (CACO3, MG/L)	66	66	50
METHOD C	66	66	520
HARDNESS, CALCIUM (CACO3, MG/L)	85	85	54
HARDNESS, CALCIUM CALC. (CACO3, MG/L)	77.4	77.4	44.9
BICARBONATE ALKALINITY (CACO3, MG/L)	67	67	77
CARBONATE ALKALINITY (CACO3, MG/L)	8.7	8.7	10
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L)	76	76	87
LANGLIER INDEX	0.70	0.70	0.85
ION BALANCE, CALC.	4.55	4.55	1.91
SODIUM ADSORPTION RATIO, CALC.	2.03	2.03	2.78
FLUORIDE (MG/L)			
METHOD B	0.46B	0.46B	0.41B
CHLORIDE (MG/L)	18.9	18.9	18.6
SULFATE (MG/L)	80	80	66
BROMIDE (MG/L)	0.19	0.19	0.18
SODIUM (MG/L)	43	43	47
POTASSIUM ((MG/L)	23	23	30.7
CALCIUM (MG/L)	31	31	18
MAGNESIUM (MG/L)	1.9	1.9	2.2
SILICON (MG/L)	15	15	18
ORTHOPHOSPHATE AS P. (MG/L)	NO.5	NO.5	NO.5
NITRITE AS NITROGEN (MG/L)	<0.10	<0.10	<0.1
NITRATE AS NITROGEN (MG/L)	2.0	2.0	2.3
TOTAL ORGANIC HALOGENS AS CL (UG/L)	N5	N5	N5
TOT. ORG. CARBON, AS C (NPDC, MG/L)	0.36	0.36	1.04
BORON (MG/L)			
COPPER (MG/L)			
IRON (MG/L)	2.1	2.1	<0.10
TOTAL COLI. - MPN (CFU./100ML)			1.6
TOTAL COLI. - FILTR (CFU./100ML)			
INITIALS:			

O X <2

TUCSON WATER SAMPLES
ANALYSIS OF WATER
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE WR-160-B (SAMPLES CONTINUED)	07/05/90	07/05/90	07/05/90	06/04/90	06/04/90
	0844	0844	0844	0920	0920
(D-16-10) 08 BCA	903867 WQ	903868 WQ	903867 WQ	102515 ATL	903260 WQ
PUMPING TIME (HR, MIN):				0028	0028

HETERO. PLATE COUNT (MEMBRANE, CFU/ML)

1370B
>200 X

METHOD B
BACKGROUND (CFU/100 ML) IS
WATER QUALITY LAB NUMBER
ATL REPORT NUMBER FOR QA

903868
103374
103375 R
608

*** PESTICIDES - EPA METHOD 608 **					
ALPHA BHC (UG/L)					<0.01
GAMMA BHC (LINDANE) (UG/L)					<0.01
BETA BHC (UG/L)					<0.01
HEPTACHLOR (UG/L)					<0.01
DELTA BHC (UG/L)					<0.05
ALDRIN (UG/L)					<0.01
HEPTACHLOR EPOXIDE (UG/L)					<0.05
ENDOSULFAN I/ALPHA (UG/L)					<0.01
4,4'-DDE / PP'-DDE (UG/L)					<0.05
DIELDRIN (UG/L)					<0.05
ENDRIN (UG/L)					<0.05
4,4'-DDD / PP'-DDD (UG/L)					<0.05
ENDOSULFAN II/BETA (UG/L)					<0.02
4,4'-DDT / PP'-DDT (UG/L)					<0.05
ENDOSULFAN SULFATE (UG/L)					<0.20
CHLORDANE (UG/L)					<0.20
TOXAPHENE (UG/L)					<0.20
PCB 1242 (UG/L)					<0.20
PCB 1254 (UG/L)					8150
*** HERBICIDES - EPA METHOD 8150 ***					
2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)					<1.0
4-(2,4-DICHLOROPHENOXY) BUTYRATE (UG/L)					<1.0
(2,4,5-TRICHLOROPHENOXY) ACETATE (UG/L)					<0.50
SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L)					<0.10
DALAPON/2,2-DICHLOROPROPANATE (UG/L)					<5.0
DICAMBA/3,6-DICHLORO-2-METHOXY (UG/L)					<0.50
DICHLOROPROP/2(2,4-DICHLOROPHENOXY (UG/L)					<1.0
DINoseb/2-SEC-BUTYL-4,6-DINITRO (UG/L)					<0.10
MCPA/2-METHYL-4-CHLOROPHENOXY (UG/L)					<200
MCPP/MECOPROP/2(4-CHLORO-2-METH (UG/L)					<200

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST : BRAWLEY WASH

WH71WU

SOURCE WR-160.B	06/04/90	06/04/90	06/04/90	05/03/90	05/03/90	05/03/90
	0920	0920	0920	0945	0945	0945
	903260 WQ	903261 WQ	903260 WQ	902670 WQ	902670 WQ	902671 WQ
	0028	0028	0028			
				101386 ATL		

(D-16-10) OB BCA
PUMPING TIME (HR. MIN) :

PH IN FIELD (S.U.)	9.5
PH IN LAB (S.U.)	9.3
TEMPERATURE (DEGREES CENT.)	25
DISSOLVED O2 (PPM)	4.9
CHLORINE FIELD (MG/L)	NOT ANALYZD
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)	422
LAB CONDUCTIVITY (UMHO/CM)	400
CALCULATED CONDUCTIVITY (UMHO/CM)	471
TOTAL DIS. SOLIDS (180) (MG/L)	252 Y
TOTAL DIS. SOLIDS CALC (MG/L)	317
TOTAL SUSPENDED SOLIDS (MG/L)	52
VOLUME FILTERED, LITERS	1.0
TURBIDITY, LAB	49
TOTAL HARDNESS (CACO3, MG/L)	27
METHOD C	29C
HARDNESS CALC. (CACO3, MG/L)	61
HARDNESS, CALCIUM CALC. (CACO3, MG/L)	52.4
BICARBONATE ALKALINITY (CACO3, MG/L)	56
CARBONATE ALKALINITY (CACO3, MG/L)	34
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L)	90
LANGLIER INDEX	1.34
ION BALANCE, CALC.	8.30 X
SODIUM ADSORPTION RATIO, CALC.	2.78
FLUORIDE (MG/L)	0.34B
METHOD B	17.8
CHLORIDE (MG/L)	66
SULFATE (MG/L)	0.18
BROMIDE (MG/L)	50 U
SODIUM (MG/L)	37.9 U
POTASSIUM (MG/L)	21 U
CALCIUM (MG/L)	2 1 U
MAGNESIUM (MG/L)	NO.5
ORTHOPHOSPHATE AS P. (MG/L)	<0.1
NITRITE AS NITROGEN (MG/L)	2.8
NITRATE AS NITROGEN (MG/L)	<5
TOTAL ORGANIC HALOGENS AS CL (UG/L)	0.77
TOT. ORG. CARBON, AS C (NPDC, MG/L)	<0.10
BORON (MG/L)	4.8
COPPER (MG/L)	
IRON (MG/L)	

WATER QUALITY LAB NUMBER	902670
R2AM INCUBATION TEMPERATURE DEGREES C	35
R2AM INCUBATION TIME IN HOURS	48
TOTAL COLI - MPN (CFU/100ML)	<2
TOTAL COLI - FILTR (CFU./100ML)	0

BORON (MG/L)	0.089
COPPER (MG/L)	<0.10
IRON (MG/L)	4.8

WATER QUALITY LAB NUMBER	902670
R2AM INCUBATION TEMPERATURE DEGREES C	35
R2AM INCUBATION TIME IN HOURS	48
TOTAL COLI - MPN (CFU/100ML)	<2
TOTAL COLI - FILTR (CFU./100ML)	0

BORON (MG/L)	0.089
COPPER (MG/L)	<0.10
IRON (MG/L)	4.8

WATER QUALITY LAB NUMBER	902670
R2AM INCUBATION TEMPERATURE DEGREES C	35
R2AM INCUBATION TIME IN HOURS	48
TOTAL COLI - MPN (CFU/100ML)	<2
TOTAL COLI - FILTR (CFU./100ML)	0

BORON (MG/L)	0.089
COPPER (MG/L)	<0.10
IRON (MG/L)	4.8

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	WR-160 B (SAMPLES CONTINUED)	06/04/90	06/04/90	05/03/90	05/03/90	05/03/90	05/03/90
		0920	0920	0945	0945	0945	0945
		903260 WQ	903261 WQ	101386 ATL	902670 WQ	902670 WQ	902671 WQ
		0028	0028				
(D-16-10) O8 BCA							
PUMPING TIME (HR, MIN):							

FECAL COLIFORM (CFU/100ML) HETERO. PLATE COUNT (MEMBRANE, CFU/ML) METHOD B 2150B 626

BACKGROUND (CFU/100 ML)	900611	>200 X
*** PESTICIDES - EPA METHOD 508 **	NO.021	
ALPHA-BHC (UG/L)	NO.023	
GAMMA-BHC (LINDANE) (UG/L)	NO.021	
BETA BHC (UG/L)	NO.023	
HEPTACHLOR (UG/L)	NO.023	
DELTA BHC (UG/L)	NO.022	
ALDRIN (UG/L)	NO.024	
HEPTACHLOR EPOXIDE (UG/L)	NO.039	
ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L)	NO.037	
4,4'-DDE / PP'-DDE (UG/L)	NO.038	
DIELDRIN (UG/L)	NO.041	
ENDRIN (UG/L)	NO.050	
4,4'-DDD / PP'-DDD (UG/L)	NO.045	
ENDOSULFAN II/BETA ENDOSULFAN (UG/L)	NO.053	
4,4'-DDT / PP'-DDT (UG/L)	NO.067	
ENDRIN ALDEHYDE (UG/L)	NO.023	
ENDOSULFAN SULFATE (UG/L)	NO.233	
METHOXYCHLOR (UG/L)	NO.174	
CHLORDANE (UG/L)	NO.303	
TOXAPHENE (UG/L)	NOT ANALYZD	
PCB 1016 (UG/L)	NOT ANALYZD	
PCB 1221 (UG/L)	NO.814	
PCB 1232 (UG/L)	NOT ANALYZD	
PCB 1242 (UG/L)	NOT ANALYZD	
PCB 1248 (UG/L)	NO.326	
PCB 1254 (UG/L)	900720	
PCB 1260 (UG/L)	NO.180 X	

*** HERBICIDES - EPA METHOD 8150 ***
 2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)
 (2,4,5-TRICHLOROPHENOXY) ACETATE (UG/L)
 SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L)

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE: WR-160-B 05/03/90 04/02/90 04/02/90 04/02/90 03/02/90 902670 WQ 100451 ATL 1000 MA 901844 WQ 901844 WQ 1000 1000 181501 ATL

(D-16-10) 08 BCA

PH IN FIELD (S.U.) 9.8
PH IN LAB (S.U.) 10.1
TEMPERATURE (DEGREES CENT.) 21.8
DISSOLVED O2 (PPM) 5.3
CHLORINE FIELD (MG/L) NO.05
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM) 405
LAB CONDUCTIVITY (UMHO/CM) 410
CALCULATED CONDUCTIVITY (UMHO/CM) 480
TOTAL DIS. SOLIDS (180) (MG/L) 256
TOTAL DIS. SOLIDS CALC (MG/L) 324
TOTAL SUSPENDED SOLIDS (MG/L) NT
TURBIDITY, LAB 50
TOTAL HARDNESS (CACO3, MG/L) 20
METHOD C 19.7

HARDNESS CALC. (CACO3, MG/L) 62
HARDNESS, CALCIUM CALC. (CACO3, MG/L) 59.9
BICARBONATE ALKALINITY (CACO3, MG/L) 7.18
CARBONATE ALKALINITY (CACO3, MG/L) 75.22
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L) 82
ALKALINITY HYDROXIDE 0
LANGLIER INDEX 1.60
ION BALANCE, CALC. 6.00
SODIUM ADSORPTION RATIO, CALC. 2.76
FLUORIDE (MG/L) 0.368
METHOD B 19.7
CHLORIDE (MG/L) 79
SULFATE (MG/L) 0.18
BROMIDE (MG/L) 50
SODIUM (MG/L) 50
POTASSIUM ((MG/L)) 38
METHOD Y 24
CALCIUM (MG/L) 24
MAGNESIUM (MG/L) 0.5
METHOD Y 2.7

NITRATE AS NITROGEN (MG/L) 6
TOTAL ORGANIC HALOGENS AS CL (UG/L) 0.61
TOT. ORG. CARBON, AS C (NPOC, MG/L) <0.05 T
BORON (MG/L) 901844
IRON (MG/L) 901844
WATER QUALITY LAB NUMBER 901844
TOTAL COLI - MPN (CFU / 100ML) <2
FECAL COLIFORM (CFU/100ML) <2
HETERO. PLATE COUNT (MEMBRANE, CFU/ML) 36008
METHOD B

INITIALS:

SOURCE WR-160-B (SAMPLES CONTINUED) 05/03/90 04/02/90 04/02/90 04/02/90 03/02/90
 0945 1000 1000 1000 1029
 902670 WQ 100451 ATL MA 901844 WQ 901844 WQ 901844 WQ 181501 ATL
 (D-16-10) 08 BCA

ANALYTE	05/03/90	04/02/90	04/02/90	04/02/90	03/02/90
4,4'-DICHLOROBIPHENYL(SURROGATE/RECOVERY)	88.8%				
METHOD %	900510				
*** PESTICIDES - EPA METHOD 608 **	NO.021				
ALPHA BHC (UG/L)	<0.023				
GAMMA BHC (LINDANE) (UG/L)	NO.021				
BETA BHC (UG/L)	<0.023-B				
HEPTACHLOR (UG/L)	NO.023				
DELTA BHC (UG/L)	NO.022				
ALDRIN (UG/L)	NO.024				
HEPTACHLOR EPOXIDE (UG/L)	NO.039				
ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L)	0.060				
4,4'-DDE / PP'-DDE (UG/L)	NO.038				
DIELDRIN (UG/L)	NO.041				
ENDRIN (UG/L)	NO.050				
4,4'-DDD / PP'-DDD (UG/L)	NO.045				
ENDOSULFAN II/BETA ENDOSULFAN (UG/L)	NO.045				
4,4'-DDT / PP'-DDT (UG/L)	NO.053				
ENDRIN ALDEHYDE (UG/L)	NO.067				
ENDOSULFAN SULFATE (UG/L)	NO.023				
METHOXYCHLOR (UG/L)	NO.233				
CHLORDANE (UG/L)	NO.174				
TOXAPHENE (UG/L)	NO.303				
PCB 1016 (UG/L)	NOT ANALYZD				
PCB 1221 (UG/L)	NOT ANALYZD				
PCB 1232 (UG/L)	NOT ANALYZD				
PCB 1242 (UG/L)	NO.814				
PCB 1248 (UG/L)	NOT ANALYZD				
PCB 1254 (UG/L)	NOT ANALYZD				
PCB 1260 (UG/L)	NO.326				
*** HERBICIDES - EPA METHOD 8150 ***	900523				
2,4-DICHLOROPHENOXYACETIC ACID (UG/L)	NO.200				
SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L)	NO.051				

INITIALS:

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE WR-160 B (D-16-10) 08 BCA 03/02/90 1029 19241 BCL MA 901220 WQ 901220 WQ 353601 AT 901220 WQ 03/02/90 1029 03/02/90 1029 03/02/90 1029 03/02/90 1029

PH IN FIELD (S.U.) 10.8 PH IN LAB (S.U.) 10.4 TEMPERATURE (DEGREES CENT.) 21.5 DISSOLVED O2 (PPM) 10.8

CHLORINE FIELD (MG/L) 700 NOT ANALYZD FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM) 700 NOT ANALYZD LAB CONDUCTIVITY (UMHO/CM) 700 LAB CONDUCTIVITY (UMHO/CM) 700 CALCULATED CONDUCTIVITY (UMHO/CM) 700

TOTAL DIS. SOLIDS(180) (MG/L) 450 TOTAL DIS. SOLIDS CALC (MG/L) 486

TOTAL SUSPENDED SOLIDS (MG/L) 58 VOLUME FILTERED, LITERS 58 TURBIDITY, LAB 11 TOTAL HARDNESS (CACO3, MG/L) 52.6

METHOD C HARDNESS CALC. (CACO3, MG/L) 6 HARDNESS, CALCIUM CALC. (CACO3, MG/L) 4.0 BICARBONATE ALKALINITY (CACO3, MG/L) 113 CARBONATE ALKALINITY (CACO3, MG/L) 101

TOTAL ALKALINITY, CALCULATED (CACO3, MG/L) 113 ALKALINITY HYDROXIDE 139 R LANGLIER INDEX 37 ION BALANCE, CALC. 2.73 R

SODIUM ADSORPTION RATIO, CALC. 17.99 FLUORIDE (MG/L) 0.32

METHOD B CHLORIDE (MG/L) 45.0 SULFATE (MG/L) 108 BROMIDE (MG/L) 0.40 SODIUM (MG/L) 100 POTASSIUM (MG/L) 66 MAGNESIUM (MG/L) 1.6 CALCIUM (MG/L) 0.45 ORTHOPHOSPHATE AS P (MG/L) 21 NITRITE AS NITROGEN (MG/L) 0.4 NITRATE AS NITROGEN (MG/L) <0.1

TOTAL ORGANIC HALOGENS AS CL (UG/L) 6.13 INITIALS: 9

07/28/93

TUCSON WATER SAMPLES ANALYSIS OF WATER
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE WR-160 B (SAMPLES CONTINUED)	03/02/90	03/02/90	03/02/90	03/02/90	03/02/90	03/02/90
	1029	1029	1029	1029	1029	1029
(D-16-10) OB BCA	19241 BCL	MA	901220 WQ	901220 WQ	353601 AT	901221 WQ

TOT ORG. CARBON, AS C (NPOC, MG/L)	1.29	901220
BORON (MG/L)	NO-1	901220
WATER QUALITY LAB NUMBER		35
R2AM INCUBATION TEMPERATURE DEGREES C		24
R2AM INCUBATION TIME IN HOURS		<2
TOTAL COLI - MPN (CFU/100ML)		<2
FECAL COLIFORM (CFU/100ML)		<2
HETEROPLATE COUNT (MEMBRANE, CFU/ML)		5380B

METHOD B

WO REPORT NUMBER FOR QA

ENDRIN KETONE (UG/L) <0.1

ISODRIN (SURROGATE % RECOVERY) 102%

**** PESTICIDES - EPA METHOD 608 **

ALPHA BHC (UG/L)	<0.05	900324	NO.021	NO.021
GAMMA BHC (LINDANE) (UG/L)	<0.05		NO.023	NO.023
BETA BHC (UG/L)	<0.05		NO.021	NO.021
HEPTACHLOR (UG/L)	<0.05		NO.023	NO.023
DELTA BHC (UG/L)	<0.05		NO.023	NO.023
ALDRIN (UG/L)	<0.05		NO.022	NO.022
HEPTACHLOR EPOXIDE (UG/L)	<0.05		NO.024	NO.024
ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L)	<0.05		NO.039	NO.039
4,4'-DDE / PP'-DDE (UG/L)	<0.1		NO.037	NO.037
ENDRIN (UG/L)	<0.1		NO.038	NO.038
4,4'-DDD / PP'-DDD (UG/L)	<0.1		NO.041	NO.041
ENDOSULFAN II/BETA ENDOSULFAN (UG/L)	<0.1		NO.050	NO.050
4,4'-DDT / PP'-DDT (UG/L)	<0.1		NO.045	NO.045
ENDRIN ALDEHYDE	<0.1		NO.067	NO.067
ENDOSULFAN SULFATE (UG/L)	<0.5		NO.023	NO.023
METHOXYCHLOR (UG/L)	<0.5		NO.233	NO.233
CHLORDANE (UG/L)	<0.5		NO.333	NO.333
TOXAPHENE (UG/L)	<1.0		N1.400	N1.400
PCB 1016 (UG/L)	<0.5		NOT ANALYZD	NOT ANALYZD
PCB 1221 (UG/L)	<0.5		NOT ANALYZD	NOT ANALYZD
PCB 1232 (UG/L)	<0.5		NOT ANALYZD	NOT ANALYZD
PCB 1242 (UG/L)	<0.5		NO.244	NO.244
PCB 1248 (UG/L)	<0.5		NO.690	NO.690
PCB 1254 (UG/L)	<0.5		NO.185	NO.185
PCB 1260 (UG/L)	<0.5		NO.326	NO.326

**** HERBICIDES - EPA METHOD 8150 ****

2,4-DICHLOROPHOENXY ACETIC ACID (UG/L)	<0.4			
4(2,4-DICHLOROPHOENXY) BUTYRATE (UG/L)	<0.4			
(2,4,5-TRICHLOROPHOENXY) ACETATE (UG/L)	<0.2			
SILVEX/2(2,4,5-TRICHLOROPHOENXY (UG/L)	<0.4			
DALAPON/2,2-DICHLOROPROPANOATE (UG/L)	<0.4			
DICAMBA/3,6-DICHLORO-2-METHOXY.. (UG/L)	<2.0			

INITIALS:

900324	NO.021	NO.021
900324	NO.023	NO.023
900324	NO.021	NO.021
900324	NO.023	NO.023
900324	NO.023	NO.023
900324	NO.022	NO.022
900324	NO.024	NO.024
900324	NO.039	NO.039
900324	NO.037	NO.037
900324	NO.038	NO.038
900324	NO.041	NO.041
900324	NO.050	NO.050
900324	NO.045	NO.045
900324	NO.053	NO.053
900324	NO.067	NO.067
900324	NO.023	NO.023
900324	NO.233	NO.233
900324	NO.333	NO.333
900324	N1.400	N1.400
900328	NOT ANALYZD	NOT ANALYZD
900328	NOT ANALYZD	NOT ANALYZD
900328	NO.244	NO.244
900328	NO.690	NO.690
900328	NO.185	NO.185
900328	NO.326	NO.326
900328	NO.26	NO.26
901220	NO.05	NO.05
901220	NO.05	NO.05

TUCSON WATER ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE	WR-160-B (SAMPLES CONTINUED)	03/02/90	03/02/90	03/02/90	03/02/90	03/02/90	03/02/90	03/02/90
		1029	1029	1029	1029	1029	1029	1029
	(D-16-10) 08 BCA	19241 BCL	MA	901220 WQ	901220 WQ	901220 WQ	353601 AT	901220 WQ
								901221 WQ

DICHLOROPROP/2 (2,4-DICHLOROPHENO... (UG/L)
DINOSB/2-SEC-BUTYL-4,6-DINITRO... (UG/L)
MCPA/2-METHYL-4-CHLOROPHENOXY... (UG/L)
MCP/MECOPROP/2 (4-CHLORO-2-METH... (UG/L)

<0.8
<0.2
<100
<100

INITIALS:

TUCSON WATER SAMPLES
ANALYSIS OF WATER SAMPLES
CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE: WR-160 C	04/02/90	04/02/90	04/02/90	04/02/90
	1143	1143	1143	1143
(D-16-10) 08 BCA	100452 ATL	MA	901845 WQ	901845 WQ

PH IN FIELD (S.U.)	12.2			
PH IN LAB (S.U.)		21.6		
TEMPERATURE (DEGREES CENT.)				
DISSOLVED O2 (PPM)				
CHLORINE, FIELD (MG/L)				
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM)		6900		
LAB CONDUCTIVITY (UMHO/CM)				
CALCULATED CONDUCTIVITY (UMHO/CM)				
TOTAL DIS. SOLIDS (180) (MG/L)				
TOTAL SUSPENDED SOLIDS (MG/L)				
TURBIDITY, LAB				
TOTAL HARDNESS (CACO3, MG/L)				
HARDNESS CALC. (CACO3, MG/L)				
HARDNESS, CALCIUM CALC. (CACO3, MG/L)				
BICARBONATE ALKALINITY (CACO3, MG/L)				
CARBONATE ALKALINITY (CACO3, MG/L)				
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L)				
ALKALINITY HYDROXIDE				
TION BALANCE, CALC				
SODIUM ADSORPTION RATIO, CALC.				
FLUORIDE (MG/L)				
METHOD B				
CHLORIDE (MG/L)				
SULFATE (MG/L)				
BROMIDE (MG/L)				
SODIUM (MG/L)				
POTASSIUM ((MG/L)				
CALCIUM (MG/L)				
MAGNESIUM (MG/L)				
NITRATE AS NITROGEN (MG/L)				
TOTAL ORGANIC HALOGENS AS CL (UG/L)				
TOT. ORG. CARBON, AS C (NPOC, MG/L)				
BORON (MG/L)				
IRON (MG/L)				
WATER QUALITY LAB NUMBER		901845 Z		

TOTAL COLI - MPN (CFU/100ML)	<2			
FECAL COLIFORM (CFU/100ML)	<2			
HETERO. PLATE COUNT (MEMBRANE, CFU/ML)	1			
**** PESTICIDES - EPA METHOD 608 **				
**** HERBICIDES - EPA METHOD 8150 ****				

INITIALS:

NOT COLLECT
NOT COLLECT

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE: WR-170 A 03/02/90 1130 181502 ATL MA 901222 WQ 901222 WQ 03/02/90 1130 901222 WQ 03/02/90 1130

(D-16-10) 08 BCA

PH IN FIELD (S.U.) 7.7 7.7
PH IN LAB (S.U.) 7.5 7.5
TEMPERATURE (DEGREES CENT.) 21.5 21.5
DISSOLVED O2 (PPM) NOT ANALYZD
CHLORINE FIELD (MG/L) NOT ANALYZD
FIELD CONDUCTIVITY (UMHO/CM AT FIELD TEM) 415 415
LAB CONDUCTIVITY (UMHO/CM) 460 460
CALCULATED CONDUCTIVITY (UMHO/CM) 491 491
TOTAL DIS. SOLIDS(180) (MG/L) 348 348
TOTAL DIS. SOLIDS CALC (MG/L) 304 Y 304 Y
TOTAL SUSPENDED SOLIDS (MG/L) 355 355
VOLUME FILTERED LITERS 26.3 26.3
TURBIDITY LAB 1.23 1.23
TOTAL HARDNESS (CACO3, MG/L) 80 80
TOTAL HARDNESS (CACO3, MG/L) 105 105
TOTAL HARDNESS (CACO3, MG/L) 106 R 106 R
TOTAL HARDNESS (CACO3, MG/L) 106C 106C
TOTAL HARDNESS (CACO3, MG/L) 110 110
TOTAL HARDNESS (CACO3, MG/L) 97.4 97.4
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L) 145 145
LANGLIER INDEX 145 145
ION BALANCE, CALC. -0.07 -0.07
SODIUM ADSORPTION RATIO, CALC. 1.02 1.02
FLUORIDE (MG/L) 2.36 2.36

METHOD C

HARDNESS CALC. (CACO3, MG/L)
HARDNESS, CALCIUM CALC. (CACO3, MG/L)
BICARBONATE ALKALINITY (CACO3, MG/L)
TOTAL ALKALINITY, CALCULATED (CACO3, MG/L)
LANGLIER INDEX
ION BALANCE, CALC.
SODIUM ADSORPTION RATIO, CALC.
FLUORIDE (MG/L)

METHOD B

CHLORIDE (MG/L) 0.23B 0.23B
SULFATE (MG/L) 25.4 25.4
BROMIDE (MG/L) 34 34
SODIUM (MG/L) 0.23 0.23
POTASSIUM (MG/L) 57 57
CALCIUM (MG/L) 2.0 2.0
MAGNESIUM (MG/L) 39 39
ORTHOPHOSPHATE AS P. (MG/L) 3.1 3.1
NITRITE AS NITROGEN (MG/L) NO.5 NO.5
NITRATE AS NITROGEN (MG/L) NO.1 NO.1
TOTAL ORGANIC HALOGENS AS CL (UG/L) 3.9 3.9
TOT. ORG. CARBON, AS C (NPOC, MG/L) <3 <3

METHOD B

BORON (MG/L) 0.13 T 0.13 T
WATER QUALITY LAB NUMBER 901222 901222
R2AM INCUBATION TEMPERATURE DEGREES C 35 35
R2AM INCUBATION TIME IN HOURS 24 24
TOTAL COLI - MPN (CFU/100ML) <2 <2
FECAL COLIFORM (CFU/100ML) <2 <2
HETERO. PLATE COUNT (MEMBRANE, CFU/ML) 1057B 1057B

INITIALS:

07/28/93

TUCSON WATER ANALYSIS OF WATER SAMPLES CH2M HILL DATA REQUEST: BRAWLEY WASH

SOURCE WR-170 A (SAMPLES CONTINUED) 03/02/90 03/02/90 03/02/90 03/02/90 1130 1130 1130 1130 MA 901222 WQ 901222 WQ 901222 WQ 901222 WQ (D-16-10) 08 BCA 181502 ATL

WQ REPORT NUMBER FOR QA	NOT ANALYZD
*** PESTICIDES - EPA METHOD 608 ***	900324
ALPHA BHC (UG/L)	NO. 021
GAMMA BHC (LINDANE) (UG/L)	NO. 023
BETA BHC (UG/L)	NO. 021
HEPTACHLOR (UG/L)	NO. 023
DELTA BHC (UG/L)	NO. 023
ALDRIN (UG/L)	NO. 022
HEPTACHLOR EPOXIDE (UG/L)	NO. 024
ENDOSULFAN I/ALPHA ENDOSULFAN (UG/L)	NO. 039
4,4'-DDE / PP'-DDE (UG/L)	NO. 037
DIELDRIN (UG/L)	NO. 038
4,4'-DDD / PP'-DDD (UG/L)	NO. 041
ENDOSULFAN II/BETA ENDOSULFAN (UG/L)	NO. 050
4,4'-DDT / PP'-DDT (UG/L)	NO. 045
ENDRIN ALDEHYDE (UG/L)	NO. 053
ENDOSULFAN SULFATE (UG/L)	NO. 067
METHOXYCHLOR (UG/L)	NO. 023
CHLORDANE (UG/L)	NO. 033
TOXAPHENE (UG/L)	N1.400
PCB 1016 (UG/L)	NOT ANALYZD
PCB 1221 (UG/L)	NOT ANALYZD
PCB 1232 (UG/L)	NO. 244
PCB 1242 (UG/L)	NO. 690
PCB 1248 (UG/L)	NO. 185
PCB 1254 (UG/L)	NO. 326
PCB 1260 (UG/L)	900328
*** HERBICIDES - EPA METHOD 8150 ***	NO. 26
2,4-DICHLOROPHENOXY ACETIC ACID (UG/L)	NO. 05
SILVEX/2(2,4,5-TRICHLOROPHENOXY (UG/L)	

DATE: 6/3/93

SIGNATURE: