

EVALUATION OF GROUND-WATER MONITORING
PLAN (WETS)

VOLUME II - APPENDICES

COMPLETION REPORT
CONTRACT NO. 26-235-816-40-2-050-0735
ARIZONA DEPARTMENT OF HEALTH SERVICES
BUREAU OF WATER QUALITY CONTROL

By

L. G. Wilson
P. Martin
E. D. Lonergan

Water Resources Research Center
The University of Arizona
Tucson, Arizona

November 1, 1977

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AREA, OCTOBER 1, 1976 TO SEPTEMBER 30, 1977

APPENDIX A

**COPY OF WATER ENGINEERING AND
TECHNICAL SERVICE, INC. METHODOLOGY
AND FLOW DIAGRAM**

I. Proposed Waste Discharge

- A. Quantity of waste (daily, monthly, annual)
- B. Type of waste
 - 1. liquid
 - a. dissolved constituents in solute
 - b. colloidal suspension or solid particulate matter in liquid
 - 2. solid
 - a. water soluble
 - b. acid or base soluble
 - c. insoluble
- C. Types of constituents in the waste
 - 1. chemical
 - 2. bacteriological
 - 3. thermal
 - 4. radioactive
 - 5. physical
- D. Quality (constituents, concentration)
 - 1. list of constituents, sources and concentration
 - a. transport characteristics of each constituent
 - b. geochemical reactions which will or could occur during surface transport, percolation or rainfall
 - 2. determine the dispersion and dilution factors during transport, rainfall, percolation, or upon entering a body of water (surface or groundwater)
 - 3. draw a flow diagram showing the effects of the present treatment of waste

E. Does the waste constitute a pollutant?

1. if yes, proceed with study
2. if no, terminate study

F. Alternative methods of disposal of waste

1. discharge into environment

a. streams and lakes

- 1) perennial
 - a) influent type
 - b) effluent type
- 2) ephemeral

b. landfill

- 1) total volume of waste discharge into landfill per annum
 - a) solid
 - b) liquid
- 2) volume of infiltration
 - a) from liquid waste
 - b) from rainfall dissolving solid waste
- 3) leachate migration

c. disposal on land surface or into lagoons

- 1) sealed
 - a) detailed description of area and sealing methods
 - b) volume of leakage
- 2) unsealed
 - a) volume of recharge or percolation
 - 3) total evaporation

d. injection wells

- 1) formation which receives the waste
- 2) well characteristics

- e. treated to reduce contaminants to acceptable level

- 1) chemical reactions which would precipitate or change the form of isotopes or compounds
- 2) cooling
- 3) filtering
- 4) chlorination
- 5) dilution

2. reuse of waste

a. contained beneficial reuse

- 1) without treatment
- 2) with treatment

b. irrigation

- 1) volume of consumptive use of vegetation
- 2) volume recharged or tailwater
- 3) increase in constituent levels

G. Location of pollution sources

1. overlay of basin map

II. Initial Data

A. Base map of basin and/or area within which the pollution is expected to occur

B. All publications on geology and groundwater resources of the area or basin

C. All the available well data within the basin or area

1. well characteristics
2. water levels through time
3. pumping tests data
4. lithologic logs
5. chemical data of the groundwaters

D. NASA imagery of basin and low altitude aerial photography of study area

III. Delineating the Physical Parameters of the Environment

A. Geology (description)

1. map (overlay) the geology
 - a. surface geology
 - 1) remote sensing analysis of aerial imagery
 - 2) field observation and mapping
 - b. structural features
 - 1) faults
 - 2) joints
 - 3) subsidence cracks
2. depth to bedrock
 - a. contour bedrock surface (map overlay)
 - b. points (wells) where depth to bedrock complex known
3. stratigraphy
 - a. geologic cross sections showing stratigraphic sequence
 - 1) unsaturated zone
 - 2) aquiclude
 - 3) aquitards
 - 4) aquifers
 - 5) bedrock complex

b. lithologic characteristics

B. Hydrology

1. unsaturated zone parameters and aquifer parameters (map overlays)

a. transmissivity

b. storage coefficient

c. diffusivity

2. groundwater characteristics

a. depth to water (map overlay)

b. groundwater flow direction (map overlay)

1) natural conditions

2) changes from natural conditions caused by withdrawal from
the aquifer

c. chemical and physical characteristics (map overlay)

1) natural base

2) historical changes which have occurred

3. recharge

a. description of stream flow source and headwaters (map overlay)

b. intermittent recharge caused by precipitation

c. planned recharge from waste

d. chemical and physical characteristics of recharge from each
source

e. volume of recharge from each source

4. perched water

a. caliche or other aquitard

b. leakage where perched water percolates to water table

C. Water budget

1. volume of withdrawal from basin
 - a. pumping
 - 1) location of water supply sources (map overlay)
 - b. evapotranspiration
 - c. outflow of basin
2. volume of inflow to basin
 - a. subsurface inflow
 - b. incidental recharge
 - c. planned recharge
3. consumptive use of groundwater
 - a. $(\text{volume of withdrawal within the basin} + \text{evapotranspiration})$
 $+ \text{volume of outflow}) - (\text{volume of inflow} + \text{volume of recharge})$

IV. Analytical Model

A. Types

1. computer
2. mathematical
3. logical

B. Decisions

1. are the characteristics such that the contaminants will not reach the groundwater? for each case project the size and shape of the contaminated area through time

- a. geologic control
 - 1) monitor the area and materials to which the contaminants will be confined
 - b. extreme depth to groundwater
 - 1) monitor the unsaturated zone
 - c. geochemical reactions that will change the contaminants to within acceptable limits prior to interception by the groundwater
 - 1) monitor the area of geochemical change to determine if a reversal reaction could occur
 - d. sealed ponds or landfill
 - 1) monitor shallow depths for seepage
 - e. perched water
 - 1) monitor perched water
 - 2) monitor unsaturated zone
 - a) above the perched water
 - b) below the perched water
 - f. is the time frame of dumping the wastes limited so that the contaminants will remain localized?
 - 1) monitor the projected depth and areal extent of the waste penetration
2. are the characteristics such that the contaminants will reach the groundwater?
- a. what amount of degradation can occur without changing the beneficial use of the groundwater?
 - 1) project the volume of waste which will be required to exceed this limit

b. what is the projected volume of waste that will reach the groundwater?

- 1) what contaminants?
- 2) what concentration?
- 3) what time frame?

c. what is the projected shape and dimension of the potential contaminated area?

- 1) two dimensional
- 2) three dimensional

3. injection wells

a. what is the shape and dimension of the formation utilized for the waste disposal?

- 1) what shape and dimension will the contaminated water develop?

b. is the formation totally confined?

- 1) if yes, what volume of waste can it hold?

2) if no, monitor above and below the formation utilized for waste disposal

C. Final determinations

1. the location of wells or well sites in the monitoring network

a. field check the wells already constructed to determine if they can be used for monitoring purposes

2. the depth and perforated area of each monitoring well

3. the contaminant or contaminants to monitor

4. the time frame of the sampling periods

5. type of monitoring required

- a. representative water samples for chemical and physical analysis
- b. instrumentation for the determination of changes in soil moisture
- c. instrumentation for the determination of changes in radioactivity
- d. temperature changes

6. will scavenger wells limit the area of contamination?

- a. number required
- b. total depth of wells
- c. diameter of well
- d. volume of water to be pumped

 1) from each well

 2) total

- e. method of disposal of pumped water

7. what is the cumulative impact on the groundwater reservoir?

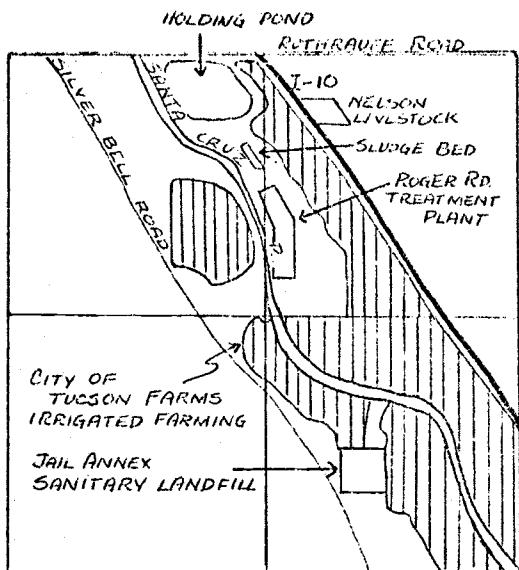
- a. combination of existing discharges of wastes
- b. addition of new discharge of waste
- c. degradation which will occur within the aquifer
 - 1) areal extent of degradation

APPENDIX B
SOURCE EVALUATION QUESTIONNAIRE

STATEWIDE GROUND-WATER MONITORING PLAN

POLLUTION POTENTIAL OF WASTE SOURCES

- A. WASTE SOURCE: Roger Road Wastewater Treatment Plant (Effluent)
- B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE: City of Tucson
- C. LOCATION OF SOURCE: (D-13-13)21C
- D. LOCATION SKETCH:



- E. TYPE OF WASTE: SOLID LIQUID
1. Dissolved or microbial
 2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify Sewage effluent
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE:

Wastewater Treated 1975-76: 12,013.92 MG
Plant No. 1 3995.70
Plant No. 2 3310.39
Plant No. 3 4707.83

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophyls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

REPRESENTATIVE ANALYSES:Date of analysis: 1975-76Location: Final Effluent Plant No. 1Major

Calcium	<u>72</u>	mg/l	meq/l
Magnesium	<u>18</u>	mg/l	meq/l
Sodium	<u>98</u>	mg/l	meq/l
Potassium		mg/l	meq/l
Carbonate	<u>0</u>	mg/l	meq/l
Bicarbonate	<u>294</u>	mg/l	meq/l
Sulfate	<u>152</u>	mg/l	meq/l
Chloride	<u>95</u>	mg/l	meq/l
Nitrate		mg/l	meq/l

Trace

Arsenic		mg/l
Barium		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Cyanide		mg/l
Fluoride		mg/l
Iron	<u>0.2</u>	mg/l
Lead		mg/l
Manganese		mg/l
Mercury		mg/l
Selenium		mg/l
Silver		mg/l
Strontium		mg/l
Zinc		mg/l

Other Constituents

Nitrate-N	<u>0.0</u>	mg/l
Ammonia-N	<u>17.1</u>	mg/l
KJN	<u>25.0</u>	mg/l
Total-N	<u>25.2</u>	mg/l
Specific conductance		mg/l
Total dissolved solids	<u>671</u>	mg/l
pH	<u>7.5</u>	mg/l
Silica	<u>42</u>	mg/l
Boron		mg/l
Fluoride		mg/l
Phosphorous	<u>18</u>	mg/l
Hardness		mg/l
Alkalinity	<u>241</u>	mg/l
B.O.D.	<u>21</u>	mg/l
C.O.D.	<u>48</u>	mg/l
S.S.	<u>68</u>	mg/l
Organic-N	<u>7.9</u>	mg/l

Microorganisms

Total coliform _____ #/100ml

Fecal coliform _____ #/100ml

Fecal Strep. _____ #/100ml

I. REPRESENTATIVE ANALYSES:

Date of analysis: 1975-76

Location: Final Effluent
(Plant No. 2)

Major

Calcium	<u>67</u>	mg/l	meq/l
Magnesium	<u>18</u>	mg/l	meq/l
Sodium	<u>89</u>	mg/l	meq/l
Potassium		mg/l	meq/l
Carbonate	<u>0</u>	mg/l	meq/l
Bicarbonate	<u>312</u>	mg/l	meq/l
Sulfate	<u>138</u>	mg/l	meq/l
Chloride	<u>96</u>	mg/l	meq/l
Nitrate		mg/l	meq/l

Trace

Arsenic		mg/l
Barium		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Cyanide		mg/l
Fluoride		mg/l
Iron	<u>0.2</u>	mg/l
Lead		mg/l
Manganese		mg/l
Mercury		mg/l
Selenium		mg/l
Silver		mg/l
Strontium		mg/l
Zinc		mg/l

Other Constituents

Nitrate-N	<u>0.0</u>	mg/l
Ammonia-N	<u>21.7</u>	mg/l
KJN		mg/l
Total-N	<u>31.5</u>	mg/l
Specific conductance		mg/l
Total dissolved solids	<u>662</u>	mg/l
pH	<u>7.6</u>	mg/l
Silica	<u>43</u>	mg/l
Boron		mg/l
Fluoride		mg/l
Phosphate, Ortho	<u>28</u>	mg/l
Hardness	<u>18</u>	mg/l
Alkalinity	<u>256</u>	mg/l
B.O.D.	<u>56</u>	mg/l
C.O.D.	<u>115</u>	mg/l
S.S.	<u>85</u>	mg/l
	<u>9.7</u>	mg/l

Microorganisms

Total coliform		#/100ml
Fecal coliform		#/100ml
Fecal Strep.		#/100ml

J. METHODS OF DISPOSAL:

1. Discharged to the environment
a. Oxidation pond or holding pond
b. Percolation or evaporation pond
c. Surface spreading
d. Dry stream bed 32,564.72 ac. ft.
e. Landfills
f. Disposal wells

2. Reused

- a. On-site reuse
(i) Specify reuse: _____

(ii) Treated

(iii) Untreated

b. Irrigation

(i) Estimated amount: Total 3185.57 ac.ft. 1975-1976

(ii) Location: Hancock Land and Cattle co. 2980.69 ac.ft.

Plant Irrigation 204.88 ac.ft.

3. Treated

- a. Chemical reactions
b. Cooling
c. Filtering
d. Chlorination
e. Dilution
f. Ultimate disposal: _____

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:
No:

STATEWIDE GROUND-WATER MONITORING PLAN

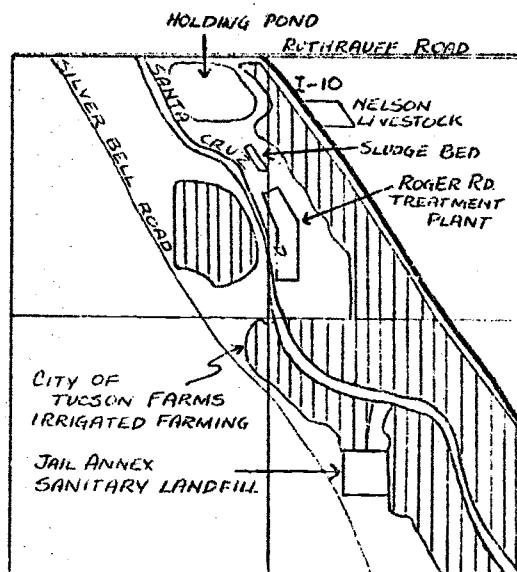
POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: Sludge beds Roger Rd Treatment Plant

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE:

C. LOCATION OF SOURCE: (D-13-13) 20 a a b

D. LOCATION SKETCH:



E. TYPE OF WASTE: SOLID LIQUID

1. Dissolved or microbial
2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify Sludge
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE:

470 Tons per year (1975-1976)

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophyls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

I. REPRESENTATIVE ANALYSES:

See attached

Date of analysis:Location:Major

Calcium	_____ mg/l	_____ meq/l
Magnesium	_____ mg/l	_____ meq/l
Sodium	_____ mg/l	_____ meq/l
Potassium	_____ mg/l	_____ meq/l
Carbonate	_____ mg/l	_____ meq/l
Bicarbonate	_____ mg/l	_____ meq/l
Sulfate	_____ mg/l	_____ meq/l
Chloride	_____ mg/l	_____ meq/l
Nitrate	_____ mg/l	_____ meq/l

Trace

Arsenic	_____ mg/l
Barium	_____ mg/l
Cadmium	_____ mg/l
Chromium	_____ mg/l
Copper	_____ mg/l
Cyanide	_____ mg/l
Fluoride	_____ mg/l
Iron	_____ mg/l
Lead	_____ mg/l
Manganese	_____ mg/l
Mercury	_____ mg/l
Selenium	_____ mg/l
Silver	_____ mg/l
Strontium	_____ mg/l
Zinc	_____ mg/l

Other Constituents

Nitrate-N	_____ mg/l
Ammonia-N	_____ mg/l
KJN	_____ mg/l
Total-N	_____ mg/l
Specific conductance	_____ mg/l
Total dissolved solids	_____ mg/l
pH	_____ mg/l
Silica	_____ mg/l
Boron	_____ mg/l
Fluoride	_____ mg/l
Phosphorous	_____ mg/l
Hardness	_____ mg/l
Alkalinity	_____ mg/l
B.O.D.	_____ mg/l
C.O.D.	_____ mg/l
S.S.	_____ mg/l

Microorganisms

Total coliform	_____ #/100ml
Fecal coliform	_____ #/100ml
Fecal Strep.	_____ #/100ml

TABLE 1

TYPICAL CHEMICAL COMPOSITION OF RAW AND ANAEROBICALLY DIGESTED SLUDGE

Item	Raw Primary Sludge		Digested Sludge	
	Range	Typical	Range	Typical
Total dry solids (TS), %	2.0-7.0	4.0	6.0-12.0	10.0
Volatile solids (% of TS)	60-80	65	30-60	40.0
Grease and fats (ether soluble, % of TS)	6.0-30.0	---	5.0-20.0	---
Protein (% of TS)	20-30	25	15-20	18
Nitrogen (N, % of TS)	1.5-4.0	2.5	1.6-6.0	3.0
Phosphorus (P_2O_5 , % of TS)	0.8-2.8	1.6	1.5-4.0	2.5
Potash (K_2O , % of TS)	0-1.0	0.4	0.0-3.0	1.0
Cellulose (% of TS)	8.0-15.0	10.0	8.0-15.0	10.0
Iron (not as sulfide)	2.0-4.0	2.5	3.0-8.0	4.0
Silica (SiO_2 , % of TS)	15.0-20.0	---	10.0-20.0	---
pH	5.0-8.0	6.0	6.5-7.5	7.0
Alkalinity (mg/liter as $CaCO_3$)	500-1,500	600	2,500-3,500	3,000
Organic acids (mg/liter as HAc)	200-2,000	500	100-600	200
Thermal content (BTU/lb) (kg cal/g)	6,800-10,000 3.7-5.6	7,600* 4.2*	2,700-6,800 1.5-3.7	4,000** 2.2**

Note: --- means data not shown in reference cited.

* Based on 65 percent volatile matter.

** Based on 40 percent volatile matter.

TABLE 2
Metals In Sludge
1971-1973

Element	Literature		Atomic Absorption	
	Geometric Mean (ppm)	Spread*	Geometric Mean (ppm)	
Cd	61	5.89	93	
Cu	906	2.66	1840	
Hg	14.5	5.24	3.2	
Ni	223	4.54	733	
Pb	404	4.13	2400	
Zn	2420	2.78	6380	

* Spread is antilog of standard deviation of log-normal distribution.

J. METHODS OF DISPOSAL:

1. Discharged to the environment
- a. Oxidation pond or holding pond
 - b. Percolation or evaporation pond
 - c. Surface spreading
 - d. Dry stream bed
 - e. Landfills
 - f. Disposal wells
 - g. Other drying beds

2. Reused

- a. On-site reuse

(i) Specify reuse: Applied as amendment on City Parks

(ii) Treated

(iii) Untreated

- b. Irrigation

(i) Estimated amount: _____

(ii) Location: _____

3. Treated

- a. Chemical reactions
 - b. Cooling
 - c. Filtering
 - d. Chlorination
 - e. Dilution
 - f. Ultimate disposal: _____
-
-

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:
No:

STATEWIDE GROUND-WATER MONITORING PLAN

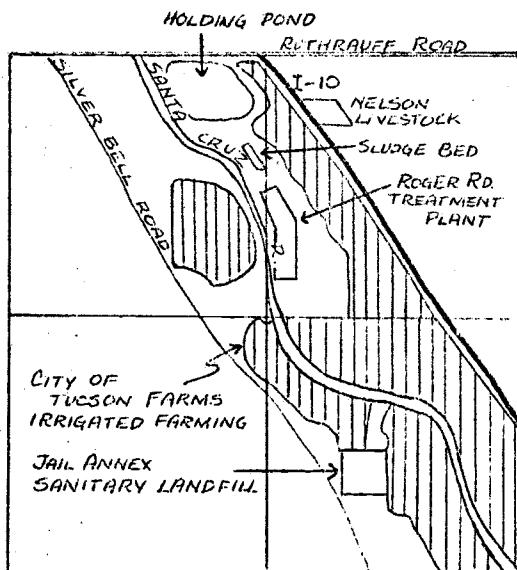
POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: El Camino del Cerro, Holding Pond

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE: City of Tucson

C. LOCATION OF SOURCE: (D-13-13) 20 a a b

D. LOCATION SKETCH:



E. TYPE OF WASTE: SOLID LIQUID

1. Dissolved or microbial
2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify Sewage Effluent
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE:

Area Pond = 42 acres

Volume Pond = 380 acre ft. A portion of flow from Plant 3 is diverted to this pond - i.e., up to 1.38×104 acre ft. per year

Seepage assumed to be zero.

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophyls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

I. REPRESENTATIVE ANALYSES:

Date of analysis: Not given

Location: Pond

Major

Calcium	mg/l	meq/l
Magnesium	mg/l	meq/l
Sodium	mg/l	meq/l
Potassium	mg/l	meq/l
Carbonate	mg/l	meq/l
Bicarbonate	mg/l	meq/l
Sulfate	mg/l	meq/l
Chloride	80 mg/l	meq/l
Nitrate	mg/l	meq/l

Trace

Arsenic	mg/l
Barium	mg/l
Cadmium	mg/l
Chromium	mg/l
Copper	mg/l
Cyanide	mg/l
Fluoride	mg/l
Iron	mg/l
Lead	mg/l
Manganese	mg/l
Mercury	mg/l
Selenium	mg/l
Silver	mg/l
Strontium	mg/l
Zinc	mg/l

Other Constituents

Nitrate-N	2.5 mg/l
Ammonia-N	19 mg/l
KJN	28.2 mg/l
Total-N	31 mg/l
Specific conductance	mg/l
Total dissolved solids	mg/l
pH	7.8 mg/l
Silica	mg/l
Boron	mg/l
Fluoride	mg/l
Phosphorous	mg/l
Hardness	mg/l
Alkalinity(CaCO ₃)	230 mg/l
B.O.D.	30 mg/l
C.O.D.	100 mg/l
S.S.	mg/l
Dissolved Oxygen	6.5 mg/l

Microorganisms

Total coliform	#/100ml
Fecal coliform	#/100ml
Fecal Strep.	#/100ml

J. METHODS OF DISPOSAL:

1. Discharged to the environment

a. Oxidation pond or holding pond

b. Percolation or evaporation pond

c. Surface spreading

d. Dry stream bed

e. Landfills

f. Disposal wells

2. Reused

a. On-site reuse

(i) Specify reuse: _____

(ii) Treated

(iii) Untreated

b. Irrigation

(i) Estimated amount: _____

(ii) Location: _____

3. Treated

a. Chemical reactions

b. Cooling

c. Filtering

d. Chlorination

e. Dilution

f. Ultimate disposal: _____

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:

No:

STATEWIDE GROUND-WATER MONITORING PLAN

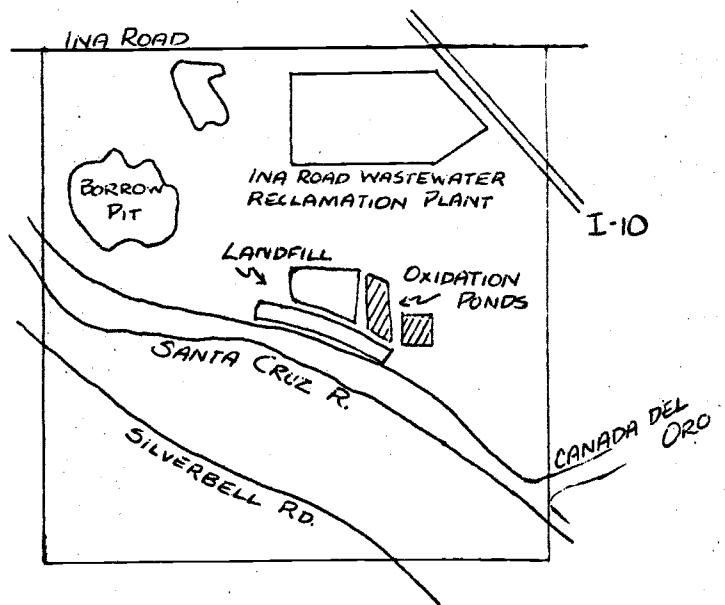
POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: Ina Road Oxidation Ponds

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE:

C. LOCATION OF SOURCE: (D-13-12) 1dba

D. LOCATION SKETCH:



E. TYPE OF WASTE: SOLID LIQUID

1. Dissolved or microbial

2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify Sewage Effluent
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE:

3.5 mgd - \approx .7 mgd are used to irrigate
Arthur Pack Park Golf Course
(No longer in use)

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophylls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

LIMA ROAD OXIDATION POND DISCHARGE NO. 1

DATE	EC	NH ₃	KA	CA	T135 R12E SEC. 1 DBA				NO2/3	KJN	TCIN	HNE				
					CL	HCC3	CO ₃	SO ₄								
1/7/77	1.00	7.29	101.6	7.6	48.4	5.6	101.0	414.8	0.0	12.0	28.6	2.7	38.6	140.9		
1/14/77	.99	7.16	98.0	8.7	47.2	5.5	93.0	427.0	0.0	3.0	28.6	3.1	36.8	37.5	140.5	
1/26/77	1.00	7.48	106.5	9.1	49.6	5.7	405.0	0.0	0.0	17.0	28.6	3.1	33.0	39.7	147.4	
2/4/77	.98	7.30	99.2	8.5	48.4	5.3	101.0	434.3	0.0	4.0	27.6	4.9	36.4	37.4	142.7	
2/10/77	.99	7.17	93.2	11.6	44.8	5.8	93.0	424.6	0.0	9.0	28.3	2.2	35.2	35.7	135.8	
2/16/77	.98	7.33	94.4	11.6	44.8	5.5	78.0	422.1	0.0	24.0	28.2	2.7	35.4	36.1	134.5	
3/4/77	.94	7.30	104.1	11.1	47.2	5.5	90.0	412.3	0.0	25.0	38.6	2.7	36.7	37.3	140.5	
B-18	3/16/77	1.00	7.30	105.3	12.1	48.4	5.6	101.0	429.4	0.0	8.0	29.1	2.7	33.5	34.1	143.9
	4/29/77	1.05	7.42	95.6	12.1	50.8	4.6	84.0	422.1	0.0	7.0	27.0	3.1	32.3	34.0	145.6
	5/4/77	1.06	7.39	96.8	9.7	50.8	4.6	80.0	356.7	0.0	69.0	25.5	3.5	37.2	38.1	145.8
	5/16/77	.95	7.40	100.4	12.1	47.2	4.7	77.0	348.9	0.0	52.0	21.3	3.1	33.6	34.5	137.2
	6/1/77	1.02	7.43	105.9	15.3	48.4	5.3	82.0	363.6	0.0	41.0	24.1	3.5	31.7	42.5	142.7
	6/13/77	.93	7.29	131.7	14.9	50.6	5.3	87.0	336.7	0.0	60.0	21.3	1.8	32.1	32.5	140.2
	6/27/77	.98	7.40	117.0	11.1	34.0	5.6	87.0	324.5	0.0	58.0	22.1	3.1	27.3	28.0	10b.0

INA ROAD OXIDATION POND DISCHARGE NO. 2

DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	PARD
															--
1/ 7/77	1.09	7.30	101.6	8.0	46.0	5.7	90.0	381.9	0.0	48.0	30.2	1.8	38.6	39.1	138.4
1/14/77	.99	7.33	99.2	7.6	47.2	5.5	98.0	392.8	0.0	53.0	31.4	3.1	39.7	40.4	140.5
1/26/77	1.00	7.65	102.9	11.7	48.4	5.8	95.0	380.6	0.0	47.0	30.7	2.7	40.6	41.2	144.8
2/ 4/77	1.09	7.32	102.9	7.5	64.1	5.9	89.0	400.2	0.0	45.0	28.7	1.3	36.4	36.7	184.4
2/10/77	1.01	7.33	105.3	12.1	47.2	5.7	80.0	397.7	0.0	48.0	29.7	1.8	37.8	37.7	141.4
2/18/77	1.01	7.33	101.6	11.9	48.4	5.5	78.0	402.6	0.0	54.0	31.5	2.7	37.8	38.5	143.5
3/ 4/77	.97	7.45	95.6	12.6	43.6	5.3	85.0	383.0	0.0	54.0	30.1	3.5	37.2	36.0	130.7
3/18/77	1.05	7.37	107.7	12.1	46.0	6.3	97.0	417.2	0.0	48.0	27.2	3.5	33.0	33.6	140.8
4/29/77	1.07	7.38	99.2	13.3	49.6	5.1	79.0	366.0	0.0	66.0	26.2	3.5	35.8	36.6	144.9
5/16/77	1.01	7.44	107.7	12.1	47.2	5.3	85.0	361.1	0.0	56.0	27.7	1.8	36.4	38.8	139.7
6/ 1/77	1.02	7.55	107.1	15.7	49.6	5.3	82.0	361.1	0.0	70.0	26.3	4.4	36.4	38.4	145.7
6/13/77	1.03	7.40	129.8	14.9	49.2	6.1	82.0	353.8	0.0	70.0	24.2	3.1	35.0	35.7	148.0
6/21/77	1.02	7.30	145.5	11.2	31.0	5.3	77.0	351.4	0.0	65.0	24.8	3.5	33.9	31.7	99.3

B-19

J. METHODS OF DISPOSAL:

1. Discharged to the environment
 - a. Oxidation pond or holding pond
 - b. Percolation or evaporation pond
 - c. Surface spreading
 - d. Dry stream bed
 - e. Landfills
 - f. Disposal wells

2. Reused
 - a. On-site reuse
 - (i) Specify reuse: _____

 - (ii) Treated
 - (iii) Untreated

- b. Irrigation
 - (i) Estimated amount: .7 MGD
 - (ii) Location: Arthur Pack Park Golf Course

3. Treated
 - a. Chemical reactions
 - b. Cooling
 - c. Filtering
 - d. Chlorination
 - e. Dilution
 - f. Ultimate disposal: _____

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:
No:

STATEWIDE GROUND-WATER MONITORING PLAN

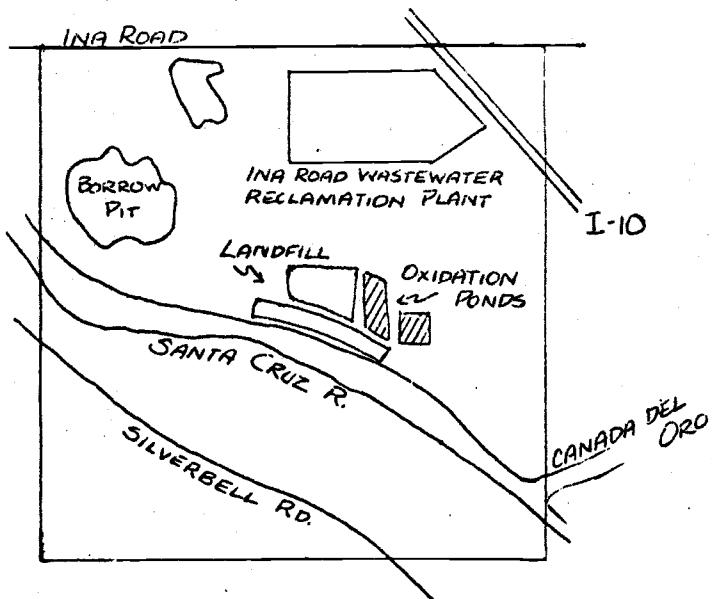
POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: Ina Road Wastewater Reclamation Plant

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE: City of Tucson

C. LOCATION OF SOURCE: (D-13-12) 1 dba

D. LOCATION SKETCH:



E. TYPE OF WASTE: SOLID LIQUID

1. Dissolved or microbial
2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify sewage effluent + sludge
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE:

3.5 mgd

≈ 0.7 mgd are used to irrigate Arthur Pack Park Golf Course

III. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophylls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

EFFLUENT FROM THE INA ROAD WASTEWATER TREATMENT PLANT

DATE	EC	pH	Na	K	Ca	Mg	HCO ₃	Cl	CO ₃	NH ₃	NO ₂ /3	KJN	TOTN	H ₄ RC	
7/11/77	1.04	7.60	112.0	14.9	26.3	7.0	96.0	263.0	0.0	76.0	21.8	1.8	29.5	30.0	94.5

J. METHODS OF DISPOSAL:

- i. Discharged to the environment
a. Oxidation pond or holding pond
b. Percolation or evaporation pond
c. Surface spreading
d. Dry stream bed
e. Landfills
f. Disposal wells

2. Reused

- a. On-site reuse

(i) Specify reuse: _____

(ii) Treated

(iii) Untreated

- b. Irrigation

(i) Estimated amount: .7 MGD

(ii) Location: Arthur Pack Park Golf Course

3. Treated

- a. Chemical reactions

- b. Cooling

- c. Filtering

- d. Chlorination

- e. Dilution

- f. Ultimate disposal: _____
-
-

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:
No:

STATEWIDE GROUND-WATER MONITORING PLAN

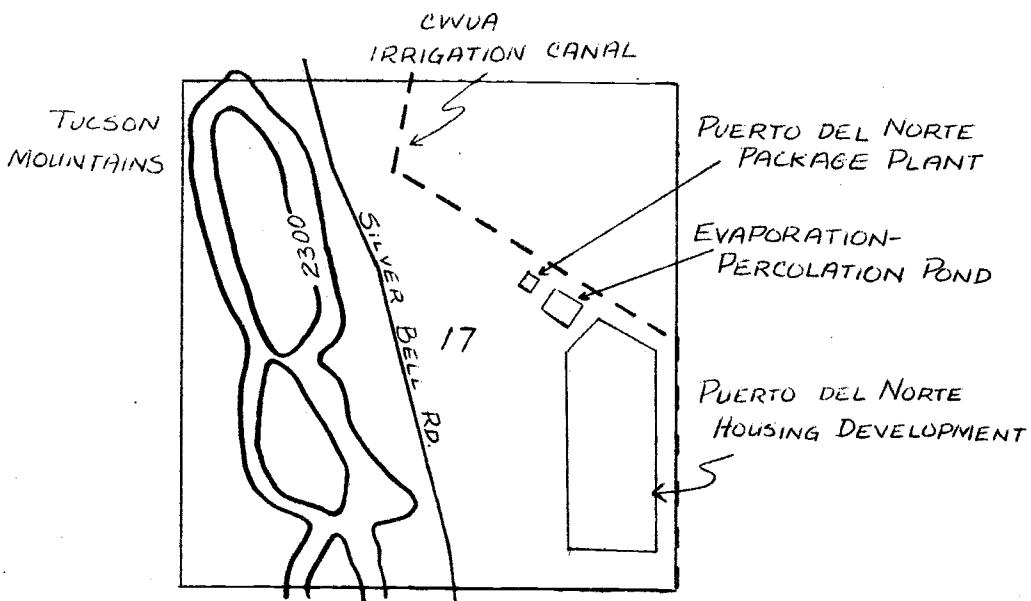
POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: Puerto del Norte
Package Plant

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE:

C. LOCATION OF SOURCE:

D. LOCATION SKETCH:



E. TYPE OF WASTE: SOLID LIQUID

1. Dissolved or microbial
2. Suspended sediment

F. CLASSIFICATION OF WASTE:

Package plant for housing development - treated effluent discharged into holding pond

1. MUNICIPAL: ; Specify _____
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE:

Estimated flow - 14,000 GPD
Area of Pond =

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophyls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

REPRESENTATIVE ANALYSES:

Date of analysis: + 2/25/77
 EC 2.05×10^3 mmhos

Location: Package Plant Effluent

Major

Calcium	<u>105.6</u>	mg/l	meq/l
Magnesium	<u>13.53</u>	mg/l	meq/l
Sodium	<u>217.8</u>	mg/l	meq/l
Potassium	<u>26.95</u>	mg/l	meq/l
Carbonate	<u>0</u>	mg/l	meq/l
Bicarbonate	<u>797.9</u>	mg/l	meq/l
Sulfate	<u>2</u>	mg/l	meq/l
Chloride	<u>293</u>	mg/l	meq/l
Nitrate	<u>3.72</u>	mg/l	meq/l

Trace

Arsenic	mg/l
Barium	mg/l
Cadmium	mg/l
Chromium	mg/l
Copper	mg/l
Cyanide	mg/l
Fluoride	mg/l
Iron	mg/l
Lead	mg/l
Manganese	mg/l
Mercury	mg/l
Selenium	mg/l
Silver	mg/l
Strontium	mg/l
Zinc	mg/l

Other Constituents

Nitrate-N	<u>.84</u>	mg/l
Ammonia-N	<u>32.00</u>	mg/l
KJN	<u>40.88</u>	mg/l
Total-N	<u>41.72</u>	mg/l
Specific conductance	<u>2.05×10^3</u>	mg/l
Total dissolved solids		mg/l
pH	<u>7.46</u>	mg/l
Silica		mg/l
Boron		mg/l
Fluoride		mg/l
Phosphorous		mg/l
Hardness	<u>290.34</u>	mg/l
Alkalinity		mg/l
B.O.D. Average	Inefum <u>249</u> Efflat <u>34</u>	mg/l
C.O.D.		mg/l
S.S.		mg/l

Microorganisms

Total coliform	#/100ml
Fecal coliform	#/100ml
Fecal Strep.	#/100ml

J. METHODS OF DISPOSAL:

1. Discharged to the environment
 - a. Oxidation pond or holding pond
 - b. Percolation or evaporation pond
 - c. Surface spreading
 - d. Dry stream bed
 - e. Landfills
 - f. Disposal wells

2. Reused
 - a. On-site reuse
 - (i) Specify reuse: _____

 - (ii) Treated
 - (iii) Untreated

- b. Irrigation
 - (i) Estimated amount: _____
 - (ii) Location: _____

3. Treated
 - a. Chemical reactions
 - b. Cooling
 - c. Filtering
 - d. Chlorination
 - e. Dilution
 - f. Ultimate disposal: _____

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:
No:

STATEWIDE GROUND-WATER MONITORING PLAN

POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: Rabies Control Package Plant

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE: Pima County

C. LOCATION OF SOURCE: (U-13-13)ddc

D. LOCATION SKETCH:

E. TYPE OF WASTE: SOLID LIQUID

1. Dissolved or microbial
2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify Package Plant effluent released to leach field
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE:

Discharge 1200 gpd

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophyls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

REPRESENTATIVE ANALYSES:

Date of analysis: unknown

Location:

Major

Calcium	mg/l	meq/l
Magnesium	mg/l	meq/l
Sodium	mg/l	meq/l
Potassium	mg/l	meq/l
Carbonate	mg/l	meq/l
Bicarbonate	mg/l	meq/l
Sulfate	mg/l	meq/l
Chloride	mg/l	meq/l
Nitrate	mg/l	meq/l

Trace

Arsenic	mg/l
Barium	mg/l
Cadmium	mg/l
Chromium	mg/l
Copper	mg/l
Cyanide	mg/l
Fluoride	mg/l
Iron	mg/l
Lead	mg/l
Manganese	mg/l
Mercury	mg/l
Selenium	mg/l
Silver	mg/l
Strontium	mg/l
Zinc	mg/l

Other Constituents

Nitrate-N	mg/l
Ammonia-N	mg/l
KJN	mg/l
Total-N	mg/l
Specific conductance	mg/l
Total dissolved solids	mg/l
pH	mg/l
Silica	mg/l
Boron	mg/l
Fluoride	mg/l
Phosphorous	mg/l
Hardness	mg/l
Alkalinity	mg/l
B.O.D.	mg/l
C.O.D.	mg/l
S.S.	mg/l

Microorganisms

Total coliform	#/100mL
Fecal coliform	#/100mL
Fecal Strep.	#/100mL

J. METHODS OF DISPOSAL:

1. Discharged to the environment

 - a. Oxidation pond or holding pond
 - b. Percolation or evaporation pond
 - c. Surface spreading
 - d. Dry stream bed
 - e. Landfills
 - f. Disposal wells
 - g. Other (leach fluid)

2. Reused
 - a. On-site reuse
 - (i) Specify reuse: _____
 - (ii) Treated
 - (iii) Untreated
 - b. Irrigation
 - (i) Estimated amount: _____
 - (ii) Location: _____
3. Treated
 - a. Chemical reactions
 - b. Cooling
 - c. Filtering
 - d. Chlorination
 - e. Dilution
 - f. Ultimate disposal: _____

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:
No:

STATEWIDE GROUND-WATER MONITORING PLAN

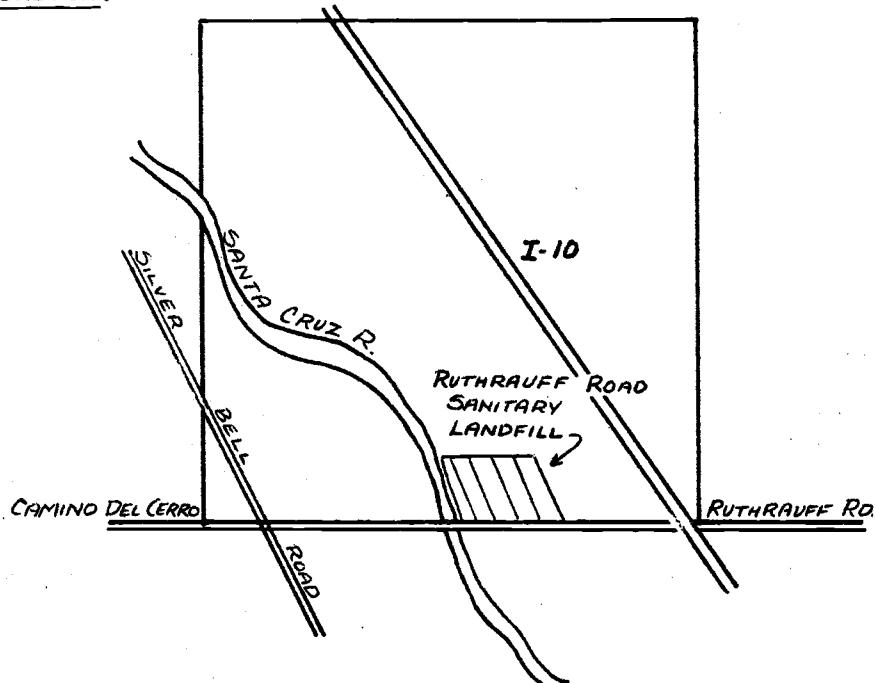
POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: Ruthrauff Rd Sanitary Landfill
(El Camino del Cerro)

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE: Pima County Dept. of Sanitation

C. LOCATION OF SOURCE: (D-13-13) 17 dcc

D. LOCATION SKETCH:



E. TYPE OF WASTE: SOLID LIQUID

1. Dissolved or microbial

2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify Residual waste
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE:

330 Tons per day

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophylls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

Typical Physical Composition of Municipal Solid Wastes

Category	Percent by Weight		
	Ref. 2*	Ref. 1 (Second Report)	Ref. 1 (Third Report)
Food Wastes	12	14.2	13.3
Garden Wastes	9	14.6	14.1
Paper	50	37.8	39.6
Plastics, Rubber, Leather	3	6.5	6.8
Textile	2	1.6	1.6
Wood	2	3.7	3.6
Metal	8	10.1	9.9
Glass, Ceramic	7	10	10.3
Rock, Dirt, Ash	7	1.5	1.5

* Moisture content ~ 30 percent

I. REPRESENTATIVE ANALYSES: (Leachate) Well located at west end of fill, in perching layer

Date of analysis: 10/1/76

Location:

Major

Calcium	<u>730</u>	mg/l	meq/l
Magnesium	<u>85</u>	mg/l	meq/l
Sodium	<u>193</u>	mg/l	meq/l
Potassium	<u>41</u>	mg/l	meq/l
Carbonate		mg/l	meq/l
Bicarbonate		mg/l	meq/l
Sulfate	<u>1157</u>	mg/l	meq/l
Chloride	<u>106</u>	mg/l	meq/l
Nitrate		mg/l	meq/l

Trace

Arsenic		mg/l
Barium		mg/l
Cadmium	<u>tr.</u>	mg/l
Chromium	<u>0.1</u>	mg/l
Copper	<u>0.2</u>	mg/l
Cyanide		mg/l
Fluoride		mg/l
Iron	<u>7.9</u>	mg/l
Lead	<u>0.5</u>	mg/l
Manganese	<u>34</u>	mg/l
Mercury		mg/l
Selenium		mg/l
Silver		mg/l
Strontium		mg/l
Zinc	<u>0.3</u>	mg/l

Other Constituents

Nitrate-N	<u>0.25</u>	mg/l
Ammonia-N	<u>8.68</u>	mg/l
KJN	<u>10.64</u>	mg/l
Total-N	<u>10.89</u>	mg/l
Specific conductance	<u>1900</u>	mmhos/cm
Total dissolved solids	<u>1216</u>	mg/l
pH	<u>6.2</u>	mg/l
Silica		mg/l
Boron		mg/l
Fluoride		mg/l
Phosphorous		mg/l
Hardness		mg/l
Alkalinity		mg/l
B.O.D.		mg/l
C.O.D.		mg/l
S.S.		mg/l
TOC	<u>0.03%</u>	

Microorganisms

Total coliform		#/100ml
Fecal coliform		#/100ml
Fecal Strep.		#/100ml

J. METHODS OF DISPOSAL:

1. Discharged to the environment

 - a. Oxidation pond or holding pond
 - b. Percolation or evaporation pond
 - c. Surface spreading
 - d. Dry stream bed
 - e. Landfills
 - f. Disposal wells

2. Reused
 - a. On-site reuse
 - (i) Specify reuse: _____

 - (ii) Treated
 - (iii) Untreated
 - b. Irrigation
 - (i) Estimated amount: _____
 - (ii) Location: _____

3. Treated
 - a. Chemical reactions
 - b. Cooling
 - c. Filtering
 - d. Chlorination
 - e. Dilution
 - f. Ultimate disposal: _____

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:
No:

STATEWIDE GROUND-WATER MONITORING PLAN

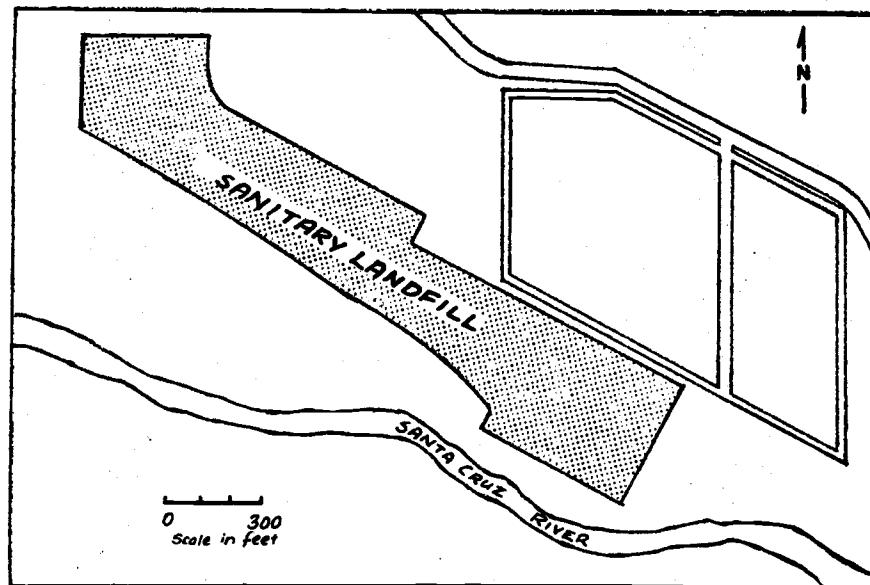
POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: Ina Rd Sanitary Landfill

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE: City of Tucson

C. LOCATION OF SOURCE: (D-12-12) 36 cd

D. LOCATION SKETCH:



INA RD SANITARY LANDFILL AND ENVIRONS, SHOWING
LOCATION OF OBSERVATION WELLS

E. TYPE OF WASTE: SOLID LIQUID Leachate

1. Dissolved or microbial
2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify solid waste Garbage + trash
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE: closed

30' deep, 60 acres, 250 tons/day
Garbage + trash

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophylls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

Typical Physical Composition of Municipal Solid Wastes

Category	Percent by Weight		
	Ref. 2*	Ref. 1 (Second Report)	Ref. 1 (Third Report)
Food Wastes	12	14.2	13.3
Garden Wastes	9	14.6	14.1
Paper	50	37.8	39.6
Plastics, Rubber, Leather	3	6.5	6.8
Textile	2	1.6	1.6
Wood	2	3.7	3.6
Metal	8	10.1	9.9
Glass, Ceramic	7	10	10.3
Rock, Dirt, Ash	7	1.5	1.5

* Moisture content ~ 30 percent

REPRESENTATIVE ANALYSES:Date of analysis: 2-28-73Leachate collected in
Location: Landfill WellMajor

Calcium	28	mg/l	meq/l
Magnesium	17	mg/l	meq/l
Sodium	33	mg/l	meq/l
Potassium		mg/l	meq/l
Carbonate	0	mg/l	meq/l
Bicarbonate	488	mg/l	meq/l
Sulfate	35	mg/l	meq/l
Chloride	28	mg/l	meq/l
Nitrate		mg/l	meq/l

Trace

Arsenic		mg/l
Barium		mg/l
Cadmium	0.04	mg/l
Chromium	0.10	mg/l
Copper	0.20	mg/l
Cyanide		mg/l
Fluoride	0.20	mg/l
Iron	2.90	mg/l
Lead	0.78	mg/l
Manganese	0.33	mg/l
Mercury		mg/l
Selenium		mg/l
Silver		mg/l
Strontium		mg/l
Zinc	0.45	mg/l
Nickle	0.14	mg/l

Other Constituents

Nitrate-N	2.42	mg/l
Ammonia-N	140.4	mg/l
KJN	360	mg/l
Total-N		mg/l
Specific conductance	1.00	mmhos/cm
Total dissolved solids	631	mg/l
pH	7.0	mg/l
Silica		mg/l
Boron		mg/l
Fluoride		mg/l
Phosphorous		mg/l
Hardness	140	mg/l
Alkalinity		mg/l
B.O.D.	110	mg/l
C.O.D.	1670	mg/l
S.S.		mg/l

Microorganisms

Total coliform		#/100ml
Fecal coliform		#/100ml
Fecal Strep.		#/100ml

J. METHODS OF DISPOSAL:

1. Discharged to the environment
 - a. Oxidation pond or holding pond
 - b. Percolation or evaporation pond
 - c. Surface spreading
 - d. Dry stream bed
 - e. Landfills
 - f. Disposal wells

2. Reused
 - a. On-site reuse
 - (i) Specify reuse: _____

 - (ii) Treated
 - (iii) Untreated
 - b. Irrigation
 - (i) Estimated amount: _____
 - (ii) Location: _____

3. Treated
 - a. Chemical reactions
 - b. Cooling
 - c. Filtering
 - d. Chlorination
 - e. Dilution
 - f. Ultimate disposal: _____

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:
No:

STATEWIDE GROUND-WATER MONITORING PLAN

POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: Cortaro Road Landfill

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE: (D-12-12) 356a

C. LOCATION OF SOURCE:

D. LOCATION SKETCH:

E. TYPE OF WASTE: SOLID LIQUID Leachate

1. Dissolved or microbial
2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify Garbage & Trash
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE: Closed
20 acres
10' deep
150 tons/day

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophylls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

Typical Physical Composition of Municipal Solid Wastes

Category	Percent by Weight		
	Ref. 2*	Ref. 1 (Second Report)	Ref. 1 (Third Report)
Food Wastes	12	14.2	13.3
Garden Wastes	9	14.6	14.1
Paper	50	37.8	39.6
Plastics, Rubber, Leather	3	6.5	6.8
Textile	2	1.6	1.6
Wood	2	3.7	3.6
Metal	8	10.1	9.9
Glass, Ceramic	7	10	10.3
Rock, Dirt, Ash	7	1.5	1.5

* Moisture content ~ 30 percent

TABLE 3
Composition of Initial Leachate*
from Municipal Solid Waste

Component	Study A†		Study B‡	
	Low	High	Low	High
pH	6.0	6.5	3.7	6.5
Hardness, CaCO ₃	230	7,600	203	550
Alkalinity, CaCO ₃	730	9,500		
Ca	240	2,330		
Mg	64	419		
Na	85	1,700	127	3,800
K	28	1,700		
Fe (total)	6.5	220	0.12	3,640
Ferrous iron	8.7†	8.7†		
Chloride	36	2,350	47	2,340
Sulfate	84	730	20	375
Phosphate	0.3	29	2.0	130
Organic-N	2.4	465	8.0	482
NH ₄ -N	0.22	480	2.1	177
BOD	21,700	30,300		
COD			803	50,715
Zn			0.03	129
Mo			0.15	0.81
Suspended solids			13	26,500

* Average composition, mg per liter of first 1.2 liters of leachate per cubic foot of a compacted, representative municipal solid waste.

† One determination.

(From: Brunner and Keller, 1972)

J. METHODS OF DISPOSAL:

1. Discharged to the environment

- a. Oxidation pond or holding pond
- b. Percolation or evaporation pond
- c. Surface spreading
- d. Dry stream bed
- e. Landfills
- f. Disposal wells

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input checked="" type="checkbox"/>
<input type="checkbox"/>

2. Reused

- a. On-site reuse

<input type="checkbox"/>
<input type="checkbox"/>

(i) Specify reuse: _____

(ii) Treated

<input type="checkbox"/>
<input type="checkbox"/>

- b. Irrigation

<input type="checkbox"/>

(i) Estimated amount: _____

(ii) Location: _____

3. Treated

- a. Chemical reactions
- b. Cooling
- c. Filtering
- d. Chlorination
- e. Dilution
- f. Ultimate disposal: _____

<input type="checkbox"/>

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:

No:

STATEWIDE GROUND-WATER MONITORING PLAN

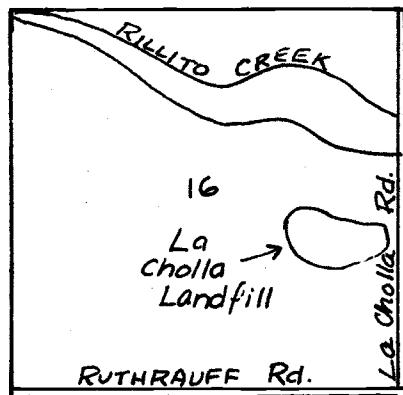
POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: La Cholla Landfill

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE:

C. LOCATION OF SOURCE: (D-13-13) 1 bda

D. LOCATION SKETCH:



E. TYPE OF WASTE: SOLID LIQUID Leachate

1. Dissolved or microbial
2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify Garbage & Trash
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE: 20' deep
16 acres
150 tons/day

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor *
- d. Turbidity

2. Inorganic chemical

- a. Major constituents X
- b. Other constituents X
- c. Trace elements X
- d. Gases X

3. Bacteriological

- a. Coliform group X
- b. Pathogenic microorganisms X
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophyls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand X
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

Typical Physical Composition of Municipal Solid Wastes

Category	Percent by Weight		
	Ref. 2*	Ref. 1 (Second Report)	Ref. 1 (Third Report)
Food Wastes	12	14.2	13.3
Garden Wastes	9	14.6	14.1
Paper	50	37.8	39.6
Plastics, Rubber, Leather	3	6.5	6.8
Textile	2	1.6	1.6
Wood	2	3.7	3.6
Metal	8	10.1	9.9
Glass, Ceramic	7	10	10.3
Rock, Dirt, Ash	7	1.5	1.5

*Moisture content ~ 30 percent

TABLE 3
Composition of Initial Leachate*
from Municipal Solid Waste

Component	Study A†		Study B†	
	Low	High	Low	High
pH	6.0	6.5	3.7	8.5
Hardness, CaCO ₃	890	7,600	200	550
Alkalinity, CaCO ₃	730	9,500		
Ca	240	2,330		
Mg	64	410		
Na	85	1,700	127	3,800
K	28	1,700		
Fe (total)	6.5	220	0.12	1,640
Ferrous iron	8.7†	8.7†		
Chloride	96	2,350	47	2,340
Sulfate	84	730	20	375
Phosphate	0.3	29	2.0	130
Organic-N	2.4	465	8.0	482
NH ₄ -N	0.22	480	2.1	177
BOD	21,700	30,300		
COD			809	50,715
Zn			0.03	129
Ni			0.15	0.81
Suspended solids			13	26,500

* Average composition, mg per liter of first 1.3 liters of leachate per cubic foot of a compacted, representative, municipal solid waste.

† One determination.

(From: Brunner and Keller, 1972)

J. METHODS OF DISPOSAL:

1. Discharged to the environment
 - a. Oxidation pond or holding pond
 - b. Percolation or evaporation pond
 - c. Surface spreading
 - d. Dry stream bed
 - e. Landfills x
 - f. Disposal wells

2. Reused
 - a. On-site reuse
 - (i) Specify reuse: _____

 - (ii) Treated
 - (iii) Untreated
 - b. Irrigation
 - (i) Estimated amount: _____
 - (ii) Location: _____

3. Treated
 - a. Chemical reactions
 - b. Cooling
 - c. Filtering
 - d. Chlorination
 - e. Dilution
 - f. Ultimate disposal: _____

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes: x
No:

STATEWIDE GROUND-WATER MONITORING PLAN

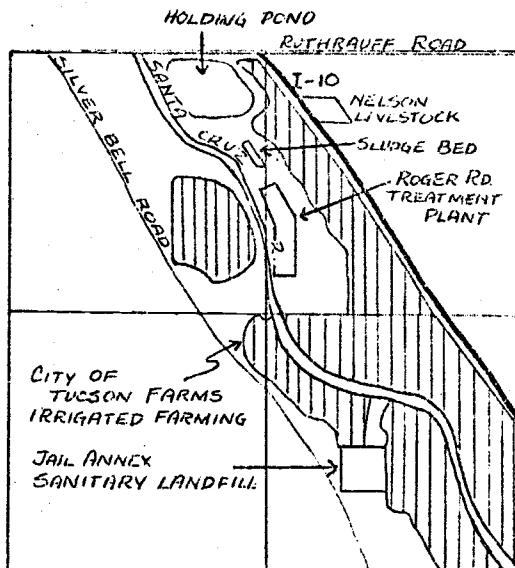
POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: Jail Annex Landfill (closed)
3100 N. Silverbell Rd.

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE: City of Tucson

C. LOCATION OF SOURCE: (D-13-13) 28, ca

D. LOCATION SKETCH:



E. TYPE OF WASTE: SOLID LIQUID

Garbage + Trash

1. Dissolved or microbial

2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify Sanitary landfill residual waste
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE:

25-30 area acres, 50 foot depth
Loading rate in tons/day = 250
9 years in operation

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor *
- d. Turbidity

2. Inorganic chemical

- a. Major constituents X
- b. Other constituents X
- c. Trace elements X
- d. Gases X

3. Bacteriological

- a. Coliform group X
- b. Pathogenic microorganisms X
- c. Enteric viruses ?

4. Organic chemical

- a. Carbon
- b. Chlorophylls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand X
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

TABLE 3
Composition of Initial Leachate*
from Municipal Solid Waste

Component	Study A†		Study B‡	
	Low	High	Low	High
pH	6.0	6.5	3.7	8.5
Hardness, CaCO ₃	890	7,600	200	550
Alkalinity, CaCO ₃	730	9,500		
Ca	240	2,330		
Mg	64	410		
Na	85	1,700	127	3,800
K	28	1,700		
Fe (total)	6.5	220	0.12	1,640
Ferrous iron	8.7†	8.7†		
Chloride	96	2,350	47	2,340
Sulfate	84	730	20	375
Phosphate	0.3	29	2.0	130
Organic-N	2.4	465	8.0	482
NH ₄ -N	0.22	480	2.1	177
BOD	21,700	30,300		
COD			809	50,715
Zn			0.03	129
Ni			0.15	0.81
Suspended solids			13	26,500

* Average composition, mg per liter of first 1.3 liters of leachate per cubic foot of a compacted, representative, municipal solid waste.

† One determination.

(From: Brunner and Keller, 1972)

J. METHODS OF DISPOSAL:

1. Discharged to the environment
 - a. Oxidation pond or holding pond
 - b. Percolation or evaporation pond
 - c. Surface spreading
 - d. Dry stream bed
 - e. Landfills
 - f. Disposal wells

2. Reused
 - a. On-site reuse
 - (i) Specify reuse: _____

 - (ii) Treated
 - (iii) Untreated
 - b. Irrigation
 - (i) Estimated amount: _____
 - (ii) Location: _____

3. Treated
 - a. Chemical reactions
 - b. Cooling
 - c. Filtering
 - d. Chlorination
 - e. Dilution
 - f. Ultimate disposal: _____

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:
No:

STATEWIDE GROUND-WATER MONITORING PLAN

POLLUTION POTENTIAL OF WASTE SOURCES

- A. WASTE SOURCE: University of Arizona Dump
- B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE: University of Arizona
- C. LOCATION OF SOURCE: (D-13-13)34bd
- D. LOCATION SKETCH:

E. TYPE OF WASTE: SOLID LIQUID (leachate)

1. Dissolved or microbial
2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify Landfill leachate
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE:

Estimated Area - 5 acres
Estimated Depth - 10 feet
Loading Rate - 2 tons/month

II. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophylls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

J. METHODS OF DISPOSAL:

1. Discharged to the environment
- a. Oxidation pond or holding pond
- b. Percolation or evaporation pond
- c. Surface spreading
- d. Dry stream bed
- e. Landfills
- f. Disposal wells
2. Reused
- a. On-site reuse
- (i) Specify reuse: _____
- (ii) Treated
- (iii) Untreated
- b. Irrigation
- (i) Estimated amount: _____
- (ii) Location: _____
3. Treated
- a. Chemical reactions
- b. Cooling
- c. Filtering
- d. Chlorination
- e. Dilution
- f. Ultimate disposal: _____
- _____
- _____

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:

No:

I. REPRESENTATIVE ANALYSES:

Date of analysis:

Location:

Major

Calcium	mg/l	meq/l
Magnesium	mg/l	meq/l
Sodium	mg/l	meq/l
Potassium	mg/l	meq/l
Carbonate	mg/l	meq/l
Bicarbonate	mg/l	meq/l
Sulfate	mg/l	meq/l
Chloride	mg/l	meq/l
Nitrate	mg/l	meq/l

Trace

Arsenic	mg/l
Barium	mg/l
Cadmium	mg/l
Chromium	mg/l
Copper	mg/l
Cyanide	mg/l
Fluoride	mg/l
Iron	mg/l
Lead	mg/l
Manganese	mg/l
Mercury	mg/l
Selenium	mg/l
Silver	mg/l
Strontium	mg/l
Zinc	mg/l

Other Constituents

Nitrate-N	mg/l
Ammonia-N	mg/l
KJN	mg/l
Total-N	mg/l
Specific conductance	mg/l
Total dissolved solids	mg/l
pH	mg/l
Silica	mg/l
Boron	mg/l
Fluoride	mg/l
Phosphorous	mg/l
Hardness	mg/l
Alkalinity	mg/l
B.O.D.	mg/l
C.O.D.	mg/l
S.S.	mg/l

Microorganisms

Total coliform	#/100mL
Fecal coliform	#/100mL
Fecal Strep.	#/100mL

STATEWIDE GROUND-WATER MONITORING PLAN

POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: Septic Tanks

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE: Rural Individual Households

C. LOCATION OF SOURCE:

D. LOCATION SKETCH:

North of Camino del Cerro and West of the Santa Cruz River
(see Source Map)

E. TYPE OF WASTE: SOLID LIQUID

1. Dissolved or microbial
2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify _____
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify Rural-Urban

G. ESTIMATED QUANTITY OF WASTE:

821 Septic tanks in area
Average septic size = 960 gallons

90 gal/day capita \times 4 cap \times 821 = 295,560 gal/day
house

B-61 = 0.3 mgd

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophylls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

I. REPRESENTATIVE ANALYSES:

Date of analysis:

Location: from Silberman(1977)
Representative analysis

Major

Calcium	mg/l	meq/l
Magnesium	mg/l	meq/l
Sodium	mg/l	meq/l
Potassium	mg/l	meq/l
Carbonate	mg/l	meq/l
Bicarbonate	mg/l	meq/l
Sulfate	mg/l	meq/l
Chloride	95 mg/l	meq/l
Nitrate	mg/l	meq/l

Trace

Arsenic	mg/l
Barium	mg/l
Cadmium	mg/l
Chromium	mg/l
Copper	mg/l
Cyanide	mg/l
Fluoride	mg/l
Iron	mg/l
Lead	mg/l
Manganese	mg/l
Mercury	mg/l
Selenium	mg/l
Silver	mg/l
Strontium	mg/l
Zinc	mg/l

Other Constituents

Nitrate-N	0.14 mg/l
Ammonia-N	27 mg/l
KJN	mg/l
Total-N	mg/l
Specific conductance	mg/l
Total dissolved solids	378 mg/l
pH	7.1± mg/l
Silica	mg/l
Boron	mg/l
Fluoride	mg/l
Phosphorous	18 mg/l
Hardness	mg/l
Alkalinity	390 mg/l
B.O.D.	160 mg/l
C.O.D.	323 mg/l
S.S.	mg/l
Organic Carbon	129 mg/l

Microorganisms

Total coliform	11-110± #/100ml
Fecal coliform	0.17 #/100ml
Fecal Strep.	#/100ml

J. METHODS OF DISPOSAL:

1. Discharged to the environment

 - a. Oxidation pond or holding pond
 - b. Percolation or evaporation pond
 - c. Surface spreading
 - d. Dry stream bed
 - e. Landfills
 - f. Disposal wells
 - g. Other (septic tank tile line)

2. Reused
 - a. On-site reuse
(i) Specify reuse: _____

 - (ii) Treated
(iii) Untreated
 - b. Irrigation
(i) Estimated amount: _____
(ii) Location: _____

3. Treated
 - a. Chemical reactions
 - b. Cooling
 - c. Filtering
 - d. Chlorination
 - e. Dilution
 - f. Ultimate disposal: _____

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:
No:

STATEWIDE GROUND-WATER MONITORING PLAN
POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: Urban Runoff

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE:

C. LOCATION OF SOURCE:

D. LOCATION SKETCH:

E. TYPE OF WASTE: SOLID LIQUID

1. Dissolved or microbial
2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify _____
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify Rainfall runoff from natural
desert, agricultural areas, paved
and unpaved roads, etc.

G. ESTIMATED QUANTITY OF WASTE:

See attached sheet

PEAK FLOW:

2 Years	125 cfs
10 "	689 cfs
100 "	2466 cfs

ANNUAL RUNOFF:

2 Years	60 acre feet/year
10 "	470 "
100 "	1150 "

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophyls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

I. REPRESENTATIVE ANALYSES:

Date of analysis: 1971-1975
mean values

Location: Atterbury Watershed

Major

Calcium	32.1	mg/l	meq/l
Magnesium	3.4	mg/l	meq/l
Sodium	3.1	mg/l	meq/l
Potassium		mg/l	meq/l
Carbonate	.081	mg/l	meq/l
Bicarbonate	101.4	mg/l	meq/l
Sulfate	16.3	mg/l	meq/l
Chloride	5.4	mg/l	meq/l
Nitrate	4.2	mg/l	meq/l

Trace

Arsenic	mg/l
Barium	mg/l
Cadmium	mg/l
Chromium	mg/l
Copper	mg/l
Cyanide	mg/l
Fluoride	.203 mg/l
Iron	mg/l
Lead	mg/l
Manganese	mg/l
Mercury	mg/l
Selenium	mg/l
Silver	mg/l
Strontium	mg/l
Zinc	mg/l

Other Constituents

Nitrate-N	mg/l
Ammonia-N	mg/l
KJN	mg/l
Total-N	mg/l
Specific conductance	.182 mg/l
Total dissolved solids	170.2 mg/l
pH	mg/l
Silica	mg/l
Boron	mg/l
Fluoride	mg/l
Phosphorous Phosphate	.512 mg/l
Hardness	94.6 mg/l
Alkalinity	mg/l
B.O.D.	mg/l
C.O.D.	182.8 mg/l
S.S.	mg/l

Microorganisms

Total coliform	794,115.4	#/100ml
Fecal coliform	182,519.2	#/100ml
Fecal Strep.	---	#/100ml

Physical

Temp.	54.35
Cloudiness	2624.75
Suspended Sediment	3240.63

Courtesy:

Urban Hydrology Project
Water Resource Research Center
University of Arizona
(Unpublished data)

J. METHODS OF DISPOSAL:

1. Discharged to the environment

- a. Oxidation pond or holding pond
- b. Percolation or evaporation pond
- c. Surface spreading
- d. Dry stream bed
- e. Landfills
- f. Disposal wells
- g. Other (Urban Runoff)

2. Reused

a. On-site reuse

(i) Specify reuse: _____

(ii) Treated

(iii) Untreated

b. Irrigation

(i) Estimated amount: _____

(ii) Location: _____

3. Treated

- a. Chemical reactions
- b. Cooling
- c. Filtering
- d. Chlorination
- e. Dilution
- f. Ultimate disposal: _____

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:

No:

STATEWIDE GROUND-WATER MONITORING PLAN

POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: Sewer Leakage

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE:

C. LOCATION OF SOURCE: T __, R __, S __, __, __, __

D. LOCATION SKETCH:

E. TYPE OF WASTE: SOLID LIQUID

1. Dissolved or microbial
2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify _____
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE:

Estimated to be almost nil

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophylls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

I. REPRESENTATIVE ANALYSES: not availableDate of analysis:Location:Major

Calcium	mg/l	meq/l
Magnesium	mg/l	meq/l
Sodium	mg/l	meq/l
Potassium	mg/l	meq/l
Carbonate	mg/l	meq/l
Bicarbonate	mg/l	meq/l
Sulfate	mg/l	meq/l
Chloride	mg/l	meq/l
Nitrate	mg/l	meq/l

Trace

Arsenic	mg/l
Barium	mg/l
Cadmium	mg/l
Chromium	mg/l
Copper	mg/l
Cyanide	mg/l
Fluoride	mg/l
Iron	mg/l
Lead	mg/l
Manganese	mg/l
Mercury	mg/l
Selenium	mg/l
Silver	mg/l
Strontium	mg/l
Zinc	mg/l

Other Constituents

Nitrate-N	mg/l
Ammonia-N	mg/l
KJN	mg/l
Total-N	mg/l
Specific conductance	mg/l
Total dissolved solids	mg/l
pH	mg/l
Silica	mg/l
Boron	mg/l
Fluoride	mg/l
Phosphorous	mg/l
Hardness	mg/l
Alkalinity	mg/l
B.O.D.	mg/l
C.O.D.	mg/l
S.S.	mg/l

Microorganisms

Total coliform	#/100ml
Fecal coliform	#/100ml
Fecal Strep.	#/100ml

J. METHODS OF DISPOSAL:

1. Discharged to the environment

- a. Oxidation pond or holding pond
- b. Percolation or evaporation pond
- c. Surface spreading
- d. Dry stream bed
- e. Landfills
- f. Disposal wells
- g. Other (sewer line leakage)

2. Reused

- a. On-site reuse

(i) Specify reuse: _____

(ii) Treated

(iii) Untreated

- b. Irrigation

(i) Estimated amount: _____

(ii) Location: _____

3. Treated

- a. Chemical reactions

- b. Cooling

- c. Filtering

- d. Chlorination

- e. Dilution

- f. Ultimate disposal: _____

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:

No:

STATEWIDE GROUND-WATER MONITORING PLAN

POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: Santa Cruz River (Effluent discharge)

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE:

C. LOCATION OF SOURCE: See Source Map

D. LOCATION SKETCH: See Source Map

E. TYPE OF WASTE: SOLID LIQUID

1. Dissolved or microbial
2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify Sewage effluent
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE:

36 mgd

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophyls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

I. REPRESENTATIVE ANALYSES:

Date of analysis: 5-4-77

Location: SCR at Ina Rd.

Major

Calcium	<u>10.6</u>	mg/l	meq/l
Magnesium	<u>6.3</u>	mg/l	meq/l
Sodium	<u>113.7</u>	mg/l	meq/l
Potassium	<u>9.7</u>	mg/l	meq/l
Carbonate	<u>0.0</u>	mg/l	meq/l
Bicarbonate	<u>302.6</u>	mg/l	meq/l
Sulfate	<u>133.0</u>	mg/l	meq/l
Chloride	<u>98.0</u>	mg/l	meq/l
Nitrate		mg/l	meq/l

Trace

Arsenic		mg/l
Barium		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Cyanide		mg/l
Fluoride		mg/l
Iron		mg/l
Lead		mg/l
Manganese		mg/l
Mercury		mg/l
Selenium		mg/l
Silver		mg/l
Strontium		mg/l
Zinc		mg/l

Other Constituents

Nitrate-N		mg/l
Ammonia-N		mg/l
KJN	<u>20.6</u>	mg/l
Total-N	<u>22.0</u>	mg/l
Specific conductance	<u>1.13</u>	mg/l
Total dissolved solids		mg/l
pH	<u>7.60</u>	mg/l
Silica		mg/l
Boron		mg/l
Fluoride		mg/l
Phosphorous		mg/l
Hardness	<u>136.3</u>	mg/l
Alkalinity		mg/l
B.O.D.		mg/l
C.O.D.		mg/l
S.S.		mg/l

Microorganisms

Total coliform		#/100ml
Fecal coliform		#/100ml
Fecal Strep.		#/100ml

SANTA CRUZ RIVER AT THE NARROWS

T12S R12E SEC. 8 DBC															
DATE	EC	PH	MA	K	CA	HG	CL	HCO3	CO3	SO4	Na3	NO2/3	KJN	TOTN	HARD
---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1/14/77	1.09	7.47	111.3	7.9	61.7	7.4	96.0	339.2	0.0	145.0	22.2	6.2	28.6	30.0	184.6
1/26/77	1.12	7.95	118.6	11.0	56.9	7.5	104.0	335.5	0.0	155.0	21.7	4.9	28.2	29.2	173.0
2/ 4/77	1.10	7.60	112.5	8.5	59.3	6.8	101.0	341.6	0.0	135.0	21.0	5.3	26.5	27.7	176.1
2/10/77	1.08	7.60	115.0	9.2	52.0	7.0	96.0	336.7	0.0	130.0	21.1	5.8	28.8	27.0	158.7
2/18/77	1.09	7.62	113.7	9.2	60.5	7.6	90.0	346.5	0.0	140.0	22.9	2.7	25.3	25.9	182.4
3/ 4/77	1.05	7.78	118.6	12.8	55.7	7.4	97.0	336.7	0.0	130.0	21.6	4.4	26.4	27.4	169.6
3/18/77	1.09	7.66	118.6	13.8	55.7	7.3	91.0	353.8	0.0	130.0	20.6	3.5	25.7	26.5	169.2
4/ 1/77	1.12	7.81	115.0	12.6	49.6	7.1	97.0	347.7	0.0	115.0	21.1	3.1	25.6	26.3	153.1
4/15/77	.70	7.72	111.3	9.3	55.7	7.0	105.0	327.0	0.0	117.0	21.0	4.4	24.0	25.0	167.9
4/29/77	1.16	7.75	112.2	14.5	54.5	6.3	91.0	327.0	0.0	120.0	19.5	4.9	23.0	24.2	162.1
5/16/77	1.03	7.90	107.7	12.1	50.8	6.9	77.0	301.3	0.0	116.0	18.5	3.1	23.0	23.6	155.3
6/ 1/77	1.07	7.73	118.0	15.5	54.5	6.9	89.0	317.2	0.0	110.0	16.2	3.1	20.0	20.7	164.5
6/ 6/77	1.00	7.61	123.8	15.1	52.9	7.5	73.0	291.6	0.0	115.0	20.2	2.7	23.0	23.5	163.0
6/13/77	1.04	7.77	133.8	16.2	51.9	8.5	80.0	297.7	0.0	120.0	18.2	3.1	21.3	22.0	164.6
7/11/77	1.00	7.90	111.0	10.8	33.0	9.3	68.0	211.0	0.0	130.0	13.5	6.2	16.0	17.4	120.7
7/19/77	.44	7.90	29.0	8.6	78.0	9.5	15.0	141.5	0.0	37.0	2.8	13.7	9.6	12.7	233.9
8/ 1/77	.59	7.70	50.5	7.2	52.5	7.8	31.0	172.0	0.0	45.0	2.6	10.6	16.7	16.6	163.2
8/12/77	1.24	7.70	120.0	20.4	56.0	7.4	94.8	229.3	0.0	135.0	10.0	13.7	11.6	14.7	170.3
8/19/77	1.15	8.10	117.0	18.3	52.0	7.6	87.0	246.4	0.0	150.0	7.8	13.7	11.8	14.9	161.2
8/27/77	1.00	8.20	44.0	11.6	33.8	9.2	80.0	280.6	0.0	115.0	13.7	4.4	16.3	17.3	122.3

SANTA CRUZ RIVER AT INA ROAD										T12S R12E SEC.35 DDD							
DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD		
5/ 4/77	1.13	7.60	113.7	9.7	10.6	6.3	98.0	302.6	0.0	133.0	16.9	6.2	20.6	22.0	52.4		
7/11/77	1.12	7.70	127.5	14.8	31.3	8.8	84.0	254.0	0.0	140.0	19.8	1.8	24.4	24.8	114.4		
7/19/77	.90	7.80	77.0	18.5	117.0	8.0	64.0	201.3	0.0	100.0	3.9	17.3	19.0	23.0	325.2		
8/ 1/77	.56	7.60	45.5	7.8	78.0	9.7	33.0	164.7	0.0	47.0	2.4	13.7	19.0	21.1	234.8		
8/19/77	1.20	7.30	130.5	13.5	80.0	7.1	84.0	257.4	0.0	110.0	3.6	12.4	5.9	8.7	229.0		

SANTA CRUZ RIVER AT RUTHRAUFF ROAD

DATE	EC	T12S R13E SEC. 17 CDD										HARD			
		PH	WA	K	CA	HG	CL	HC03	CO3	S04	NH3	NO2/3	KJN	TCTN	---
---	--	--	--	--	--	--	--	---	---	---	---	---	---	---	
1/ 7/77	1.13	7.50	108.9	7.0	61.7	8.1	97.0	309.9	0.0	180.0	22.1	3.1	26.5	27.2	187.5
1/14/77	1.10	7.40	108.9	7.4	60.5	7.9	94.0	327.0	0.0	175.0	23.5	6.2	27.1	28.5	183.6
1/26/77	1.08	7.73	118.6	11.7	62.9	8.4	101.0	319.6	0.0	175.0	22.7	11.1	25.6	28.1	191.7
2/ 4/77	1.10	7.40	112.5	8.4	60.5	7.5	99.0	317.2	0.0	180.0	21.6	4.9	28.8	27.0	182.0
2/10/77	1.13	8.37	107.7	11.6	69.0	8.4	94.0	324.5	0.0	140.0	23.3	12.8	28.4	31.8	206.9
2/18/77	1.09	7.70	107.7	8.4	59.3	7.5	84.0	330.6	0.0	175.0	25.0	4.0	28.0	28.9	179.0
3/ 4/77	1.08	7.62	118.6	11.1	60.5	9.2	100.0	317.2	0.0	170.0	21.4	7.1	24.9	25.6	189.0
3/18/77	1.16	7.50	124.6	11.6	59.3	8.2	104.0	319.6	0.0	137.0	20.3	12.4	26.0	27.5	181.9
4/22/77	1.10	7.30	113.7	8.5	60.5	7.3	86.0	286.7	0.0	136.0	17.9	15.1	24.1	23.5	181.2
4/29/77	1.17	7.50	122.2	10.9	59.3	6.9	87.0	285.5	0.0	128.0	16.8	12.4	20.7	22.3	176.5
5/16/77	1.00	7.61	108.9	10.9	54.5	7.3	76.0	266.0	0.0	0.0	15.5	11.1	19.7	22.2	166.2
6/ 1/77	1.11	7.60	122.2	13.1	55.7	7.7	89.0	275.7	0.0	145.0	14.1	9.7	18.2	20.5	170.8
6/13/77	1.03	7.35	131.7	14.0	54.6	9.6	81.0	264.7	0.0	145.0	14.4	17.3	18.6	22.5	175.9
8/19/77	1.25	7.80	132.0	7.9	73.0	8.4	88.0	276.9	0.0	175.0	14.1	17.3	19.9	23.9	216.9
6/27/77	1.15	7.60	138.0	9.8	40.8	8.7	83.0	287.9	0.0	170.0	16.7	9.3	18.8	20.9	137.7
7/11/77	.52	7.60	48.0	8.7	190.0	8.5	32.0	123.0	0.0	66.0	2.8	7.5	5.9	7.5	509.5
7/19/77	1.00	7.90	53.0	10.5	75.0	8.5	71.0	222.0	0.0	140.0	6.2	11.1	22.1	24.6	222.3
8/ 1/77	.59	7.70	50.5	7.2	52.5	7.8	31.0	172.0	0.0	60.0	2.6	10.6	16.7	18.0	163.2

J. METHODS OF DISPOSAL:

1. Discharged to the environment
- a. Oxidation pond or holding pond
 - b. Percolation or evaporation pond
 - c. Surface spreading
 - d. Dry stream bed X
 - e. Landfills
 - f. Disposal wells
2. Reused
- a. On-site reuse
 - (i) Specify reuse: _____

 - (ii) Treated
 - (iii) Untreated
 - b. Irrigation
 - (i) Estimated amount: _____
 - (ii) Location: _____

3. Treated
- a. Chemical reactions
 - b. Cooling
 - c. Filtering
 - d. Chlorination
 - e. Dilution
 - f. Ultimate disposal: _____

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes: X
No:

STATEWIDE GROUND-WATER MONITORING PLAN

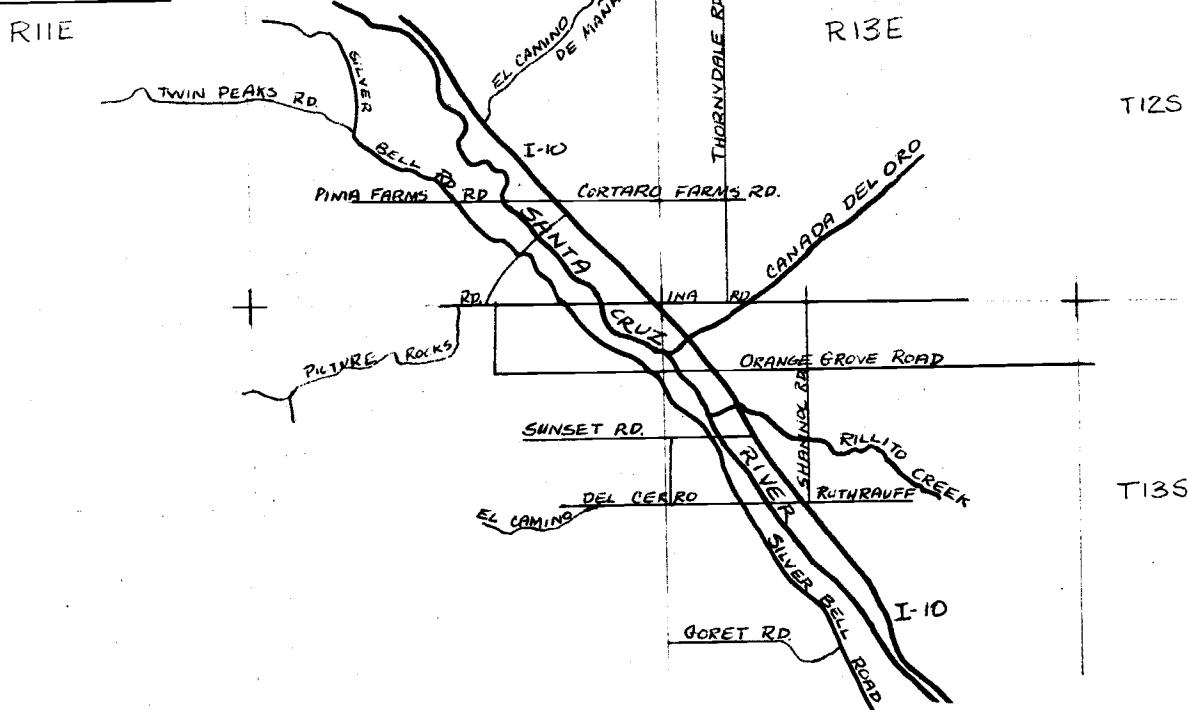
POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: Santa Cruz River (Natural discharge)

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE:

C. LOCATION OF SOURCE:

D. LOCATION SKETCH:



E. TYPE OF WASTE: SOLID LIQUID

1. Dissolved or microbial
2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify _____
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify River discharge _____

G. ESTIMATED QUANTITY OF WASTE:

Total volume in 1975 at Cortaro 20,812 cubic feet
Mean discharge rate in 1975 57 cfs

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophyls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

I. REPRESENTATIVE ANALYSES:Date of analysis: 1968Location: WRRC Field LabMajor

Calcium	<u>22</u>	mg/l	meq/l
Magnesium	<u>5</u>	mg/l	meq/l
Sodium	<u>17</u>	mg/l	meq/l
Potassium		mg/l	meq/l
Carbonate	<u>0</u>	mg/l	meq/l
Bicarbonate	<u>45</u>	mg/l	meq/l
Sulfate	<u>36</u>	mg/l	meq/l
Chloride	<u>12</u>	mg/l	meq/l
Nitrate		mg/l	meq/l

Trace

Arsenic		mg/l
Barium		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Cyanide		mg/l
Fluoride		mg/l
Iron		mg/l
Lead		mg/l
Manganese		mg/l
Mercury		mg/l
Selenium		mg/l
Silver		mg/l
Strontium		mg/l
Zinc		mg/l

Other Constituents

Nitrate-N	<u>1.3</u>	mg/l
Ammonia-N		mg/l
KJN		mg/l
Total-N		mg/l
Specific conductance	<u>.22</u>	mg/l
Total dissolved solids	<u>149</u>	mg/l
pH	<u>7.5</u>	mg/l
Silica		mg/l
Boron		mg/l
Fluoride		mg/l
Phosphorous		mg/l
Hardness		mg/l
Alkalinity		mg/l
B.O.D.		mg/l
C.O.D.		mg/l
S.S.		mg/l

Microorganisms

Total coliform		#/100ml
Fecal coliform		#/100ml
Fecal Strep.		#/100ml

J. METHODS OF DISPOSAL:

1. Discharged to the environment
 - a. Oxidation pond or holding pond
 - b. Percolation or evaporation pond
 - c. Surface spreading
 - d. Dry stream bed x
 - e. Landfills
 - f. Disposal wells

2. Reused
 - a. On-site reuse
 - (i) Specify reuse: _____

 - (ii) Treated
 - (iii) Untreated

- b. Irrigation
 - (i) Estimated amount: _____
 - (ii) Location: _____

3. Treated
 - a. Chemical reactions
 - b. Cooling
 - c. Filtering
 - d. Chlorination
 - e. Dilution
 - f. Ultimate disposal: _____

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:
No: x

STATEWIDE GROUND-WATER MONITORING PLAN

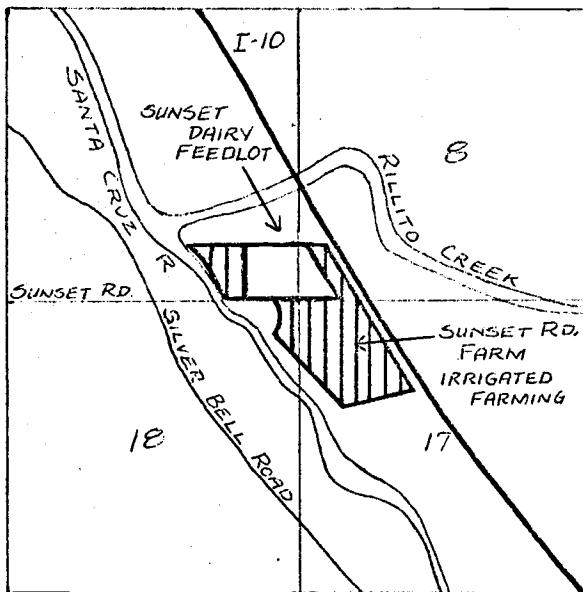
POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: Sunset Dairy Feedlot

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE: Sunset Dairy

C. LOCATION OF SOURCE: T 13S R13E, S7 & 8

D. LOCATION SKETCH:



E. TYPE OF WASTE: SOLID LIQUID

1. Dissolved or microbial
2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify _____
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE:

Information unavailable

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophylls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

J. METHODS OF DISPOSAL:

1. Discharged to the environment

- a. Oxidation pond or holding pond
-
- b. Percolation or evaporation pond
-
- c. Surface spreading
-
- d. Dry stream bed
-
- e. Landfills
-
- f. Disposal wells
-
- g. Unknown

2. Reused

- a. On-site reuse

(i) Specify reuse: _____

(ii) Treated

(iii) Untreated

- b. Irrigation

(i) Estimated amount: _____

(ii) Location: _____

3. Treated

- a. Chemical reactions

- b. Cooling

- c. Filtering

- d. Chlorination

- e. Dilution

- f. Ultimate disposal: _____

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:

No:

CONCENTRATIONS OF CHEMICAL CONSTITUENTS
MEASURED IN DIRECT RUNOFF FROM THE FEEDPENS
(mg/l)

	Number of Samples	Mean	Min.	Max.
T-Solids	8	11,429	3,110	28,882
TSS	8	5,912	745	17,202
VSS	7	3,426	475	9,286
TDS	8	5,526	882	22,372
Chloride	7	450	97	648
T-PO ₄ -P	16	69.2	21	223
NO ₃ -N	15	0.64	<0.05	2.3
NH ₃ -N	15	108	4	173
TON-N	15	228	31	493
COD	15	7,210	1,439	16,320
BOD ₅	4	2,201	1,075	3,450
TOC	15	2,010	150	4,400
Ca	6	698	194	1,619
Mg	6	69	28	89
Na	6	408	130	655
K	6	761	226	1,352

From: Kreis, R.D., M.R.Scalf, and J.F.McNabb,
"Characteristics of a Beef Cattle Feedlot,"
EPA R2-72-061, U.S.Env. Protection
Agency, Corvallis, Wash, 1972.

STATEWIDE GROUND-WATER MONITORING PLAN

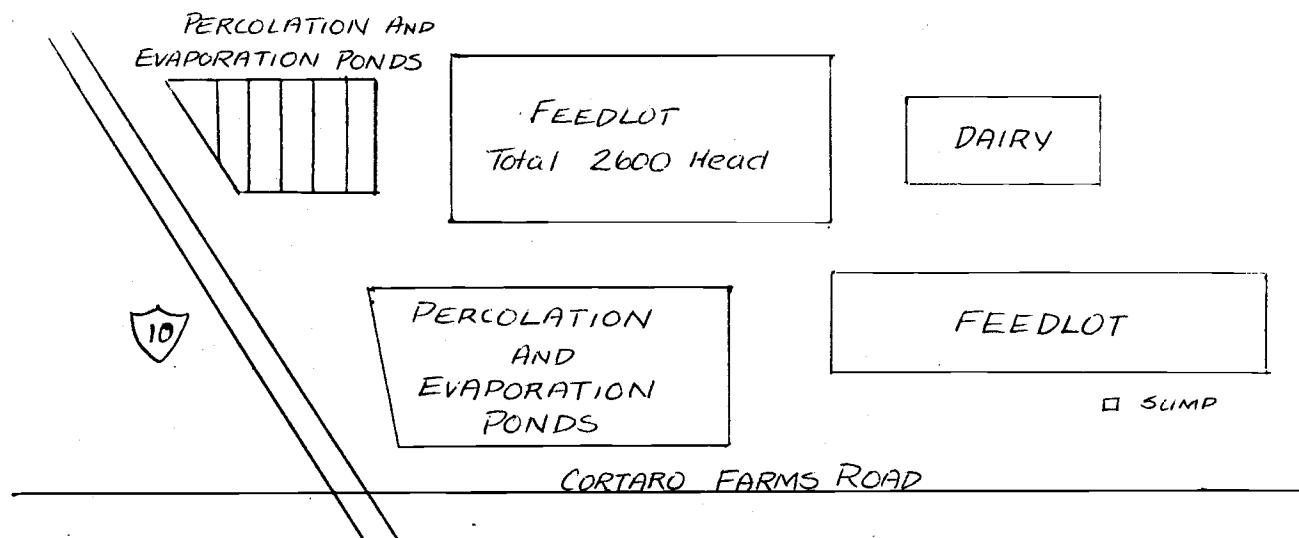
POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: Shamrock Diary

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE:

C. LOCATION OF SOURCE: T 12S, R 12E, S 26, A, D, B (D-12-12) 26 a d b

D. LOCATION SKETCH:



E. TYPE OF WASTE: SOLID LIQUID

1. Dissolved or microbial
2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify _____
2. AGRICULTURAL: ; Specify Wash water for cows + buildings
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE:

104,933 gpd estimated over 10 day period
using Sparling meter (1-15-77 - 1-14-77)
area of ponds ≈ 6.7 acres

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophylls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

I. REPRESENTATIVE ANALYSES:

Date of analysis: 4-15-77

Location: Shamrock Diary
Seepage-Evaporative Pond

Major

Calcium	<u>122.2</u>	mg/l	meq/l
Magnesium	<u>38.5</u>	mg/l	meq/l
Sodium	<u>70.2</u>	mg/l	meq/l
Potassium	<u>47.6</u>	mg/l	meq/l
Carbonate	<u>0.0</u>	mg/l	meq/l
Bicarbonate	<u>464.0</u>	mg/l	meq/l
Sulfate	<u>9999.9</u>	mg/l	meq/l
Chloride	<u>161.0</u>	mg/l	meq/l
Nitrate		mg/l	meq/l

Trace

Arsenic	mg/l
Barium	mg/l
Cadmium	mg/l
Chromium	mg/l
Copper	mg/l
Cyanide	mg/l
Fluoride	mg/l
Iron	mg/l
Lead	mg/l
Manganese	mg/l
Mercury	mg/l
Selenium	mg/l
Silver	mg/l
Strontium	mg/l
Zinc	mg/l

Other Constituents

Nitrate-N	mg/l
Ammonia-N	mg/l
KJN	<u>169.0</u> mg/l
Total-N	<u>174.7</u> mg/l
Specific conductance	<u>2.75</u> mg/l
Total dissolved solids	mg/l
pH	<u>7.80</u> mg/l
Silica	mg/l
Boron	mg/l
Fluoride	mg/l
Phosphorous	mg/l
Hardness	<u>383.1</u> mg/l
Alkalinity	mg/l
B.O.D.	mg/l
C.O.D.	mg/l
S.S.	mg/l

4-18-77 Discharge Pt.

Microorganisms

Total coliform	<u>23,000,000</u> #/100ml
Fecal coliform	<u>7,300,000</u> #/100ml
Fecal Strep.	#/100ml

Pond #1

Total Coliform	49,500/100 ml
Fecal Coliform	6,500/100 ml

SHAMROCK DAIRY SEEPAGE-EVAPORATIVE POND

T12S R12E SEC.26 ADB

DATE	PC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
3/25/77	1.18	7.90	69.0	115.0	111.3	32.4	9999.9	9999.9	0.0	9999.9	98.7	6.6	161.4	162.9	411.4
4/15/77	2.75	7.80	70.2	47.6	122.2	38.5	161.0	464.0	0.0	9999.9	107.8	25.4	169.0	174.7	463.8

SHANROCK DAIRY WASTE WATER EFFLUENT

T12S R12E SEC.26 ADB

DATE	EC	PH	NA	K	CA	MG	CL	HC03	CO3	SO4	NH3	NO2/3	KJN	TCTN	HARD
---	--	--	--	-	--	--	--	---	--	--	--	--	--	--	----
2/17/77	2.13	7.80	49.6	19.7	64.1	21.2	110.0	927.2	0.0	9999.9	52.9	14.3	197.4	200.7	247.4
4/1/77	1.75	8.30	49.6	115.0	50.8	22.9	9999.9	9999.9	0.0	9999.9	47.0	16.8	155.7	159.5	221.2
4/15/77	3.28	7.80	64.1	47.6	99.2	35.1	198.0	1464.0	0.0	9999.9	223.3	24.8	294.0	299.6	392.3
6/27/77	1.90	7.80	48.5	172.5	47.3	22.2	100.0	858.9	0.0	300.0	95.0	12.0	150.0	152.7	209.6

J. METHODS OF DISPOSAL:

1. Discharged to the environment

a. Oxidation pond or holding pond

b. Percolation or evaporation pond

c. Surface spreading

d. Dry stream bed

e. Landfills

f. Disposal wells

2. Reused

a. On-site reuse

(i) Specify reuse: _____

(ii) Treated

(iii) Untreated

b. Irrigation

(i) Estimated amount: _____

3. Treated

a. Chemical reactions

b. Cooling

c. Filtering

d. Chlorination

e. Dilution

f. Ultimate disposal: _____

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:

No:

STATEWIDE GROUND-WATER MONITORING PLAN

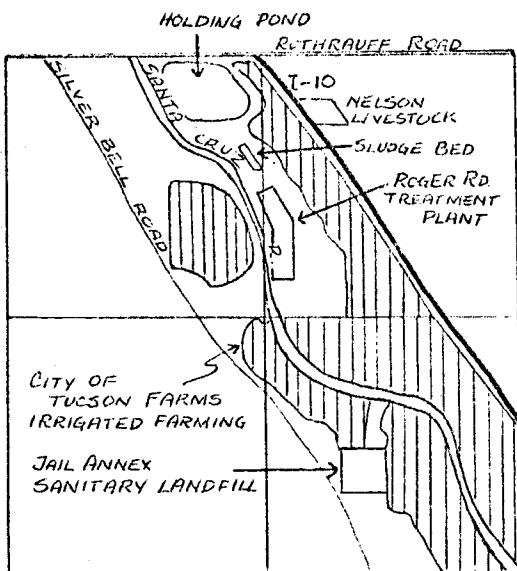
POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: Nelson Livestock Feedlot

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE:

C. LOCATION OF SOURCE: (D-13-13) 21 b b

D. LOCATION SKETCH:



E. TYPE OF WASTE: SOLID LIQUID

1. Dissolved or microbial

2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify _____
2. AGRICULTURAL: ; Specify Manure + Runoff _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE:

No. of livestock varies on daily basis. Between 300-2000. Stockpile manure and give away. 32,000 head over past year. No idea as to water use
Manure: 160000 lbs per year (dry weight)
Urine: 160,000 gal per year

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophyls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

J. METHODS OF DISPOSAL:

1. Discharged to the environment

a. Oxidation pond or holding pond

b. Percolation or evaporation pond

c. Surface spreading

d. Dry stream bed

some

e. Landfills

f. Disposal wells

2. Reused

a. On-site reuse

(i) Specify reuse: _____

(ii) Treated

(iii) Untreated

b. Irrigation

(i) Estimated amount: _____

(ii) Location: _____

3. Treated

a. Chemical reactions

b. Cooling

c. Filtering

d. Chlorination

e. Dilution

f. Ultimate disposal: _____

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:

No:

CONCENTRATIONS OF CHEMICAL CONSTITUENTS
MEASURED IN DIRECT RUNOFF FROM THE FEEDPENS
(mg/l)

	Number of Samples	Mean	Min.	Max.
T-Solids	8	11,429	3,110	28,882
TSS	8	5,912	745	17,202
VSS	7	3,426	475	9,286
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Mg	6	69	28	89
Na	6	408	130	655
K	6	761	226	1,352

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"Characteristics of a Beef Cattle Feedlot,"
EPA R2-72-061, U.S.Env.Protection
Agency, Corvallis, Wash, 1972.

STATEWIDE GROUND-WATER MONITORING PLAN

POLLUTION POTENTIAL OF WASTE SOURCES

- A. WASTE SOURCE: Tucson Gas and Electric Company cooling tower blowdown effluent
- B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE: Tucson Gas and Electric Company, recharged by Water Resource Research Center, U. of A.
- C. LOCATION OF SOURCE: (D-13-13) 34 acc
- D. LOCATION SKETCH: See over page
- E. TYPE OF WASTE: SOLID LIQUID
1. Dissolved or microbial
2. Suspended sediment
- F. CLASSIFICATION OF WASTE:
1. MUNICIPAL: ; Specify _____
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify Cooling tower blowdown effluent
4. MISCELLANEOUS: ; Specify _____
- G. ESTIMATED QUANTITY OF WASTE:
100 to 400 gpm

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophylls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

Table 3--Chemical composition of selected animal wastes†

Type of animal waste	Chemical composition											Reference	
	N	P	K	Ca	Mg	S	Mn	Fe	B	Cu	Zn	Mo	
	% dry weight						ppm						
Broiler litter	2.3	1.1	1.7	2.0	0.4	0.4	272	1,244	33	29	128	13	Perkins and Parker (1971)
Hen litter	2.0	1.9	1.9	3.4	0.5	0.5	333	1,347	28	31	120	14	Perkins and Parker (1971)
Dairy cow	2.7	0.5	2.4	1.6	0.6	0.3	56	222	83	28	83	6	Benne et al. (1961)
Fattening cattle	3.5	1.0	2.3	0.6	0.5	0.4	23	182	91	23	68	2	Benne et al. (1961)
Hog	2.0	0.6	1.5	2.0	0.3	0.5	72	1,002	143	18	215	4	Benne et al. (1961)
Horse	1.7	0.3	1.5	2.9	0.5	0.3	37	500	56	19	56	4	Benne et al. (1961)
Sheep	4.0	0.6	2.9	1.9	0.6	0.3	32	518	32	16	81	3	Benne et al. (1961)

† Cited in Azevedo and Stout (1974).

I. REPRESENTATIVE ANALYSES:

Date of analysis:

Location:

Major

Calcium	_____ mg/l	_____ meq/l
Magnesium	_____ mg/l	_____ meq/l
Sodium	_____ mg/l	_____ meq/l
Potassium	_____ mg/l	_____ meq/l
Carbonate	_____ mg/l	_____ meq/l
Bicarbonate	_____ mg/l	_____ meq/l
Sulfate	_____ mg/l	_____ meq/l
Chloride	_____ mg/l	_____ meq/l
Nitrate	_____ mg/l	_____ meq/l

Trace

Arsenic	_____ mg/l
Barium	_____ mg/l
Cadmium	_____ mg/l
Chromium	_____ mg/l
Copper	_____ mg/l
Cyanide	_____ mg/l
Fluoride	_____ mg/l
Iron	_____ mg/l
Lead	_____ mg/l
Manganese	_____ mg/l
Mercury	_____ mg/l
Selenium	_____ mg/l
Silver	_____ mg/l
Strontium	_____ mg/l
Zinc	_____ mg/l

Other Constituents

Nitrate-N	_____ mg/l
Ammonia-N	_____ mg/l
KJN	_____ mg/l
Total-N	_____ mg/l
Specific conductance	_____ mg/l
Total dissolved solids	_____ mg/l
pH	_____ mg/l
Silica	_____ mg/l
Boron	_____ mg/l
Fluoride	_____ mg/l
Phosphorous	_____ mg/l
Hardness	_____ mg/l
Alkalinity	_____ mg/l
B.O.D.	_____ mg/l
C.O.D.	_____ mg/l
S.S.	_____ mg/l

Microorganisms

Total coliform	_____ #/100ml
Fecal coliform	_____ #/100ml
Fecal Strep.	_____ #/100ml

J. METHODS OF DISPOSAL:

1. Discharged to the environment

a. Oxidation pond or holding pond

b. Percolation or evaporation pond

c. Surface spreading

d. Dry stream bed

e. Landfills

f. Disposal wells

2. Reused

a. On-site reuse

(i) Specify reuse: _____

(ii) Treated

(iii) Untreated

b. Irrigation

(i) Estimated amount: _____

(ii) Location: _____

3. Treated

a. Chemical reactions

b. Cooling

c. Filtering

d. Chlorination

e. Dilution

f. Ultimate disposal: _____

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:

No:

STATEWIDE GROUND-WATER MONITORING PLAN

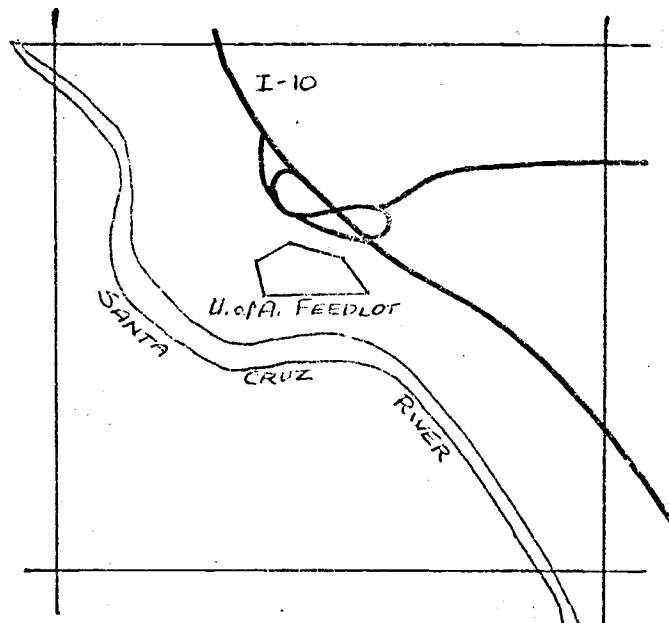
POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: U of A Feedlot

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE:

C. LOCATION OF SOURCE: (D-13-13) 34 bd

D. LOCATION SKETCH:



E. TYPE OF WASTE: SOLID LIQUID

1. Dissolved or microbial

2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify _____
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE:

Manure: 1.5 to 2 tons/day

Urine: 1500 gal/day

See Section L, Additional Comments

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophylls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

J. METHODS OF DISPOSAL:

1. Discharged to the environment
- a. Oxidation pond or holding pond
- b. Percolation or evaporation pond
- c. Surface spreading (on irrigated fields)
- d. Dry stream bed
- e. Landfills
- f. Disposal wells

2. Reused

- a. On-site reuse

(i) Specify reuse: Incorporated into farmland and other crop areas

(ii) Treated

(iii) Untreated

- b. Irrigation

(i) Estimated amount: _____

(ii) Location: _____

3. Treated

- a. Chemical reactions

- b. Cooling

- c. Filtering

- d. Chlorination

- e. Dilution

- f. Ultimate disposal: _____
-
-

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:

No:

CONCENTRATIONS OF CHEMICAL CONSTITUENTS
MEASURED IN DIRECT RUNOFF FROM THE FEEDPENS
(mg/l)

	Number of Samples	Mean	Min.	Max.
T-Solids	8	11,429	3,110	28,882
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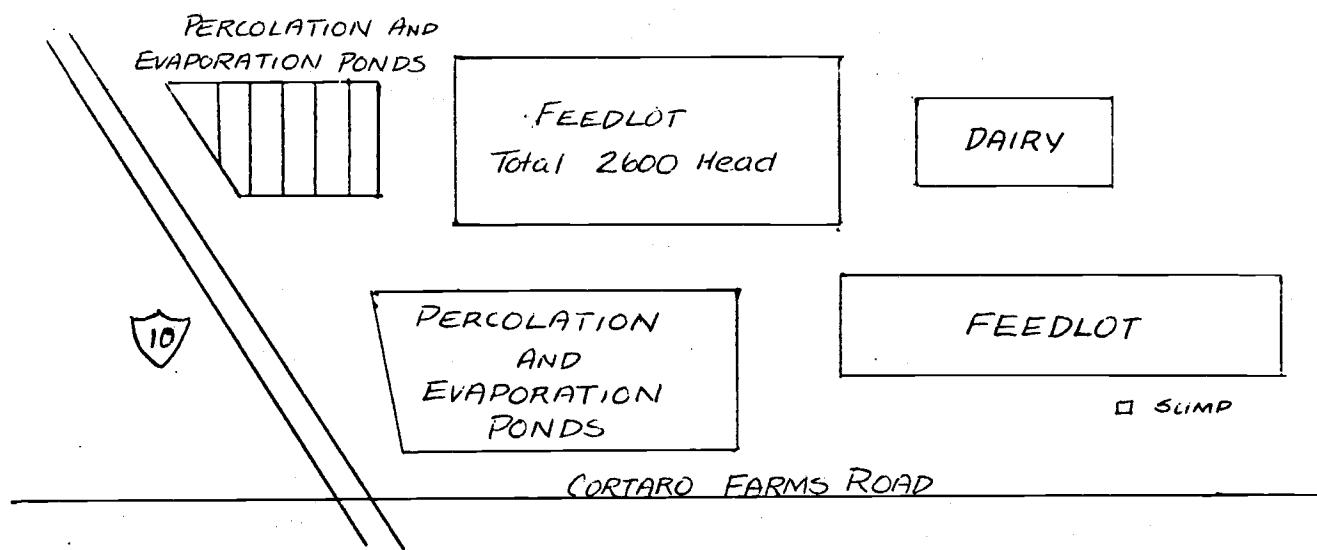
STATEWIDE GROUND-WATER MONITORING PLAN
POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: Shamrock Dairy Feedlot

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE:

C. LOCATION OF SOURCE:

D. LOCATION SKETCH:



E. TYPE OF WASTE: SOLID LIQUID

1. Dissolved or microbial
2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify _____
2. AGRICULTURAL: ; Specify manure, urine
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE:

2600 head

5 gpd urine/cow = 13,000 gpd urine

7 lbs/day manure (dry weight)/cow = 18,200 lbs/day manure

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
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- c. Enteric viruses

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- c. Extractable organic matter
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- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

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EPA R2-72-061, U.S. Env. Protection
Agency, Corvallis, Wash., 1972.

J. METHODS OF DISPOSAL:

1. Discharged to the environment

- a. Oxidation pond or holding pond
- b. Percolation or evaporation pond
- c. Surface spreading
- d. Dry stream bed
- e. Landfills
- f. Disposal wells
- g. Other (applied to cropland)

2. Reused

a. On-site reuse

(i) Specify reuse: applied to cropland

(ii) Treated

(iii) Untreated

b. Irrigation

(i) Estimated amount: _____

(ii) Location: _____

3. Treated

a. Chemical reactions

b. Cooling

c. Filtering

d. Chlorination

e. Dilution

f. Ultimate disposal: _____

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:

No:

STATEWIDE GROUND-WATER MONITORING PLAN

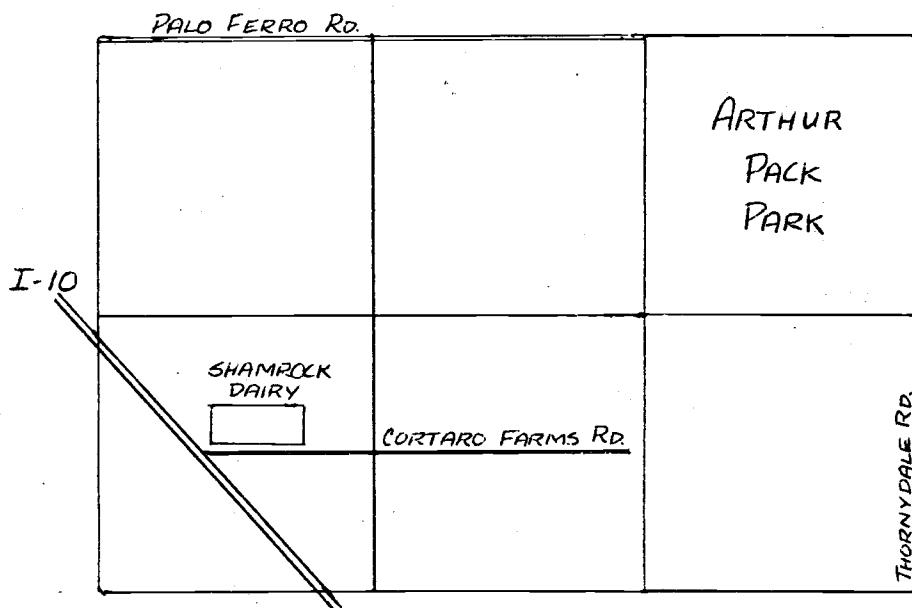
POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: Arthur Pack Park - Effluent irrigation

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE:

C. LOCATION OF SOURCE: (D-13-13) 7 a bb

D. LOCATION SKETCH:



E. TYPE OF WASTE: SOLID LIQUID

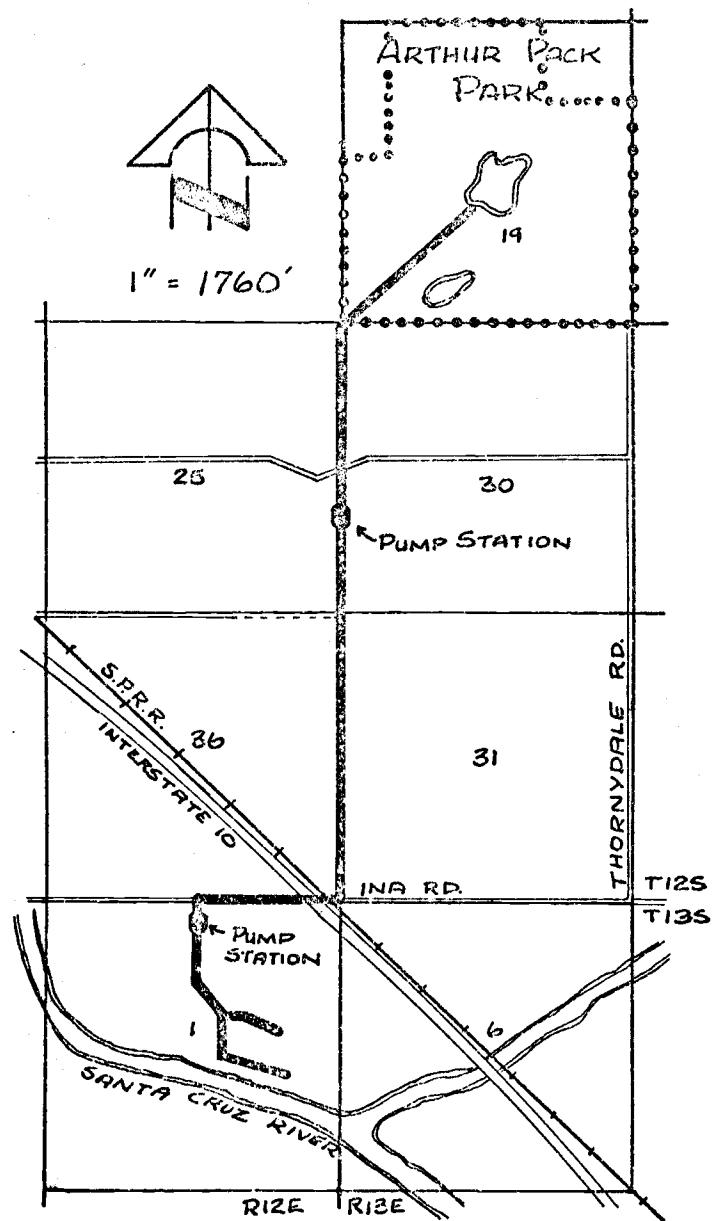
1. Dissolved or microbial
2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify _____
2. AGRICULTURAL: ; Specify effluent irrigation _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE:

0.7 mgd.



H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophyls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

I. REPRESENTATIVE ANALYSES:

Date of analysis: 6-6-77Location: PondMajor

Calcium	<u>53.2</u>	mg/l	meq/l
Magnesium	<u>6.4</u>	mg/l	meq/l
Sodium	<u>131.8</u>	mg/l	meq/l
Potassium	<u>17.6</u>	mg/l	meq/l
Carbonate	<u>0.0</u>	mg/l	meq/l
Bicarbonate	<u>353.8</u>	mg/l	meq/l
Sulfate	<u>74.0</u>	mg/l	meq/l
Chloride	<u>91.0</u>	mg/l	meq/l
Nitrate		mg/l	meq/l

Trace

Arsenic	mg/l
Barium	mg/l
Cadmium	mg/l
Chromium	mg/l
Copper	mg/l
Cyanide	mg/l
Fluoride	mg/l
Iron	mg/l
Lead	mg/l
Manganese	mg/l
Mercury	mg/l
Selenium	mg/l
Silver	mg/l
Strontium	mg/l
Zinc	mg/l

Other Constituents

Nitrate-N		mg/l
Ammonia-N		mg/l
KJN	<u>30.1</u>	mg/l
Total-N	<u>30.7</u>	mg/l
Specific conductance	<u>1.04</u>	mmhos/1
Total dissolved solids		mg/l
pH	<u>7.73</u>	mg/l
Silica		mg/l
Boron		mg/l
Fluoride		mg/l
Phosphorous		mg/l
Hardness	<u>0.0</u>	mg/l
Alkalinity		mg/l
B.O.D.		mg/l
C.O.D.		mg/l
S.S.		mg/l

Microorganisms

Total coliform	#/100ml
Fecal coliform	#/100ml
Fecal Strep.	#/100ml

J. METHODS OF DISPOSAL:

1. Discharged to the environment
 - a. Oxidation pond or holding pond
 - b. Percolation or evaporation pond
 - c. Surface spreading
 - d. Dry stream bed
 - e. Landfills
 - f. Disposal wells

2. Reused
 - a. On-site reuse
 - (i) Specify reuse: _____

 - (ii) Treated
 - (iii) Untreated
 - b. Irrigation
 - (i) Estimated amount: unknown
 - (ii) Location: _____

3. Treated
 - a. Chemical reactions
 - b. Cooling
 - c. Filtering
 - d. Chlorination
 - e. Dilution
 - f. Ultimate disposal: _____

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:
No:

STATEWIDE GROUND-WATER MONITORING PLAN
POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: CWVA IRR CANAL

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE:

C. LOCATION OF SOURCE:

D. LOCATION SKETCH: see attached figure

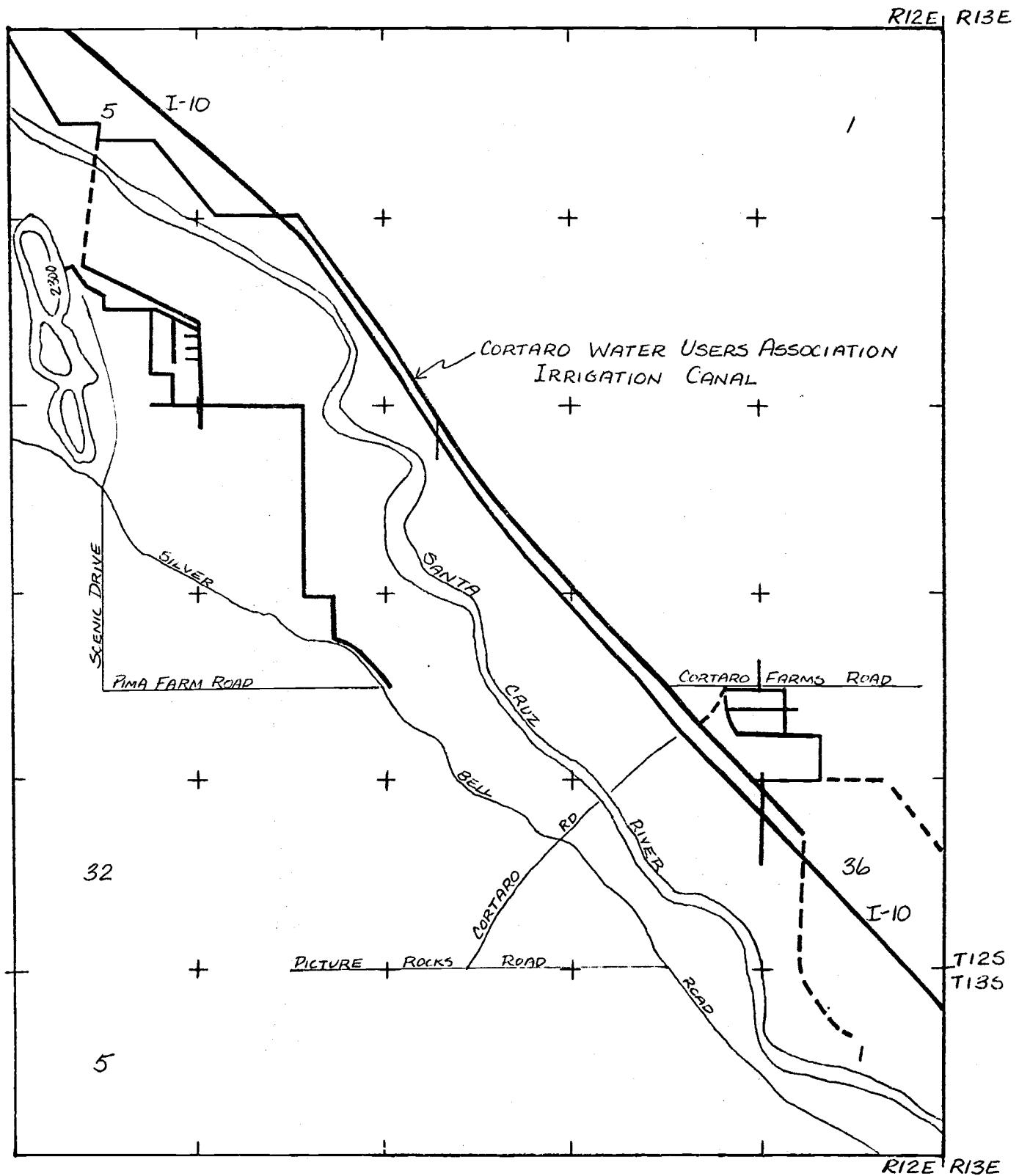
E. TYPE OF WASTE: SOLID LIQUID

1. Dissolved or microbial
2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify _____
2. AGRICULTURAL: ; Specify Irr. water _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE: 16.8 miles in length
7% loss
90 cfs average discharge
6.3 cfs water loss or
0.4 cfs per mile



H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophyls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

I. REPRESENTATIVE ANALYSES: Not available - blend of CWVA wells
Date of analysis: Location:

Major

Calcium	mg/l	meq/l
Magnesium	mg/l	meq/l
Sodium	mg/l	meq/l
Potassium	mg/l	meq/l
Carbonate	mg/l	meq/l
Bicarbonate	mg/l	meq/l
Sulfate	mg/l	meq/l
Chloride	mg/l	meq/l
Nitrate	mg/l	meq/l

Trace

Arsenic	mg/l
Barium	mg/l
Cadmium	mg/l
Chromium	mg/l
Copper	mg/l
Cyanide	mg/l
Fluoride	mg/l
Iron	mg/l
Lead	mg/l
Manganese	mg/l
Mercury	mg/l
Selenium	mg/l
Silver	mg/l
Strontium	mg/l
Zinc	mg/l

Other Constituents

Nitrate-N	mg/l
Ammonia-N	mg/l
KJN	mg/l
Total-N	mg/l
Specific conductance	mg/l
Total dissolved solids	mg/l
pH	mg/l
Silica	mg/l
Boron	mg/l
Fluoride	mg/l
Phosphorous	mg/l
Hardness	mg/l
Alkalinity	mg/l
B.O.D.	mg/l
C.O.D.	mg/l
S.S.	mg/l

Microorganisms

Total coliform	#/100ml
Fecal coliform	#/100ml
Fecal Strep.	#/100ml

J. METHODS OF DISPOSAL:

1. Discharged to the environment

- a. Oxidation pond or holding pond
- b. Percolation or evaporation pond
- c. Surface spreading
- d. Dry stream bed
- e. Landfills
- f. Disposal wells
- g. Other (seepage)

-
-
-
-
-
-
-

2. Reused

- a. On-site reuse

-
-

(i) Specify reuse: _____

(ii) Treated

-
-

(iii) Untreated

- b. Irrigation

-

(i) Estimated amount: _____

(ii) Location: _____

3. Treated

- a. Chemical reactions

-
-

- b. Cooling

-
-

- c. Filtering

-
-

- d. Chlorination

-
-

- e. Dilution

-
-

- f. Ultimate disposal: _____

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:

-

No:

-

STATEWIDE GROUND-WATER MONITORING PLAN

POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: Effluent Irrigation (For distribution of total irrigated acreage and consumptive water use, see Item L.)

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE: HANCOCK LAND AND CATTLE CO.

C. LOCATION OF SOURCE:

D. LOCATION SKETCH: SEE SOURCE MAPS

E. TYPE OF WASTE: SOLID LIQUID

1. Dissolved or microbial

2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify _____
2. AGRICULTURAL: ; Specify Effluent Irrigation
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE:

Irrigation Volume - 3186 acre feet/year in 1976
Area irrigated with effluent - 300 acre

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophylls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

1. REPRESENTATIVE ANALYSES:

Date of analysis: 1975-76

Location: Final Effluent Plant No. 1

Major

Calcium	72	mg/l	meq/l
Magnesium	18	mg/l	meq/l
Sodium	98	mg/l	meq/l
Potassium		mg/l	meq/l
Carbonate	0	mg/l	meq/l
Bicarbonate	294	mg/l	meq/l
Sulfate	152	mg/l	meq/l
Chloride	95	mg/l	meq/l
Nitrate		mg/l	meq/l

Trace

Arsenic	mg/l
Barium	mg/l
Cadmium	mg/l
Chromium	mg/l
Copper	mg/l
Cyanide	mg/l
Fluoride	mg/l
Iron	0.2 mg/l
Lead	mg/l
Manganese	mg/l
Mercury	mg/l
Selenium	mg/l
Silver	mg/l
Strontium	mg/l
Zinc	mg/l

Other Constituents

Nitrate-N	0.0	mg/l
Ammonia-N	17.1	mg/l
KJN	25.0	mg/l
Total-N	25.2	mg/l
Specific conductance		mg/l
Total dissolved solids	671	mg/l
pH	7.5	mg/l
Silica	42	mg/l
Boron		mg/l
Fluoride		mg/l
Phosphorous (Phosphate, Ortho)	18	mg/l
Hardness		mg/l
Alkalinity	241	mg/l
B.O.D.	21	mg/l
C.O.D.	48	mg/l
S.S.	68	mg/l
Organic-N	7.9	mg/l

Microorganisms

Total coliform	#/100ml
Fecal coliform	#/100ml
Fecal Strep.	#/100ml

1976 CROP SURVEY

	ALFALFA	CORN ¹	COTTON ¹	GRAIN ¹	SORGHUM ¹	PASTURE ¹	PECANS ¹	CROP TOTAL	FALLOW ¹	ACREAGE TOTAL	CNU ²
T 125, R 12E Sec. 8				94	146	146		386	0	386	1059
9				48	48			96	0	96	240
16			295					295	0	295	1033
17				40				40	40	80	100
21			383					383	79	462	1341
22			104					104	68	172	364
25			93					93	0	93	326
27			36					36	30	66	126
28								0	76	76	0
35			64					64	0	64	160
T 135, R 12E Sec. 1			40					40	0	40	100
2			19					19	19	19	86
12			15					15	15	15	38
T 135, R 13E Sec. 7			25		37	25		15	102	0	102
3			34			16		50	0	50	217
13						22		22	22	22	88
16			56			42		98		98	308
17			75			77		75	75	75	263
20						100		17	66	83	43
21			100			100		200	0	200	500
28			149	8	149			306	106	412	774
29								0	12	12	0
TOTAL	53	274	1088	672	259	80	15	2441	477	2918	7438

¹ In acres² In acre-feet.

Pesticide, Herbicide and Fertilizer

APPLICATION RATES FOR 1976

	Ethyl Parathion	Methyl Parathion	Diazinon 14-G	Treflan	Prometryne	Dicamba	N lbs/yr	P ₂ O ₅ lbs/yr
T12S, R12E								
Section 8	-	203.5	146.0	-	117.5	36.5	52,000	15,440
9	-	36.0	48.0	-	-	12.0	14,400	3,840
16	-	295.0	-	-	368.75	-	25,800	11,800
17	-	-	40.0	-	-	10.0	5,000	-
21	-	383.0	-	-	478.75	-	33,500	15,320
22	-	104.0	-	-	130.0	-	9,100	4,160
26	-	93.0	-	-	116.25	-	8,130	3,720
27	-	36.0	-	-	45.0	-	3,150	1,440
35	-	48.0	-	-	-	-	11,200	5,120
T13S, R12E								
Section 1	-	30.0	-	-	-	-	7,000	3,200
2	4.75	-	-	-	-	-	380	1,900
12	-	11.25	-	-	-	-	2,625	1,200
T13A, R13E								
Section 7	-	39.0	25.0	12.5	-	6.25	13,350	4,210
9	8.5	-	-	-	-	-	680	3,400
16	-	42.0	-	-	-	-	9,800	4,480
17	-	75.0	-	-	93.75	-	6,560	3,000
20	-	12.5	-	-	-	-	2,975	1,360
21	-	120.0	-	-	-	-	32,500	13,000
28	-	186.85	-	74.5	10.0	-	49,125	19,700

T.R.S. Acreage	Crop	Ethyl Parathion	Methyl Parathion	Diazinon 14-G	Treflan	Prometryne	Dicamba	N lbs/yr	P ₂ O ₅ lbs/yr
12, 12, 8									
94	Cotton		94 lbs		117.5			7050-9400	3,760
146	Grain		109.5					25,550	11,680
146	Sorghum			146			36.5	18,250	-
Sec. 9									
48	Grain		36					8,400	3,840
48	Sorghum			48			12	6,000	-
Sec. 16									
295	Cotton		295			368.75		2,125- 29,500	11,800
Sec. 17									
40	Sorghum			40			10	5,000	-
Sec. 21									
383	Cotton		383			478.75		28,725- 38,300	15,320
Sec. 22									
104	Cotton		104			130.0		7,800- 10,400	4,100
Sec. 26									
93	Cotton		93			116.25		6,975- 9,300	3,720
Sec. 27									
36	Cotton		36			45.0		2700-3600	1,440
Sec. 35									
64	Grain		48					11,200	5,120
13, 12, 1									
40	Grain		30					7,000	3,200
Sec. 2									
19	Alfalfa	4.75						285-475	1,900
Sec. 12									
15	Grain		11.25					2,625	1,200
13, 13, 7									
25	Corn		11.25		12.5			3,750	1,250
37	Grain		27.75					6,475	2,960
25	Sorghum			25			6.25	3,125	-
15	Pecans							-	-
Sec. 9									
34	Alfalfa	8.5						510-850	3,400
Sec. 16									
56	Grain		42					9,800	4,480
Sec. 17									
75	Cotton		75			93.75		5625-7500	3,000
Sec. 20									
17	Grain		12.75					2,975	1,360
Sec. 21									
100	Corn		45		50			15,000	5,000
100	Grain		75					17,500	8,000
Sec. 28									
149	Corn		67.1		74.5			22,350	7,450
8	Cotton		8			10.0		600-800	320
149	Grain		111.75					26,075	11,920

TOTALS

13.25 1,715.35 259.0 137.0 1,360.0 64.75

PESTICIDE, HERBICIDE AND FERTILIZER APPLICATION¹

CROP	PESTICIDE	DOSAGE ²	HERBICIDE	DOSAGE ²	P ₂ O ₅ ²	N ²
Alfalfa	Ethyl Parathion	.25	None	-	100	15-25
Corn	Methyl Parathion	.45	Treflan	.50	50	150
Cotton	Methyl Parathion	1.0	Prometryne	1.25	40	75-100
Grain	Methyl Parathion	.75	None	-	80	175
Sorghum	Diazinon 14-G	1.0	Dicamba	.25	0	125
Pecans	None	-	None	-	-	-

¹Contributors:

Dennis, R.E., R.K. Thompson, A.D. Day, E.B. Jackson, Growing Wheat in Arizona, College of Agriculture, Coop. Ext. Ser., Univ. of Arizona, Tucson, AZ.

Dennis, R.E., et al, Growing Alfalfa in Arizona, College of Agriculture, Coop. Ext. Ser., University of Arizona, Tucson, 1977.

Ibid., Oral communication.

Helms, Dempsey, Written communication.

²lbs/acre

J. METHODS OF DISPOSAL:

1. Discharged to the environment

- a. Oxidation pond or holding pond
- b. Percolation or evaporation pond
- c. Surface spreading
- d. Dry stream bed
- e. Landfills
- f. Disposal wells

-
-
-
-
-
-

2. Reused

a. On-site reuse

-
-

(i) Specify reuse: _____

(ii) Treated

-
-

(iii) Untreated

b. Irrigation

-

(i) Estimated amount: 3186 acre-ft per year (1976)

(ii) Location: Sewerfarm and other area, see source map

3. Treated

- a. Chemical reactions
- b. Cooling
- c. Filtering
- d. Chlorination
- e. Dilution
- f. Ultimate disposal: _____

-
-
-
-
-
-

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:

-

No:

-

STATEWIDE GROUND-WATER MONITORING PLAN

POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: Non-effluent irrigation, (For distribution of total irrigated acreage and consumptive water use, see Item L.)

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE:

C. LOCATION OF SOURCE:

D. LOCATION SKETCH: See Source Map

E. TYPE OF WASTE: SOLID LIQUID

1. Dissolved or microbial
2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify _____
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE:

Irrigation Volume - 10,700 acre feet/yr in 1976

For loading of pesticides and fertilizer see over page

Non-effluent irrigated area - 2141 acres

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophyls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

I. REPRESENTATIVE ANALYSES:

Date of analysis: see over page

Location:

Major

Calcium	_____ mg/l	_____ meq/l
Magnesium	_____ mg/l	_____ meq/l
Sodium	_____ mg/l	_____ meq/l
Potassium	_____ mg/l	_____ meq/l
Carbonate	_____ mg/l	_____ meq/l
Bicarbonate	_____ mg/l	_____ meq/l
Sulfate	_____ mg/l	_____ meq/l
Chloride	_____ mg/l	_____ meq/l
Nitrate	_____ mg/l	_____ meq/l

Trace

Arsenic	_____ mg/l
Barium	_____ mg/l
Cadmium	_____ mg/l
Chromium	_____ mg/l
Copper	_____ mg/l
Cyanide	_____ mg/l
Fluoride	_____ mg/l
Iron	_____ mg/l
Lead	_____ mg/l
Manganese	_____ mg/l
Mercury	_____ mg/l
Selenium	_____ mg/l
Silver	_____ mg/l
Strontium	_____ mg/l
Zinc	_____ mg/l

Other Constituents

Nitrate-N	_____ mg/l
Ammonia-N	_____ mg/l
KJN	_____ mg/l
Total-N	_____ mg/l
Specific conductance	_____ mg/l
Total dissolved solids	_____ mg/l
pH	_____ mg/l
Silica	_____ mg/l
Boron	_____ mg/l
Fluoride	_____ mg/l
Phosphorous	_____ mg/l
Hardness	_____ mg/l
Alkalinity	_____ mg/l
B.O.D.	_____ mg/l
C.O.D.	_____ mg/l
S.S.	_____ mg/l

Microorganisms

Total coliform	_____ #/100ml
Fecal coliform	_____ #/100ml
Fecal Strep.	_____ #/100ml

1976 CROP SURVEY

	ALFALFA ¹	CORN ¹	COTTON ¹	GRAIN ¹	SORGHUM ¹	PASTURE ¹	PECANS ¹	CROP TOTAL	FALLOW ¹	ACREAGE TOTAL	CHU ²
1125, R12E Sec. 8				94	146	146		385	0	386	1059
9				48	48			96	0	96	240
16			295					295	0	295	1033
17					40			40	40	80	100
21			383					383	79	462	1341
22			104					104	68	172	364
25			93					93	0	93	326
27			36					36	30	66	126
28								0	76	76	0
35			64					64	0	64	160
1135, R12E Sec. 1			40					40	0	40	100
2			19					19	19	19	86
12			15					15	15	15	38
1135, R13E Sec. 7			25		37	25		75	102	102	272
9			34			16		50	0	50	217
15						22		22	22	22	88
16					56	42		98		98	308
17			75			77		75	75	75	263
20					100	100		17	66	83	43
21			100					200	0	200	500
28			149	8	149			306	106	412	774
29								0	12	12	0
TOTAL	53	274	1088	672	259	80	15	2441	477	2918	7438

¹ In acres.² In acre-feet.

Pesticide, Herbicide and Fertilizer

APPLICATION RATES FOR 1976

	Ethyl Parathion	Methyl Parathion	Diazinon 14-G	Treflan	Prometryne	Dicamba	N lbs/yr	P ₂ O ₅ lbs/yr
T12S, R12E								
Section 8	-	203.5	146.0	-	117.5	36.5	52,000	15,440
9	-	36.0	48.0	-	-	12.0	14,400	3,840
16	-	295.0	-	-	368.75	-	25,800	11,800
17	-	-	40.0	-	-	10.0	5,000	-
21	-	383.0	-	-	478.75	-	33,500	15,320
22	-	104.0	-	-	130.0	-	9,100	4,160
26	-	93.0	-	-	116.25	-	8,130	3,720
27	-	36.0	-	-	45.0	-	3,150	1,440
35	-	48.0	-	-	-	-	11,200	5,120
T13S, R12E								
Section 1	-	30.0	-	-	-	-	7,000	3,200
2	4.75	-	-	-	-	-	380	1,900
12	-	11.25	-	-	-	-	2,625	1,200
T13A, R13E								
Section 7	-	39.0	25.0	12.5	-	6.25	13,350	4,210
9	8.5	-	-	-	-	-	680	3,400
16	-	42.0	-	-	-	-	9,800	4,480
17	-	75.0	-	-	93.75	-	6,560	3,000
20	-	12.5	-	-	-	-	2,975	1,360
21	-	120.0	-	-	-	-	32,500	13,000
28	-	186.85	-	74.5	10.0	-	49,125	19,700

F.R.S. Acreage	Crop	Ethyl Parathion	Methyl Parathion	Diazinon 14-G	Treflan	Prometryne	Dicamba	N lbs/yr	P ₂ O ₅ lbs/yr
12, 12, 8 94	Cotton		94 lbs		117.5			7050-9400	3,760
146	Grain		109.5					25,550	11,680
146	Sorghum			146			36.5	18,250	-
Sec. 9 48	Grain		36					8,400	3,840
48	Sorghum			48			12	6,000	-
Sec. 16 295	Cotton		295		368.75			2,125- 29,500	11,800
Sec. 17 40	Sorghum			40			10	5,000	-
Sec. 21 383	Cotton		383		478.75			28,725- 38,300	15,320
Sec. 22 104	Cotton		104		130.0			7,800- 10,400	4,160
Sec. 26 93	Cotton		93		116.25			6,975- 9,300	3,720
Sec. 27 36	Cotton		36		45.0			2700-3600	1,440
Sec. 35 64	Grain		48					11,200	5,120
13, 12, 1 40	Grain		30					7,000	3,200
Sec. 2 19	Alfalfa	4.75						285-475	1,900
Sec. 12 15	Grain		11.25					2,625	1,200
13, 13, 7 25	Corn		11.25					3,750	1,250
37	Grain		27.75		12.5			6,475	2,960
25	Sorghum			25			6.25	3,125	-
15	Pecans							-	-
Sec. 9 34	Alfalfa	8.5						510-850	3,400
Sec. 16 56	Grain		42					9,800	4,480
Sec. 17 75	Cotton		75		93.75			5625-7500	3,000
Sec. 20 17	Grain		12.75					2,975	1,360
Sec. 21 100	Corn		45		50			15,000	5,000
100	Grain		75					17,500	8,000
Sec. 28 149 8	Corn		67.1		74.5			22,350	7,450
149	Cotton		8			10.0		600-800	320
149	Grain		111.75					26,075	11,920
TOTALS		13.25	1,715.35	259.0	137.0	1,360.0	64.75		

PESTICIDE, HERBICIDE AND FERTILIZER APPLICATION¹

CROP	PESTICIDE	DOSAGE ²	HERBICIDE	DOSAGE ²	P ₂ O ₅ ²	N ²
Alfalfa	Ethyl Parathion	.25	None	-	100	15-25
Corn	Methyl Parathion	.45	Treflan	.50	50	150
Cotton	Methyl Parathion	1.0	Prometryne	1.25	40	75-100
Grain	Methyl Parathion	.75	None	-	80	175
Sorghum	Diazinon 14-G	1.0	Dicamba	.25	0	125
Pecans	None	-	None	-	-	-

¹Contributors:

Dennis, R.E., R.K. Thompson, A.D. Day, E.B. Jackson, Growing Wheat in Arizona, College of Agriculture, Coop. Ext. Ser., Univ. of Arizona, Tucson, AZ.

Dennis, R.E., et al, Growing Alfalfa in Arizona, College of Agriculture, Coop. Ext. Ser., University of Arizona, Tucson, 1977.

Ibid., Oral communication.

Helms, Dempsey, Written communication.

²lbs/acre

3. METHODS OF DISPOSAL:

- i. Discharged to the environment
- a. Oxidation pond or holding pond
 - b. Percolation or evaporation pond
 - c. Surface spreading
 - d. Dry stream bed
 - e. Landfills
 - f. Disposal wells
 - g. Other (irrigated water)
2. Reused
- a. On-site reuse

(i) Specify reuse: _____

- (ii) Treated
- (iii) Untreated
- b. Irrigation
- (i) Estimated amount: _____
- (ii) Location: _____
-

3. Treated

- a. Chemical reactions
 - b. Cooling
 - c. Filtering
 - d. Chlorination
 - e. Dilution
 - f. Ultimate disposal: _____

-

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:
No:

STATEWIDE GROUND-WATER MONITORING PLAN

POLLUTION POTENTIAL OF WASTE SOURCES

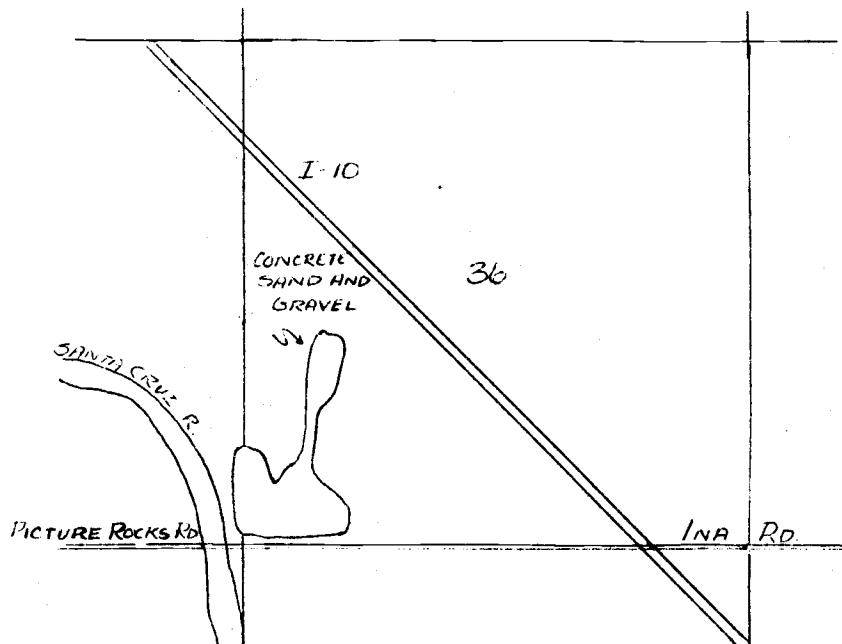
Sand and Gravel Operation

A. WASTE SOURCE:

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE: Concrete Sand & Gravel

C. LOCATION OF SOURCE: (D-12-12) 35 ddd

D. LOCATION SKETCH:



E. TYPE OF WASTE: SOLID LIQUID Gravel wash water

1. Dissolved or microbial
2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify _____
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify Gravel pit effluent _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE:

Unknown

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophyls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

I. REPRESENTATIVE ANALYSES:

Date of analysis: 6-20-77

Location: Gravel wash water

Major

Calcium	95.7	mg/l	meq/l
Magnesium	18.3	mg/l	meq/l
Sodium	137.0	mg/l	meq/l
Potassium	11.4	mg/l	meq/l
Carbonate	0.0	mg/l	meq/l
Bicarbonate	258.6	mg/l	meq/l
Sulfate	330.0	mg/l	meq/l
Chloride	89.0	mg/l	meq/l
Nitrate	0.0	mg/l	meq/l

Trace

Arsenic	_____	mg/l
Barium	_____	mg/l
Cadmium	_____	mg/l
Chromium	_____	mg/l
Copper	_____	mg/l
Cyanide	_____	mg/l
Fluoride	_____	mg/l
Iron	_____	mg/l
Lead	_____	mg/l
Manganese	_____	mg/l
Mercury	_____	mg/l
Selenium	_____	mg/l
Silver	_____	mg/l
Strontium	_____	mg/l
Zinc	_____	mg/l

Other Constituents

Nitrate-N	_____	mg/l
Ammonia-N	_____	mg/l
KJN	0.0	mg/l
Total-N	14.1	mg/l
Specific conductance	1.38	mg/l
Total dissolved solids	_____	mg/l
pH	7.80	mg/l
Silica	_____	mg/l
Boron	_____	mg/l
Fluoride	_____	mg/l
Phosphorous	_____	mg/l
Hardness	0.0	mg/l
Alkalinity	_____	mg/l
B.O.D.	_____	mg/l
C.O.D.	_____	mg/l
S.S.	_____	mg/l

Microorganisms

Total coliform	_____	#/100ml
Fecal coliform	_____	#/100ml
Fecal Strep.	_____	#/100ml

G. METHODS OF DISPOSAL:

1. Discharged to the environment

- a. Oxidation pond or holding pond
-
- b. Percolation or evaporation pond
-
- c. Surface spreading
-
- d. Dry stream bed
-
- e. Landfills
-
- f. Disposal wells
-

2. Reused

- a. On-site reuse

(i) Specify reuse: _____

(ii) Treated

(iii) Untreated

- b. Irrigation

(i) Estimated amount: _____

(ii) Location: _____

3. Treated

- a. Chemical reactions
-
- b. Cooling
-
- c. Filtering
-
- d. Chlorination
-
- e. Dilution
-
- f. Ultimate disposal: _____
-

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:

No:

STATEWIDE GROUND-WATER MONITORING PLAN

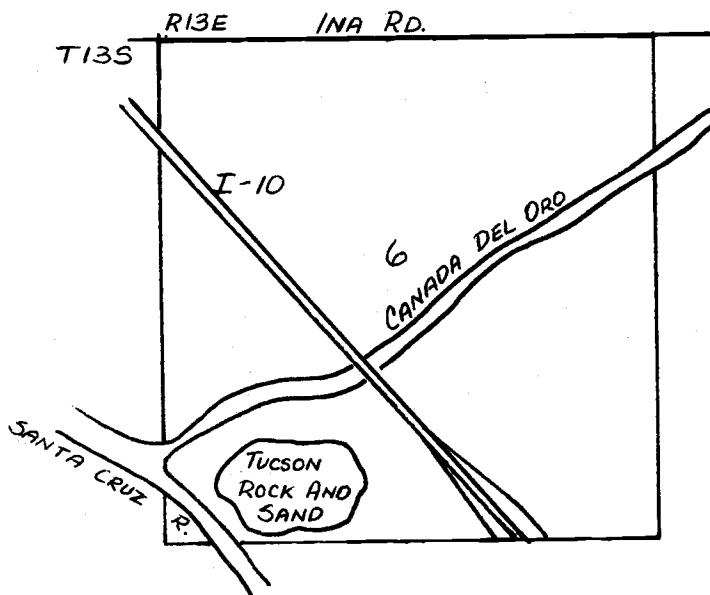
POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE:

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE: Tucson Rock and Sand, Tanner Co.

C. LOCATION OF SOURCE: (D-13-13) 6 cc

D. LOCATION SKETCH:



E. TYPE OF WASTE: SOLID LIQUID

1. Dissolved or microbial

2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify _____
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE:

Not known: well water used as wash and process water in gravel sand operation.

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophylls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

I. REPRESENTATIVE ANALYSES: Not available

Date of analysis:

Location:

Major

Calcium	mg/l	meq/l
Magnesium	mg/l	meq/l
Sodium	mg/l	meq/l
Potassium	mg/l	meq/l
Carbonate	mg/l	meq/l
Bicarbonate	mg/l	meq/l
Sulfate	mg/l	meq/l
Chloride	mg/l	meq/l
Nitrate	mg/l	meq/l

Trace

Arsenic	mg/l
Barium	mg/l
Cadmium	mg/l
Chromium	mg/l
Copper	mg/l
Cyanide	mg/l
Fluoride	mg/l
Iron	mg/l
Lead	mg/l
Manganese	mg/l
Mercury	mg/l
Selenium	mg/l
Silver	mg/l
Strontium	mg/l
Zinc	mg/l

Other Constituents

Nitrate-N	mg/l
Ammonia-N	mg/l
KJN	mg/l
Total-N	mg/l
Specific conductance	mg/l
Total dissolved solids	mg/l
pH	mg/l
Silica	mg/l
Boron	mg/l
Fluoride	mg/l
Phosphorous	mg/l
Hardness	mg/l
Alkalinity	mg/l
B.O.D.	mg/l
C.O.D.	mg/l
S.S.	mg/l

Microorganisms

Total coliform	#/100ml
Fecal coliform	#/100ml
Fecal Strep.	#/100ml

J. METHODS OF DISPOSAL:

1. Discharged to the environment
- a. Oxidation pond or holding pond
- b. Percolation or evaporation pond
- c. Surface spreading
- d. Dry stream bed
- e. Landfills
- f. Disposal wells
2. Reused
- a. On-site reuse
- (i) Specify reuse: Reused as wash water
-
- (ii) Treated
- (iii) Untreated
- b. Irrigation
- (i) Estimated amount: _____
- (ii) Location: _____
-
3. Treated
- a. Chemical reactions
- b. Cooling
- c. Filtering
- d. Chlorination
- e. Dilution
- f. Ultimate disposal: _____
-
-

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:
No:

STATEWIDE GROUND-WATER MONITORING PLAN

POLLUTION POTENTIAL OF WASTE SOURCES

- A. WASTE SOURCE: Tucson Gas and Electric Company cooling tower blowdown effluent
- B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE: Tucson Gas and Electric Company, recharged by Water Resource Research Center, U. of A.
- C. LOCATION OF SOURCE: (D-13-13) 34 acc
- D. LOCATION SKETCH: See over page

- E. TYPE OF WASTE: SOLID LIQUID
1. Dissolved or microbial
2. Suspended sediment
- F. CLASSIFICATION OF WASTE:
1. MUNICIPAL: ; Specify _____
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify Cooling tower blowdown effluent
4. MISCELLANEOUS: ; Specify _____

G. ESTIMATED QUANTITY OF WASTE:

100 to 400 gpm

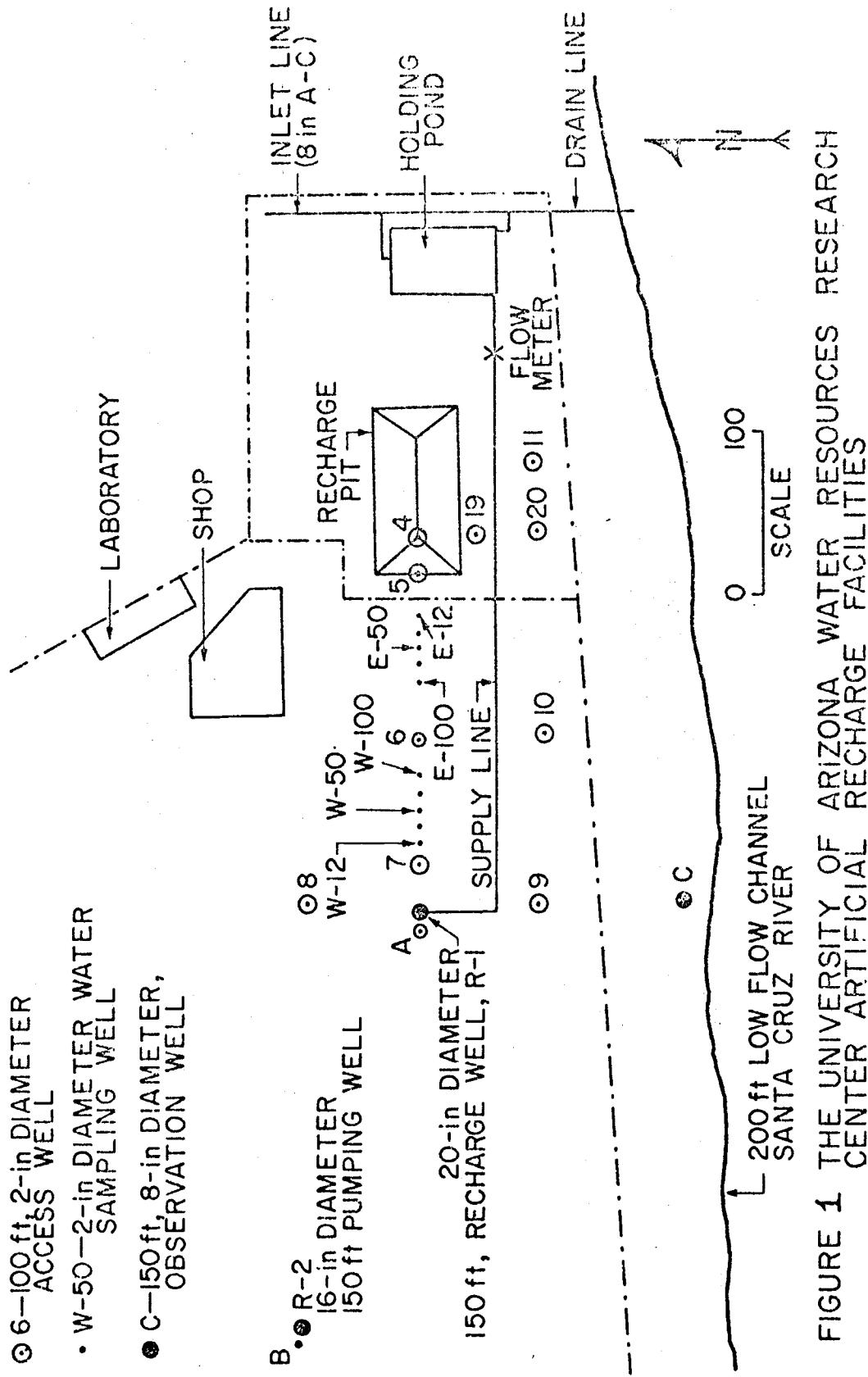


FIGURE 1 THE UNIVERSITY OF ARIZONA WATER RESOURCES RESEARCH CENTER ARTIFICIAL RECHARGE FACILITIES

H. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophylls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

TABLE 8.
COMPLETE ANALYSES OF SAMPLES OF EFFLUENT
SUPPLY AND FROM WELLS R-1, R-2 AND DOMESTIC WELL

	EFFLUENT SUPPLY	WELL R-1	WELL R-2	DOMESTIC WELL	
	9/4/74	9/4/74	9/4/74	2/28/69	9/4/74
Soluble Salt (mg/l)	2245	2158	2100	947	1233
ECX10 ³	4.8	3.75	2.82	1.2	1.7
Calcium (mg/l)	148	282	278	104	166
Magnesium (mg/l)	33.6	15.6	21.6	19	51.6
Sodium (mg/l)	700	385	350	156	208
Chloride (mg/l)	342	344	328	140	158
Sulfate (mg/l)	925	882	906	340	405
Carbonate (mg/l)	0	0	0	0	0
Bicarbonate (mg/l)	49	117	176	171	227
Nitrate (mg/l)	44.7	28.5	36.3	17.0	14.4
pH	6.8	7.0	7.3	7.3	7.6
Hardness (gr/gal)		769	783	338	626

J. METHODS OF DISPOSAL:

- i. Discharged to the environment
- a. Oxidation pond or holding pond
 - b. Percolation or evaporation pond
 - c. Surface spreading
 - d. Dry stream bed
 - e. Landfills
 - f. Disposal wells
2. Reused
- a. On-site reuse
(i) Specify reuse: _____

 - (ii) Treated
(iii) Untreated
b. Irrigation
(i) Estimated amount: _____
(ii) Location: _____

3. Treated
- a. Chemical reactions
 - b. Cooling
 - c. Filtering
 - d. Chlorination
 - e. Dilution
 - f. Ultimate disposal: _____

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:
No:

STATEWIDE GROUND-WATER MONITORING PLAN

POLLUTION POTENTIAL OF WASTE SOURCES

A. WASTE SOURCE: Wells in Source Area

B. INDIVIDUAL OR AGENCY PRODUCING OR MANAGING WASTE:

C. LOCATION OF SOURCE: See Well Location Map

D. LOCATION SKETCH:

(D-12-12) 8, abd	(D-12-12) 26,dba	(D-13-13) 7,dda
8, bbb	26,dbd	8,baa
8, cbc	27,cbb	8,cdd
8, dba	33,aca	8,cda
16,bba	33,dad	17,acc
16,bdc	34,baa	17,acc
16,ddd	35,add	17,acc
17,aad	36,add	17,acc
17,ddc	36,cbc	17,dba
17,ddd	36,cdc	17,dba
20,baa	36,ddc	17,ddc
20,cad		18,aca
20,dcd		18,cad
22,bba		21,cbd
22,bbd	(D-13-12) 1,bda	21,dcc
22,dcd		27,ccd
22,ddb		
25,cca		
26,bca	(D-13-13) 5,ccb	
26,cba		

E. TYPE OF WASTE: SOLID LIQUID

1. Dissolved or microbial
2. Suspended sediment

F. CLASSIFICATION OF WASTE:

1. MUNICIPAL: ; Specify _____
2. AGRICULTURAL: ; Specify _____
3. INDUSTRIAL: ; Specify _____
4. MISCELLANEOUS: ; Specify Leakage into well _____

G. ESTIMATED QUANTITY OF WASTE:

Unknown

III. CLASSIFICATION OF WASTE CONSTITUENTS

1. Physical

- a. Temperature
- b. Density
- c. Odor
- d. Turbidity

2. Inorganic chemical

- a. Major constituents
- b. Other constituents
- c. Trace elements
- d. Gases

3. Bacteriological

- a. Coliform group
- b. Pathogenic microorganisms
- c. Enteric viruses

4. Organic chemical

- a. Carbon
- b. Chlorophylls
- c. Extractable organic matter
- d. Methylene Blue Active substances
- e. Nitrogen
- f. Chemical oxygen demand
- g. Phenolic material
- h. Pesticides

5. Radiological

- a. Gross alpha activity
- b. Gross beta activity
- c. Strontium
- d. Radium
- e. Tritium

I. REPRESENTATIVE ANALYSES: UnknownDate of analysis:Location:Major

Calcium	mg/l	meq/l
Magnesium	mg/l	meq/l
Sodium	mg/l	meq/l
Potassium	mg/l	meq/l
Carbonate	mg/l	meq/l
Bicarbonate	mg/l	meq/l
Sulfate	mg/l	meq/l
Chloride	mg/l	meq/l
Nitrate	mg/l	meq/l

Trace

Arsenic	mg/l
Barium	mg/l
Cadmium	mg/l
Chromium	mg/l
Copper	mg/l
Cyanide	mg/l
Fluoride	mg/l
Iron	mg/l
Lead	mg/l
Manganese	mg/l
Mercury	mg/l
Selenium	mg/l
Silver	mg/l
Strontium	mg/l
Zinc	mg/l

Other Constituents

Nitrate-N	mg/l
Ammonia-N	mg/l
KJN	mg/l
Total-N	mg/l
Specific conductance	mg/l
Total dissolved solids	mg/l
pH	mg/l
Silica	mg/l
Boron	mg/l
Fluoride	mg/l
Phosphorous	mg/l
Hardness	mg/l
Alkalinity	mg/l
B.O.D.	mg/l
C.O.D.	mg/l
S.S.	mg/l

Microorganisms

Total coliform	#/100ml
Fecal coliform	#/100ml
Fecal Strep.	#/100ml

J. METHODS OF DISPOSAL:

1. Discharged to the environment
- a. Oxidation pond or holding pond
 - b. Percolation or evaporation pond
 - c. Surface spreading
 - d. Dry stream bed
 - e. Landfills
 - f. Disposal wells
 - g. Other (Leakage into wells.) X
2. Reused
- a. On-site reuse
- (i) Specify reuse: _____

- (ii) Treated
(iii) Untreated
- b. Irrigation
- (i) Estimated amount: _____

- (ii) Location: _____

3. Treated
- a. Chemical reactions
 - b. Cooling
 - c. Filtering
 - d. Chlorination
 - e. Dilution
 - f. Ultimate disposal: _____

K. DOES THE WASTE CONSTITUTE A POTENTIAL GROUND-WATER POLLUTANT?

Yes:
No:

APPENDIX C
WELL INVENTORY OF THE STUDY AREA

Location			Owner	Use	Well Depth ft	Log Avail	Date Drilled	Perforated Zone ft
T	R	Section						
12	12	8.124	Goodman	DA	250	Y	1936	77-230
12	12	8.133	Ariz. Portland 2	I	500	N	1945	N.R.
12	12	8.222	Ariz. Portland 1	I	300	Y	1947	160-260
12	12	8.414	Roger Sams	D	315	Y	1962	125-310
12	12	8.421	CWUA 8-J	A	261	Y	1919	50-235
12	12	8.422	Ariz. Portland 4	I	500	Y	1960	125-497
12	12	9.311	A. Choate	D	199	Y	1917	N.R.
12	12	9.332	AS&R Co.	D	N.R.	N	N.R.	N.R.
12	12	9.342	TG&E New	I	N.R.	N	N.R.	N.R.
12	12	13.323	R. Fall	D	N.R.	N	N.R.	N.R.
12	12	13.422	C. Henson	D	400	Y	1955	290-395
12	12	13.441	E. Ellis	D	N.R.	N	N.R.	N.R.
12	12	14.141	Frobisher	D	300	Y	1931	240-300
12	12	14.234	W. Babienko	D	N.R.	N	N.R.	N.R.
12	12	14.234	E. Gray	D	225	N	N.R.	N.R.
12	12	14.421	D. Goodin	D	329	Y	N.R.	N.R.
12	12	15.333	C. Phillips 2	D	N.R.	N	N.R.	N.R.
12	12	15.333	C. Phillips 1	D	N.R.	N	N.R.	N.R.
12	12	15.344	Dr. Gluck	D	N.R.	N	N.R.	N.R.
12	12	15.413	H. Klein	D	249	Y	1947	85-249
12	12	16.221	CWUA 16-D1	A	250	Y	N.R.	90-236
12	12	16.221	CWUA 16-D2	A	270	Y	N.R.	90-256
12	12	16.244	CWUA 16-F1	A	346	Y	1920	40-337
12	12	16.323	CWUA 16-L	A	260	Y	1919	25-240
12	12	16.444	CWUA 16-P	A	234	Y	1929	68-225
12	12	17.411	CWUA 17-I1	A	416	Y	1920	50-404
12	12	17.441	CWUA (La Puerta)	M	N.R.	N	N.R.	N.R.
12	12	17.444	CWUA 17-P1	A	250	Y	1920	50-230
12	12	20.114	CWUA 20-A	A	386	Y	1920	90-370
12	12	20.314	Berwick	D	N.R.	N	N.R.	N.R.
12	12	20.341	Snyder	D	154	Y	1931	N.R.
12	12	20.433	Servirson	D	212	Y	1950	133-210
12	12	21.111	G.E. Phillips	D	163	Y	1958	100-160
12	12	21.111	Carl Cook	D	N.R.	N	N.R.	N.R.
12	12	21.211	CWUA 21-C2	A	409	Y	1920	50-390
12	12	21.221	CWUA 21-C1	A	242	Y	1919	30-218
12	12	21.244	CWUA 21-F	A	300	Y	1953	104-297
12	12	21.314	CWUA 21-K	A	225	Y	1920	50-200
12	12	21.344	Dow Chemical	D	N.R.	N	N.R.	N.R.
12	12	21.434	CWUA 21-D	A	300	W	1954	N.R.
12	12	22.221	KOA Campground	D	N.R.	N	N.R.	N.R.
12	12	22.223	G. Land	D	N.R.	N	N.R.	N.R.
12	12	22.224	CWUA 22-D	A	245	N	1948	110-245
12	12	22.231	L. Scott Trailer Crt.	D	N.R.	N	N.R.	N.R.
12	12	22.243	Western Meat Packing	D	N.R.	N	N.R.	N.R.
12	12	22.411	KFIF Radio Station	D	N.R.	N	N.R.	N.R.
12	12	22.434	L.F. Curtis	A	N.R.	N	N.R.	N.R.
12	12	22.442	CWUA 22-P	A	316	Y	1924	36-300
12	12	23.313	W. Rhea	D	N.R.	N	N.R.	N.R.
12	12	23.341	R. Harris	D	N.R.	N	N.R.	N.R.

Location			Owner	Use	Well Depth ft	Log Avail	Date Drilled	Perforated Zone ft
T	R	Section						
12	12	23.344	B. Terrell	D	N.R.	N	N.R.	N.R.
12	12	23.431	H. Saunders	D	N.R.	N	N.R.	N.R.
12	12	25.143	A. Davis	D	N.R.	N	N.R.	N.R.
12	12	25.232	H. L. Davis	D	N.R.	N	N.R.	N.R.
12	12	25.233	Hartman	D	340	Y	1966	219-319
12	12	25.234	Gilles	D	N.R.	N	N.R.	N.R.
12	12	25.313	CWUA 25-K	A	238	Y	1942	80-224
12	12	25.443	J. Crawford	D	N.R.	N	N.R.	N.R.
12	12	26.142	Shamrock Hill Farm	D	344	Y	1965	112-344
12	12	26.242	CWUA 26-E	A	312	Y	1938	71-280
12	12	26.321	Dow Chemical (Antel)	D	N.R.	N	N.R.	N.R.
12	12	26.241	CWUA 26-J2	A	248	Y	1922	60-240
12	12	26.423	M. Konklin	D	N.R.	N	N.R.	N.R.
12	12	26.424	CWUA 26-53	A	250	Y	1923	70-245
12	12	27.232	R. Cockey	D	N.R.	N	N.R.	N.R.
12	12	27.233	J. Acosta	D	N.R.	N	N.R.	N.R.
12	12	27.322	Lane Johnson	D	180	Y	1958	110-180
12	12	27.322	CWUA 27-L	A	236	Y	N.R.	65-208
12	12	28.143	Lil Abner's (L. Lewis)	D	N.R.	N	N.R.	N.R.
12	12	29.214	David Cutler	D	N.R.	N	N.R.	N.R.
12	12	29.244	Lazy K-Bar (Krah)	D	250	Y	1954	150-245
12	12	29.423	W. Allen 1 Blackarrow	D	212	Y	1947	N.R.
12	12	29.431	W. Allen 2	D	N.R.	N	N.R.	N.R.
12	12	29.444	J. E. Norton	D	N.R.	N	N.R.	N.R.
12	12	33.131	Neiheisel	D	230	Y	N.R.	N.R.
12	12	33.141	C. D. Miller	D	N.R.	N	N.R.	N.R.
12	12	33.231	Rielly	D.	N.R.	N	N.R.	N.R.
12	12	33.244	O. Cooke 1	D	301	Y	N.R.	144-301
12	12	33.314	K. K. Koempfer	D	520	Y	1964	240-520
12	12	33.334	Mrs. Konklin	D	210	Y	1938	N.R.
12	12	33.414	Sahuaro Vista Ranch	D	390	Y	1954	75-327
12	12	33.423	G. Bingham	D	N.R.	N	N.R.	N.R.
12	12	34.211	Redemptorist Fathers	M	376	Y	1965	105-210
12	12	34.313	W. Nichols	D	328	Y	N.R.	N.R.
12	12	34.314	G. Meech	D	N.R.	N	N.R.	N.R.
12	12	34.322	J. Smolen	D	N.R.	N	N.R.	N.R.
12	12	34.333	M. L. Babb	D	N.R.	N	N.R.	N.R.
12	12	34.342	L. Mogge	D	N.R.	N	N.R.	N.R.
12	12	34.413	B. B. Reeves	D	138	N	1936	N.R.
12	12	34.414	R. Hampton	D	N.R.	N	N.R.	N.R.
12	12	34.422	C. D. Emmons 1	D	300	Y	1958	254-300
12	12	34.423	A. L. Cornell	D	N.R.	N	N.R.	N.R.
12	12	34.424	Curtis Barrett	D	N.R.	N	N.R.	N.R.
12	12	34.424	E. Grondin	D	N.R.	N	N.R.	N.R.
12	12	34.431	Karl Monroe	D	N.R.	N	N.R.	N.R.
12	12	34.434	E. E. Hanson	D	N.R.	N	N.R.	N.R.
12	12	34.442	Kline	D	N.R.	N	N.R.	N.R.
12	12	35.144	CWUA 35-H	A	200	Y	1918	35-190
12	12	36.111	Bob Boykin	D	N.R.	N	N.R.	N.R.

Location			Owner	Use	Well Depth ft	Log Avail	Date Drilled	Perforated Zone ft
T	R	Section						
12	12	36.121	G. Hubbard	D	260	N	1970	N.R.
12	12	36.122	W. Moncada	D	N.R.	N	N.R.	N.R.
12	12	36.131	H. D. Horne	D	220	N	1968	N.R.
12	12	36.134	W. D. Herman	D	220	N	1970	N.R.
12	12	36.144	J. Trent	D	230	N	1970	130-220
12	12	36.211	G. Ingram	D	N.R.	N	N.R.	N.R.
12	12	36.212	CWUA 36-C	A	301	Y	1957	95-298
12	12	36.213	E. Stephens	D	N.R.	N	N.R.	N.R.
12	12	36.213	R. Islas	D	N.R.	N	N.R.	N.R.
12	12	36.234	John Glenn	D	210	N	1970	90-210
12	12	36.343	CWUA 36-N	A	347	Y	1920	45-338
12	12	36.411	CWUA 36-H	A	400	Y	1960	105-395
12	12	36.411	G. Carr	D	N.R.	N	N.R.	N.R.
12	12	36.411	W. Young	D	N.R.	N	N.R.	N.R.
12	12	36.412	R. Diaz	D	N.R.	N	N.R.	N.R.
12	12	36.414	CaLame	D	N.R.	N	N.R.	N.R.
12	12	36.414	W. Leslie	D	N.R.	N	N.R.	N.R.
12	12	36.414	H. Fickett	D	N.R.	N	N.R.	N.R.
12	12	36.434	Humble Oil Co.	D	310	Y	1970	115-215
12	12	36.444	Haynes	D	N.R.	N	N.R.	N.R.
12	13	19.443	D. Lynn	D	N.R.	N	N.R.	N.R.
12	13	20.232	S. Gorby	D	N.R.	N	N.R.	N.R.
12	13	28.111	Tucson National GC3	DI	456	Y	1962	174-450
12	13	29.244	Martin (Whitehead)	D	N.R.	N	N.R.	N.R.
12	13	30.111	W.S. Mason	D	362	Y	1952	257-358
12	13	30.134	M. Hillman	D	N.R.	N	N.R.	N.R.
12	13	30.312	Hobby Horse Ranch	D	N.R.	N	N.R.	N.R.
12	13	30.413	I. Eliot	D	317	Y	1947	217-317
12	13	31.312	Ray Doering	D	N.R.	N	N.R.	N.R.
12	13	31.324	S. F. Heubner	D	N.R.	N	N.R.	N.R.
12	13	31.434	Citizens Utility	M	N.R.	N	N.R.	N.R.
12	13	32.224	H. Ream	D	N.R.	N	N.R.	N.R.
12	13	32.241	Gibson	AD	300	Y	1946	135-290
12	13	32.323	C.W. Werner	D	352	Y	1948	200-350
13	12	1.123	Truman Egg Ranch	D	N.R.	N	N.R.	N.R.
13	12	1.211	Pulley (Owner Lee)	D	N.R.	N	N.R.	N.R.
13	12	1.221	C. Kane	D	N.R.	N	N.R.	N.R.
13	12	1.221	E. Contreras, Castillo	D	154	Y	1961	N.R.
13	12	1.222	Burrola	D	N.R.	N	N.R.	N.R.
13	12	1.222	V. Valles	D	210	Y	1964	89-199
13	12	1.244	CWUA 1-F	A	280	Y	1920	80-278
13	12	1.414	Tom Yawes	D	N.R.	N	N.R.	N.R.
13	12	1.414	George Bonitos	D	N.R.	N	N.R.	N.R.
13	12	2.144	C.A. Logan	M	300	N	1959	N.R.
13	12	2.211	D. Freedland	D	N.R.	N	N.R.	N.R.
13	12	2.212	Citizens Utility	M	210	Y	1970	N.R.
13	12	2.412	R. Berry	D	164	N	1946	N.R.
13	12	2.443	C.A. Logan	M	300	N	1948	N.R.
13	12	3.122	L. Roeser	D	N.R.	N	N.R.	N.R.

Location			Owner	Use	Well Depth ft	Log Avail	Date Drilled	Perforated Zone ft
T	R	Section						
13	12	3.123	Desert Trail Ranch	D	N.R.	N	N.R.	N.R.
13	12	3.231	T. Green	D	320	Y	1961	220-315
13	12	3.233	Horan	D	N.R.	N	N.R.	N.R.
13	12	3.243	Wild Horse Ranch	D	212	Y	1932	N.R.
13	12	4.114	G. Harwood	D	N.R.	N	N.R.	N.R.
13	12	4.122	W. Tucker	D	N.R.	N	N.R.	N.R.
13	12	4.144	Dr. Thomas	D	403	Y	1965	130-398
13	12	4.214	Picture Rocks Ranch	D	N.R.	N	N.R.	N.R.
13	12	4.411	L. E. Parker	D	500	Y	1967	0-250
13	12	11.214	B. A. Killoran	D	285	Y	1949	207-280
13	12	12.212	G. N. Kaylor	D	N.R.	N	N.R.	N.R.
13	12	12.212	Greene	D	N.R.	N	N.R.	N.R.
13	12	12.311	City A-22	M	350	Y	1956	165-347
13	12	13.113	D. W. Stanton	D	N.R.	N	N.R.	N.R.
13	12	13.144	M. Mikesell	D	N.R.	N	N.R.	N.R.
13	12	13.441	B. L. Bryant	D	N.R.	N	N.R.	N.R.
13	12	13.443	J. Marron	D	200	N	N.R.	N.R.
13	13	5.222	CWUA 5-D	A	294	Y	1944	100-280
13	13	5.332	Hillmar	D	183	Y	1951	100-180
13	13	6.123	D. Gonzales	D	N.R.	N	N.R.	N.R.
13	13	6.133	R. Ritter	D	N.R.	N	N.R.	N.R.
13	13	6.211	R. Sweat	D	205	Y	1955	100-200
13	13	6.213	B. Bennett	D	N.R.	N	N.R.	N.R.
13	13	6.221	S. Dobbs	D	N.R.	N	N.R.	N.R.
13	13	6.222	M. Cox	D	200	Y	1965	N.R.
13	13	6.222	H.T. Toole, Jr.	D	N.R.	N	N.R.	N.R.
13	13	6.242	W.T. Martin	D	440	N	1919	50-425
13	13	6.321	W. R. Wells	D	N.R.	N	N.R.	N.R.
13	13	6.322	Schumaker	A	N.R.	N	N.R.	N.R.
13	13	7.241	Schumaker	D	203	Y	1958	82-195
13	13	7.311	Schumaker	A	330	Y	1958	80-254
13	13	7.344	Ted Walker	D	250	Y	1961	130-250
13	13	7.441	Sunset Dairy	D	300	Y	1939	N.R.
13	13	7.444	Borden's Dairy	D	300	Y	1939	N.R.
13	13	8.133	Greenfield School	D	262	Y	1956	N.R.
13	13	8.211	City Z-7	M	198	N	N.R.	N.R.
13	13	8.243	Latimore	D	280	Y	1951	N.R.
13	13	8.344	Waylor Nursery	D	120	Y	1945	50-120
13	13	8.344	Paul Griggs	D	N.R.	N	N.R.	N.R.
13	13	8.412	Simonsen Ranch	D	251	Y	1963	91-246
13	13	8.431	E. Minnix	D	N.R.	N	N.R.	N.R.
13	13	8.432	Carti H ₂ O Co. No. 1	M	N.R.	N	N.R.	N.R.
13	13	8.432	Labuzan	D	N.R.	N	N.R.	N.R.
13	13	8.434	Stalker	D	N.R.	N	N.R.	N.R.
13	13	16.323	R. Flores	D	N.R.	N	N.R.	N.R.
13	13	16.333	H.E. Brown	D	N.R.	N	N.R.	N.R.
13	13	16.333	Gilbert Pump Sales	D	N.R.	N	N.R.	N.R.
13	13	16.441	City Z-2	M	301	Y	1959	95-298
13	13	17.122	R.H. Ingalls	D	150	Y	1954	80-147
13	13	17.122	Albert Smith	D	N.R.	N	N.R.	N.R.

Location			Owner	Use	Well Depth ft	Log Avail	Date Drilled	Perforated Zone ft
T	R	Section						
13	13	17.123	City Z-4	M	230	N	1957	90-225
13	13	17.133	P. Pierce South Well	D	230	N	1957	90-225
13	13	17.133	P. Pierce North Well	D	N.R.	N	N.R.	N.R.
13	13	17.133	Mohawk Apartments	F	230	N	1957	100-225
13	13	17.211	Simonsen Brick House	D	190	Y	1949	N.R.
13	13	17.211	J. Hummer North Well	D	N.R.	N	N.R.	N.R.
13	13	17.214	J. Hummer South Well	D	N.R.	N	N.R.	N.R.
13	13	17.314	T.P.A.C., Inc.	ID	N.R.	N	N.R.	N.R.
13	13	17.413	Tumbleweed Inn	D	N.R.	N	N.R.	N.R.
13	13	17.421	Al Darris	D	N.R.	N	N.R.	N.R.
13	13	17.421	Eicholtz	D	400	Y	1947	N.R.
13	13	17.422	Casa Motel	D	N.R.	N	N.R.	N.R.
13	13	17.443	Robert Pike	D	N.R.	N	N.R.	N.R.
13	13	17.444	H.C. Smith	D	N.R.	N	N.R.	N.R.
13	13	18.122	V. Chandler	D	198	Y	1956	150-193
13	13	18.131	Frank Howard	D	115	Y	1939	72-115
13	13	18.231	H. Darimont	D	N.R.	N	N.R.	N.R.
13	13	18.313	E. Heuston	D	N.R.	N	N.R.	N.R.
13	13	18.314	Pat Owen	D	N.R.	N	N.R.	N.R.
13	13	18.332	J. West	D	N.R.	N	N.R.	N.R.
13	13	18.344	R. W. Miley	D	N.R.	N	N.R.	N.R.
13	13	18.432	R. Schad	D	250	N	1970	150-250
13	13	18.433	H.O. Barber	D	N.R.	N	N.R.	N.R.
13	13	18.434	W. L. Shearer	D	N.R.	N	N.R.	N.R.
13	13	19.113	J. Saunders	D	N.R.	N	N.R.	N.R.
13	13	19.344	City A-43	M	450	Y	1966	190-445
13	13	19.434	J. J. Jackson	D	N.R.	N	N.R.	N.R.
13	13	19.441	J. W. Maupin	D	N.R.	N	N.R.	N.R.
13	13	19.444	City A-44	M	300	Y	1956	185-296
13	13	20.224	Citizens Utility 2	D	N.R.	N	N.R.	N.R.
13	13	20.443	Rabies Control Ctr.	D	450	Y	1963	110-418
13	13	21.242	Wentz Bros. Stockyard	D	N.R.	N	N.R.	N.R.
13	13	21.324	Infilco	U	360	Y	1966	90-355
13	13	21.433	City Sewage Farm	D	251	Y	1950	75-N.R.
13	13	27.331	Circle Bar Motel	D	N.R.	N	N.R.	N.R.
13	13	27.331	Crecelius	D	N.R.	N	N.R.	N.R.
13	13	27.332	Arizona Ranch School	D	200	Y	1954	90-107
13	13	27.334	Tratel Tucson	D	N.R.	N	N.R.	N.R.
13	13	27.343	Town & Country Apt.	D	N.R.	N	N.R.	N.R.
13	13	27.344	USDA Romero Rd.	A	300	Y	1963	150-300
13	13	28.332	Citizens Utility	D	270	N	1970	N.R.
13	13	28.342	Haciendas Del Oeste	D	N.R.	N	N.R.	N.R.
13	13	29.122	R. Crull	D	N.R.	N	N.R.	N.R.
13	13	29.124	R.G. Marsland	D	128	Y	1948	73-128
13	13	29.212	S. Ott	D	N.R.	N	N.R.	N.R.
13	13	29.214	P. Martin	D	N.R.	N	N.R.	N.R.
13	13	29.313	M. Soweres	D	N.R.	N	N.R.	N.R.
13	13	29.313	M. Barnett	D	N.R.	N	N.R.	N.R.
13	13	29.314	Dr. Bloss	D	210	Y	1952	N.R.
13	13	29.314	P. Smith	D	N.R.	N	N.R.	N.R.

Location			Owner	Use	Well Depth ft	Log Avail	Date Drilled	Perforated Zone ft
T	R	Section						
13	13	29.314	T. Nelson	D	N.R.	N	N.R.	N.R.
13	13	29.331	Nick Scull	D	285	N	N.R.	N.R.
13	13	29.332	B. Sadler	D	N.R.	N	N.R.	N.R.
13	13	29.333	J. Cox	D	N.R.	N	N.R.	N.R.
13	13	29.334	E. Oliver	D	N.R.	N	N.R.	N.R.
13	13	29.341	Steve Smith	D	N.R.	N	N.R.	N.R.
13	13	29.342	Bob King	D	N.R.	N	N.R.	N.R.
13	13	29.342	H.E. Wells	D	N.R.	N	N.R.	N.R.
13	13	29.344	H. Chapman	D	N.R.	N	N.R.	N.R.
13	13	29.344	E. Stopa	D	N.R.	N	N.R.	N.R.
13	13	29.344	A. Friedman	D	N.R.	N	N.R.	N.R.
13	13	29.434	B.E. Zonker	D	N.R.	N	N.R.	N.R.
13	13	29.441	Lucy Bergman (West)	D	160	Y	1930	N.R.
13	13	29.441	Lucy Bergman (East)	D	200	Y	1950	N.R.
13	13	30.141	W. Ingraham	D	N.R.	N	N.R.	N.R.
13	13	20.144	Walter Werman	D	240	Y	1951	N.R.
13	13	30.234	E. Rumsly	M	N.R.	N	N.R.	N.R.
13	13	33.122	City A-39	M	267	Y	1968	N.R.
13	13	33.133	Stella Ware	D	N.R.	N	N.R.	N.R.
13	13	33.312	C. Fotinos	D	N.R.	N	N.R.	N.R.
13	13	33.442	Phyllis Hayton	D	187	Y	1952	90-184
13	13	33.442	Avalon College	D	N.R.	N	N.R.	N.R.
13	13	34.133	UA Poultry Farm	D	300	Y	1965	125-290
13	13	34.213	UA Casa Grande Hwy F	D	201	Y	1926	50-200
13	13	34.234	Bill Shaw	D	N.R.	N	N.R.	N.R.
13	13	34.234	UA Water Resources	D	300	Y	1964	150-300
13	13	34.243	UA WRRC R2	U	150	Y	1965	N.R.
13	13	34.244	UA WRRC R1	U	150	Y	1965	N.R.
13	13	34.321	Smithson Egg Ranch	D	N.R.	N	N.R.	N.R.
13	13	34.343	City A-24	M	175	N	1956	72-172

T	R	Location Section	Owner	Use	Well Depth ft	Log Avail	Date Drilled	Perforated Zone ft
12	12	13.123	Ray S. Burton	D	500	Y	1973	334-500
12	12	14.231	Earl Gray	D	400	Y	1973	250-395
12	12	15.332	Wayne Holley	D	190	Y	1973	Between
12	12	22.221	Clete O'Neil	D	200	Y	1972	110-190
12	12	25.132	Richard Carreon	D	280	Y	1974	170-270
12	12	25.244	Tom Elliot	D	296	Y	1972	176-276
12	12	25.422	Richard Gentry	D	308	Y	1973	183-298
12	13	17.111	City C-101	M	570	Y	1972	400-560
12	13	17.431	Wilford Construction	D	500	Y	1973	368-488
12	13	30.242	Bill Wright	D	400	Y	1972	250-390
12	13	31.333	City Z-13	M	300	Y	1972	100-280
13	13	16.314	Diamond Grove	M	420	Y	1974	131-420
13	13	18.132	Sam Borders	D	300	Y	1973	140-300

APPENDIX D
SOURCES OF INFORMATION

CONTRIBUTORS

<u>NAME</u>	<u>AGENCY</u>
Mr. J. Roberts	Colombia Sand and Gravel
Mr. Wm. Faust	Pima Co. Dept. of Sanitation
Mr. D. Hyland	Pima Co. Dept. of Sanitation
Mr. Earl Smith	Pima Co. Dept. of Sanitation
Mr. Tom Derekson	Pima Co. Dept. of Sanitation
Mr. Bill Voice	Shamrock Farms
Mr. Wayne Barteau	Tucson Rock and Sand
Mr. Gordon Davis	City of Tucson, Dept. of Water & Sewers
Mr. J. Posedly	Soils, Water and Engineering
Mr. E.J. Trueblood	City Wastewater Treatment Plant
Mr. Sam Dunlap	Sunset Farms
Dr. J. Wright	City of Tucson, Dept. of Water & Sewers
Dr. R. Phillips	U. of A. Dept. of Sanitary Engineering
Mr. A. Oshrin	Oshrin Realty
Mr. G. Fogg	U. of A. Grad. Student-Hydrology
Mr. Dempsey Helms	Soils, Water and Engineering
Dr. W.H. Hale	Animal Sciences
Mr. Brad DeSpain	Cortaro Water Users Association
Mr. Maurice Basute	Soil Conservation Service
Dr. B. Reid	Poultry Scientist, U. of A.
Mr. Joe Weber	Water Resources Research Center
Dr. James DeCook	Water Resources Research Center
Mr. Bill Bateman	U. of A. Undergrad.
Mr. Jeffery Randall	U. of A. Grad. Student-Hydrology
Mr. Blackwell	County Agent
Dr. W. Kneebone	Plant Sciences, U. of A.
Dr. R.E. Dennis	Plant Sciences, U. of A.

APPENDIX E

WATER QUALITY DATA FROM
MONITORING PROGRAM IN
STUDY AREA, OCTOBER 1, 1976
TO SEPTEMBER 30, 1977

EFFLUENT FROM THE INA FOOD WASTEWATER TREATMENT PLANT

DATE	EC	pH	Na	K	Ca	Mg	Cl	HCO ₃	SO ₄	NH ₃	NO ₂ /3	TKN	TOTN	H/RD	
7/11/77	1.04	7.60	112.6	14.9	26.3	7.0	96.0	263.0	0.0	76.0	21.8	1.8	29.5	30.0	94.5

C.W.U.A. WELL 8-J (IRRIGATION)

DATE	T12S R12E SEC.8 DBA														
	EC	PH	NA	K	CA	MG	CL	HC03	CO3	NH3	NO2/3	KJN	TOTN	HARD	
1/17/75	1.02	7.07	85.3	6.6	115.0	13.9	92.0	270.8	0.0	0.0	24.9	0.0	5.6	344.5	
6/11/75	1.05	7.26	82.0	6.5	119.5	14.6	93.0	268.4	0.0	0.0	20.1	0.0	4.5	358.6	
8/21/75	1.05	7.28	82.0	6.0	112.5	14.7	83.0	246.4	0.0	0.0	24.5	0.0	5.5	341.5	
4/ 8/76	1.08	7.20	78.0	2.6	98.5	14.9	81.0	273.3	0.0	0.0	19.4	0.0	4.4	307.4	
2/25/77	1.00	7.20	72.6	1.7	98.0	13.8	75.0	270.8	0.0	205.0	0.0	18.0	0.0	4.1	301.6
3/10/77	1.04	7.60	75.0	1.7	72.6	13.7	74.0	266.0	0.0	195.0	0.0	17.1	0.0	3.9	237.8
3/25/77	.92	7.25	71.4	1.8	111.3	13.3	74.0	264.7	0.0	195.0	0.0	15.9	0.0	3.6	332.8
5/16/77	.95	7.15	65.3	1.2	108.9	12.0	67.0	258.6	0.0	156.0	0.0	15.9	0.0	3.6	321.4
7/ 5/77	1.00	7.20	81.5	2.2	89.1	15.3	72.0	263.5	0.0	180.0	0.0	18.2	0.0	4.1	285.6
8/12/77	1.48	7.30	66.5	3.1	90.0	13.8	73.0	263.5	0.0	150.0	0.0	15.9	0.0	3.6	281.6

MONITOR WELL RRCY3

T12S R12E SEC. 8 DBC

DATE	EC	PH	NA	K	CA	NG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TOTN	HARD
---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1/ 7/77	.90	8.02	105.3	7.5	50.8	8.5	96.0	305.0	0.0	53.0	11.8	.4	13.2	13.3	161.9
1/14/77	.88	7.90	100.4	13.3	52.0	9.3	91.0	295.2	0.0	45.0	11.3	1.8	13.1	13.5	168.2
1/26/77	.83	8.45	108.9	7.7	33.9	7.0	100.0	258.6	7.2	45.0	11.0	2.7	12.4	19.0	113.5
2/ 4/77	.87	7.98	106.5	7.3	49.6	8.0	91.0	305.0	0.0	58.0	10.6	2.7	12.4	19.0	156.8
2/10/77	.90	8.20	107.7	7.6	42.4	7.7	89.0	309.9	0.0	73.0	10.6	.9	11.6	11.8	137.6
2/18/77	.90	8.14	106.5	11.1	58.1	9.0	85.0	308.6	4.8	73.0	11.7	.9	12.7	12.9	182.2
3/ 4/77	.84	8.36	108.9	7.3	62.9	7.9	87.0	290.4	7.2	45.0	11.8	2.2	13.6	14.1	189.6
3/18/77	.90	8.23	110.1	12.5	41.1	9.1	90.0	305.0	3.6	38.0	11.5	1.8	12.3	12.7	140.1
4/15/77	.72	8.35	104.1	7.9	27.8	5.6	85.0	248.9	16.2	20.0	12.5	3.1	13.9	14.6	92.5
6/ 1/77	.92	8.41	116.8	15.3	36.3	6.7	84.0	331.8	2.4	45.0	13.4	1.8	14.6	15.0	118.3
6/ 6/77	.99	8.23	147.7	17.3	43.9	9.2	90.0	356.2	0.0	70.0	16.6	1.8	18.9	19.3	147.5
6/13/77	.99	8.29	145.8	16.7	43.9	9.1	88.0	385.5	0.0	48.0	16.8	1.3	18.9	19.2	147.1
7/19/77	1.15	8.30	116.5	17.3	63.5	7.8	84.0	287.9	0.0	125.0	21.8	4.9	2.7	3.9	190.7
8/ 1/77	1.62	7.50	167.5	18.9	99.8	17.7	96.0	405.0	0.0	100.0	22.1	225.9	22.7	72.8	322.2

T.G.E. WELL
(COMMERCIAL)

	T12S R12E SEC.09 CAC															
DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOT N	HARD	
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--	--
9/26/77	6.2	8.30	39.5	2.5	24.0	5.8	14.0	171.6	0.0	21.0	0.0	0.0	0.0	0.0	83.8	

ASARCO WELL (COMMERCIAL)

T12S R12E SEC.9 CCB

DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TON	HARD
---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6/ 6/77	.87	7.78	66.0	2.9	102.5	16.0	78.0	258.6	0.0	105.0	0.0	22.2	0.0	5.0	321.9
6/20/77	.93	7.65	59.4	2.4	77.0	14.5	77.0	258.6	0.0	105.0	0.0	18.6	0.0	4.2	252.0
7/ 5/77	.88	7.80	63.5	1.9	94.9	15.8	73.0	252.5	0.0	105.0	0.0	23.5	0.0	5.3	302.1

ASARECC WELL (COMMERCIAL)

PIMA COUNTY ANALYSIS							T12S R12E SEC. 9 CCB								
DATE	EC	pH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD
11/29/76	.69	7.40	81.1	0.0	121.0	14.5	71.0	128.1	0.0	118.0	0.0	12.0	0.0	2.7	361.9

C.W.U.A. WELL 16D1 (IRRIGATION)

T12S R12E SEC.16 BBA

DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1/17/75	.69	7.37	48.0	6.5	75.8	13.1	65.0	219.6	0.0	0.0	16.1	0.0	3.6	243.3	
6/11/75	.70	7.29	46.0	5.8	76.8	13.3	62.0	217.2	0.0	0.0	13.8	0.0	3.1	246.6	
8/21/75	0.30	0.00	42.0	5.8	71.0	12.5	0.0	0.0	0.0	0.0	12.8	0.0	2.9	228.8	
4/ 3/76	.66	7.57	36.5	2.4	71.0	12.2	48.0	212.3	0.0	0.0	12.1	0.0	2.7	227.6	
2/11/77	.67	7.50	41.1	1.9	78.7	11.4	52.0	222.0	0.0	98.0	0.0	12.8	0.0	2.9	243.5
2/25/77	.70	7.60	38.7	1.9	66.6	12.3	51.0	217.2	0.0	90.0	0.0	11.2	0.0	2.5	217.0
3/10/77	.55	7.60	39.9	1.8	73.8	10.9	47.0	212.3	0.0	92.0	0.0	11.5	0.0	2.6	229.2
3/25/77	.60	7.58	61.7	1.7	70.2	10.9	43.0	205.0	0.0	82.0	0.0	8.0	0.0	1.8	220.2
4/22/77	.68	7.30	33.9	2.4	84.7	12.1	47.0	218.4	0.0	74.0	0.0	16.1	0.0	3.6	261.4
5/16/77	.66	7.51	33.9	1.8	79.9	12.8	49.0	214.7	0.0	62.0	0.0	11.1	0.0	2.5	252.3
6/ 6/77	.64	7.60	43.9	2.9	77.2	14.2	47.0	212.3	0.0	75.0	0.0	9.7	0.0	2.2	251.3
6/20/77	.66	7.45	38.0	2.3	58.3	11.7	47.0	211.1	0.0	71.0	0.0	11.1	0.0	2.5	193.8
7/ 5/77	.67	7.50	41.5	2.2	55.5	13.5	43.0	207.4	0.0	78.0	0.0	12.4	0.0	2.8	194.2
8/12/77	1.00	7.70	36.5	2.7	57.5	10.9	44.0	236.7	0.0	85.0	0.0	12.4	0.0	2.8	188.5

C.W.U.A. WELL 16D2 (IRRIGATION)

T12S R12E SEC. 16 EBB

DATE	EC	PH	NA	K	CA	MG	CL	HC03	CO3	SO4	NH3	NO2/3	KJN	TOTN	HARD
1/17/75	.81	7.09	73.3	6.4	80.2	12.7	78.0	239.1	0.0	0.0	15.4	0.0	3.5	252.6	
8/21/75	.81	7.31	66.0	5.5	74.0	12.0	67.0	226.9	0.0	0.0	10.3	0.0	2.3	234.2	
4/ 8/76	.78	7.17	54.5	1.6	73.0	12.2	61.0	229.4	0.0	0.0	12.7	0.0	2.9	232.6	
2/25/77	.77	7.20	53.2	1.8	77.4	10.5	60.0	222.0	0.0	105.0	0.0	16.1	0.0	3.6	236.6
3/10/77	.73	7.40	46.0	1.2	75.0	9.9	55.0	214.7	0.0	98.0	0.0	17.4	0.0	3.9	228.1
3/25/77	.70	7.28	52.0	1.1	81.1	11.4	57.0	218.4	0.0	105.0	0.0	15.5	0.0	3.5	249.5
5/16/77	.73	7.13	48.4	1.8	79.9	11.3	58.0	217.2	0.0	80.0	0.0	15.9	0.0	3.6	246.1
6/ 6/77	.69	7.45	58.0	3.2	83.9	13.1	55.0	217.2	0.0	83.0	0.0	13.7	0.0	3.1	263.5
7/ 5/77	.78	7.30	54.0	2.0	76.4	13.5	59.0	228.1	0.0	90.0	0.0	16.8	0.0	3.8	246.4
8/12/77	1.13	7.70	49.0	3.2	57.5	11.7	53.0	44.5	0.0	90.0	0.0	12.4	0.0	2.8	191.8

C. W. U. A. WELL 16F1 (IRRIGATION)

DATE	T12S R12E SEC.16 BDC														
	EC	PH	NA	K	CA	MG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TOTN	HARD
1/17/75	.85	7.17	54.7	6.5	82.3	13.6	71.0	219.6	0.0	0.0	16.0	0.0	3.6	261.6	
6/11/75	.88	7.31	55.5	6.3	90.5	16.9	83.0	244.0	0.0	0.0	20.3	0.0	4.6	295.6	
8/21/75	.72	7.32	53.0	5.4	72.5	12.1	57.0	200.1	0.0	0.0	14.0	0.0	3.2	230.5	
4/ 8/76	.65	7.21	43.5	1.7	59.5	11.3	46.0	197.6	0.0	0.0	0.0	0.0	0.0	195.2	
3/10/77	.65	2.60	39.6	4.1	67.8	9.8	42.0	191.5	0.0	85.0	0.0	11.2	0.0	2.5	209.7
3/25/77	.56	7.38	37.5	1.0	61.7	10.2	43.0	190.3	0.0	86.0	0.0	10.6	0.0	2.4	196.1
4/ 1/77	.62	7.31	38.7	1.3	64.1	10.3	44.0	187.9	0.0	82.0	0.0	5.8	0.0	1.3	202.5
4/22/77	.60	7.20	36.3	1.0	70.2	9.7	38.0	191.5	0.0	77.0	0.0	7.4	0.0	1.7	215.3
6/ 1/77	.60	7.54	33.3	2.1	66.6	11.5	41.0	187.9	0.0	72.0	0.0	10.6	0.0	2.4	213.7
6/ 6/77	1.55	7.41	38.0	2.8	65.2	12.1	37.5	185.4	0.0	72.0	0.0	9.3	0.0	2.1	212.7
6/20/77	.60	7.24	39.6	2.1	52.8	10.5	41.0	191.5	0.0	70.0	0.0	9.7	0.0	2.2	175.1
7/ 5/77	.64	7.40	41.0	1.9	72.1	12.5	41.0	196.4	0.0	72.0	0.0	12.0	0.0	2.7	231.6
8/12/77	.95	7.60	33.5	2.9	51.5	10.4	49.0	322.1	0.0	65.0	0.0	9.3	0.0	2.1	171.5

C. W. J. A. WELL 16L (IRRIGATION)							T12S R12E SEC.16 CBC								
DATE	EC --	pH --	NA --	K --	CA --	MG --	CL --	HCO3 --	CO3 --	SO4 --	NH3 --	NO2/3 --	KJN --	TCTN --	HARD --
1/17/75	1.00	7.33	98.8	6.6	104.0	13.1	89.0	287.9	0.0	0.0	22.1	0.0	5.0	313.7	
6/11/75	1.12	7.30	100.5	6.5	110.0	13.1	107.0	303.6	0.0	0.0	20.5	0.0	4.6	328.7	
8/21/75	1.03	7.41	129.0	6.3	100.0	11.8	79.0	258.6	0.0	0.0	20.7	0.0	4.7	298.4	
4/ 8/76	1.00	7.29	96.5	2.2	94.5	12.5	76.0	278.2	0.0	0.0	17.1	0.0	3.9	267.5	
2/17/77	1.00	7.30	88.3	1.0	101.6	12.6	71.0	273.3	0.0	190.0	0.0	18.6	0.0	4.2	305.7
2/25/77	1.05	7.42	87.1	1.8	100.4	12.3	73.0	275.7	0.0	220.0	0.0	18.6	0.0	4.2	301.4
3/10/77	1.01	7.50	85.9	1.9	39.2	12.8	71.0	268.4	0.0	200.0	0.0	17.6	0.0	4.0	300.5
3/25/77	.96	7.39	82.3	1.6	100.4	11.9	70.0	263.5	0.0	210.0	0.0	15.1	0.0	3.4	299.8
4/22/77	.99	7.10	79.9	1.5	106.5	11.1	61.0	261.1	0.0	190.0	0.0	18.0	0.0	4.1	311.7
6/ 6/77	.99	7.37	99.8	3.0	98.5	13.6	69.0	261.1	0.0	180.0	0.0	15.9	0.0	3.6	302.0
6/20/77	1.10	7.24	85.8	2.3	77.0	11.9	68.0	262.3	0.0	185.0	0.0	15.5	0.0	3.5	241.3
7/ 5/77	1.02	7.40	96.5	2.4	97.5	14.0	69.0	264.7	0.0	175.0	0.0	18.2	0.0	4.1	301.2

C.W.U.A. WELL 16P (IRRIGATION)

DATE	112S R12E SEC.16 DDC					
	EC	pH	NA	K	CA	Mg
	--	--	--	--	--	CO3
1/17/75	.43	7.55	31.2	6.2	43.0	8.1
6/11/75	.80	7.33	60.5	6.1	80.4	15.8
8/21/75	.42	7.70	30.5	4.9	34.0	5.9
6/20/77	.35	7.78	24.8	1.9	28.6	4.3
8/12/77	.57	7.90	24.2	2.6	31.0	4.4

IRRIGATION RETURN WATER

T12S R12E SEC. 17

DATE	EC	pH	NA	K	CA	KG	CL	HCC ₃	CC ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TON	HARD
---	--	--	--	-	--	--	--	-----	---	---	---	---	---	---	---
8/12/77	1.22	8.30	101.0	13.5	85.0	11.9	73.8	276.2	0.0	140.0	0.0	16.8	0.0	3.8	261.3

PUERTO DEL NORTE (SEWAGE EFFLUENT)

DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	T12S R12E SEC. 17 ACD		NO ₂ /3	KJN	TOT N	HARD
										---	---				
2/25/77	2.05	7.40	239.6	29.7	116.2	14.9	293.0	797.9	0.0	2.0	32.0	3.7	40.9	41.7	351.6

C.W.U.A. WELL 1711 (IRRIGATION)

T12S R12E SEC.17 DAC

DATE	EC	pH	NA	K	Ca	Mg	Cl	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD	
---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
1/17/75	1.10	7.21	101.0	6.6	117.2	13.4	99.0	270.6	0.0	0.0	25.2	0.0	5.7	347.9	-----	
6/11/75	1.22	7.29	110.7	6.7	125.0	13.0	106.0	290.4	0.0	0.0	26.5	0.0	6.0	365.7	-----	
8/21/75	1.02	7.32	99.0	5.9	98.0	11.9	83.0	241.6	0.0	0.0	19.4	0.0	4.4	293.8	-----	
4/ 8/76	1.00	7.20	91.0	2.3	102.0	12.1	78.0	257.4	0.0	0.0	19.2	0.0	4.3	304.6	-----	
2/17/77	.99	7.30	84.7	1.5	101.6	12.6	76.0	258.6	0.0	195.0	0.0	19.0	0.0	4.3	305.7	-----
2/25/77	1.05	7.30	83.5	1.9	100.4	11.0	77.0	261.1	0.0	240.0	0.0	18.0	0.0	4.1	296.1	-----
3/25/77	.90	7.33	75.0	2.2	96.8	11.6	71.0	246.4	0.0	210.0	0.0	17.3	0.0	3.9	289.5	-----
4/22/77	.90	7.10	75.0	3.4	108.9	11.1	66.0	247.7	0.0	185.0	0.0	16.7	0.0	3.8	317.7	-----
6/ 6/77	.98	7.28	99.8	2.9	99.8	13.3	75.5	252.5	0.0	190.0	0.0	17.3	0.0	3.9	304.0	-----
6/20/77	.97	7.16	79.2	2.2	78.1	11.7	70.0	246.4	0.0	175.0	0.0	13.7	0.0	3.1	243.3	-----
7/ 5/77	1.00	7.30	92.5	2.2	78.4	14.0	70.0	247.7	0.0	195.0	0.0	18.6	0.0	4.2	253.5	-----
8/12/77	1.38	7.50	65.5	3.5	76.5	12.8	69.9	219.6	0.0	160.0	0.0	15.1	0.0	3.4	243.8	-----

C.O.U.A. WELL 17P1 (IRRIGATION)

T12S R12E SEC.17 DDC

DATE	EC	PH	NA	K	CA	MG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TOTN	HAFD
---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1/17/75	1.11	7.39	116.0	6.6	107.2	13.6	101.0	312.3	0.0	0.0	0.0	31.5	0.0	7.1	323.6
6/11/75	1.16	7.30	110.7	7.1	107.5	14.1	100.0	319.6	0.0	0.0	0.0	24.8	0.0	5.6	326.6
8/21/75	1.13	7.50	121.0	6.1	103.0	13.3	91.0	301.3	0.0	0.0	0.0	23.7	0.0	5.4	312.0
4/ 8/76	1.13	7.40	117.0	2.3	96.0	13.6	87.0	319.6	0.0	0.0	0.0	21.6	0.0	4.9	295.8
2/17/77	1.12	7.40	106.5	1.9	106.5	13.8	83.0	314.8	0.0	200.0	0.0	22.1	0.0	5.0	322.8
2/25/77	1.12	7.40	107.7	2.2	107.7	12.2	84.0	317.2	0.0	230.0	0.0	21.1	0.0	4.8	319.2
3/25/77	1.00	7.52	106.5	2.4	108.9	13.0	80.0	309.9	0.0	200.0	0.0	21.3	0.0	4.8	325.5
4/ 1/77	1.12	7.48	98.0	2.1	104.1	12.7	83.0	306.2	0.0	205.0	0.0	20.4	0.0	4.6	312.3
4/22/77	1.02	7.30	101.6	1.2	121.0	12.1	74.0	307.4	0.0	199.0	0.0	18.6	0.0	4.2	352.0
6/20/77	1.12	7.36	104.0	2.5	82.5	13.2	83.0	309.9	0.0	200.0	0.0	19.9	0.0	4.5	260.4
7/ 5/77	1.14	7.50	103.0	1.7	86.9	15.0	79.0	308.7	0.0	195.0	0.0	21.3	0.0	4.8	278.6
8/12/77	1.70	7.60	97.0	4.2	86.0	11.6	78.5	302.6	0.0	180.0	0.0	15.5	0.0	3.5	262.6

C.W.U.A. WELL 20A (IRRIGATION)							T12S R12E SEC.20 AAD								
DATE	EC	pH	NA	K	CA	Mg	Cl	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
6/11/75	1.06	7.35	100.5	6.9	100.5	15.4	95.0	306.0	0.0	0.0	24.3	0.0	5.5	314.4	
8/21/75	1.06	7.35	113.0	6.1	91.0	14.0	87.0	286.7	0.0	0.0	20.5	0.0	4.6	284.9	
4/ 8/76	1.05	7.22	97.5	2.6	99.0	14.7	82.0	309.9	0.0	0.0	19.0	0.0	4.3	307.8	
6/ 1/77	1.03	7.60	105.3	2.9	95.6	13.3	57.0	274.5	0.0	190.0	0.0	35.9	0.0	8.1	293.5
6/ 6/77	1.00	7.43	121.9	3.6	93.2	15.1	61.0	279.4	0.0	180.0	0.0	35.4	0.0	8.0	295.0
6/20/77	1.04	7.22	104.0	2.8	74.8	13.6	64.0	283.0	0.0	180.0	0.0	26.6	0.0	6.0	242.6
7/ 5/77	1.06	7.40	108.0	1.7	71.1	15.0	64.0	284.3	0.0	180.0	0.0	35.9	0.0	8.1	239.4
8/12/77	1.68	7.90	94.5	4.4	78.0	13.5	64.0	278.2	0.0	175.0	0.0	33.1	0.0	7.6	250.4

J. D. BERWICK		PINAS COUNTY ANALYSIS						T12S R12E SEC 20 CAA								
(DOMESTIC)		EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	S0 ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD
DATE	---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	---
12/14/76	.87	7.40	121.0	0.0	87.1	20.6	39.0	134.2	0.0	206.0	0.0	7.1	0.0	1.6	302.4	

L. SNYDERS DATE	PIMA COUNTY ANALYSIS						T12S R12E SEC 20 CDD								
	(DOMESTIC)	EC	PH	NA	K	CA	MG	CL	HC03	CC3	SO4	NH3	NO2/3	KJN	TOTN
12/ 1/76	.50	7.80	53.2	0.0	72.6	20.6	43.0	91.5	0.0	51.0	0.0	12.0	0.0	2.7	266.2
12/14/76	.77	8.00	127.1	0.0	75.0	15.7	51.0	128.1	0.0	205.0	0.0	6.2	0.0	1.4	252.0

C.W.U.A. WELL 21C2 (IRRIGATION)

DATE	T12S R12E SEC.21 BAA					NH3	NO2/3	KJN	TOIN	HAED					
	EC	PH	NA	K	CA	MG	CL	HCC3	CO3	SO4					
1/17/75	.96	7.21	100.0	6.5	100.0	12.1	91.0	261.1	0.0	0.0	26.9	0.0	6.1	299.6	
6/11/75	.98	7.30	89.0	6.1	90.5	10.7	85.0	261.1	0.0	0.0	21.7	0.0	4.9	270.1	
8/21/75	.92	7.39	92.0	5.5	86.0	11.0	73.0	247.7	0.0	0.0	17.7	0.0	4.0	260.1	
4/ 8/76	.98	7.20	93.0	1.5	86.0	10.9	72.0	257.4	0.0	0.0	16.7	0.0	3.8	259.7	
2/25/77	1.00	7.30	90.8	1.9	89.5	11.1	68.0	263.5	0.0	185.0	0.0	19.8	0.0	4.5	269.3
3/10/77	.99	7.40	88.3	1.9	92.0	10.9	64.0	251.3	0.0	190.0	0.0	19.2	0.0	4.3	274.7
3/25/77	.89	7.30	78.7	1.7	88.3	10.7	63.0	251.3	0.0	180.0	0.0	17.3	0.0	3.9	264.6
4/ 1/77	.70	7.31	71.5	1.3	89.5	10.8	63.0	253.8	0.0	170.0	0.0	19.0	0.0	4.3	268.0
4/22/77	.95	7.10	84.7	1.5	99.2	10.7	63.0	261.1	0.0	171.0	0.0	16.1	0.0	3.6	291.8
6/ 6/77	.92	7.33	105.9	3.5	94.5	12.8	65.0	255.0	0.0	170.0	0.0	18.2	0.0	4.1	286.7
6/20/77	.94	7.18	85.8	2.3	73.7	10.7	65.0	259.9	0.0	160.0	0.0	17.3	0.0	3.9	228.1
7/ 5/77	.96	7.30	95.5	2.2	70.4	12.8	63.0	253.8	0.0	170.0	0.0	18.2	0.0	4.1	228.6
8/12/77	.95	7.30	68.0	3.6	71.5	11.1	63.0	229.4	0.0	140.0	0.0	15.9	0.0	3.6	224.3
8/12/77	1.17	7.70	82.0	3.5	79.8	11.9	72.0	258.6	0.0	180.0	0.0	13.7	0.0	3.1	248.3

C.W.U.A. WELL 21C1 (IRRIGATION)

T12S R12E SEC.21 BAS

DATE	EC	PH	TA	K	CA	MG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TOIN	HARD
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1/17/75	1.05	7.19	108.3	6.6	110.7	12.1	104.0	292.8	0.0	0.0	0.0	24.7	0.0	5.6	326.3
6/11/75	1.15	7.30	102.5	4.8	117.3	12.9	106.0	295.2	0.0	0.0	0.0	21.4	0.0	4.8	346.1
8/21/75	1.10	7.35	108.0	5.9	105.5	11.8	90.0	268.4	0.0	0.0	0.0	19.6	0.0	4.4	312.1
4/ 8/76	1.05	7.25	98.5	2.0	103.5	11.4	83.0	283.0	0.0	0.0	0.0	13.3	0.0	3.0	305.5
2/17/77	1.03	7.30	100.4	2.2	101.6	11.7	72.0	280.6	0.0	240.0	0.0	25.4	0.0	5.7	301.9
2/25/77	1.10	7.40	99.2	2.2	104.1	11.7	74.0	285.5	0.0	260.0	0.0	25.9	0.0	5.9	308.2
3/10/77	1.10	7.60	96.8	1.8	102.9	13.0	74.0	280.6	0.0	230.0	0.0	24.8	0.0	5.6	310.5
3/25/77	1.00	7.45	99.2	1.9	104.1	12.6	70.0	275.7	0.0	210.0	0.0	25.3	0.0	5.7	311.9
4/22/77	.70	7.20	92.0	1.7	111.3	11.6	66.0	274.5	0.0	195.0	0.0	23.6	0.0	5.3	325.8
6/ 6/77	1.02	7.52	119.8	3.5	102.5	15.7	67.5	283.0	0.0	200.0	0.0	15.9	0.0	3.6	320.7
7/ 5/77	1.06	7.30	98.0	2.5	82.5	14.3	71.0	276.2	0.0	185.0	0.0	26.1	0.0	5.9	265.0
8/12/77	1.20	7.70	87.0	3.0	81.5	12.2	74.0	268.4	0.0	65.0	0.0	19.0	0.0	4.3	253.8

C.W.U.A. WELL 21F (IRRIGATION)							T12S R12E SEC.21 CAA								
DATE	EC	pH	NA	K	CA	Mg	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HAFD
---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	----
1/17/75	1.00	7.16	112.2	6.6	102.0	11.4	100.0	302.6	0.0	0.0	0.0	22.8	0.0	5.2	301.7
6/11/75	1.05	7.29	100.5	6.7	103.0	11.4	96.0	303.6	0.0	0.0	0.0	15.9	0.0	3.6	304.2
2/17/77	1.09	7.37	105.3	2.3	105.3	14.0	75.0	309.9	0.0	245.0	0.0	20.7	0.0	4.7	320.7
3/10/77	1.17	7.53	105.3	2.2	106.5	13.7	76.0	307.4	0.0	240.0	0.0	20.1	0.0	4.5	322.4
3/25/77	1.01	7.40	96.8	1.9	101.6	13.1	74.0	303.8	0.0	210.0	0.0	21.7	0.0	4.9	307.7
6/ 6/77	1.04	7.45	119.8	3.6	106.5	16.0	70.0	325.0	0.0	200.0	0.0	17.3	0.0	3.9	331.9
6/20/77	1.12	7.25	107.3	2.8	82.5	13.5	74.0	308.7	0.0	190.0	0.0	18.6	0.0	4.2	261.7
7/ 5/77	1.12	7.40	120.0	2.6	111.4	15.8	72.0	311.1	0.0	195.0	0.0	19.0	0.0	4.5	343.3
8/12/77	1.76	7.60	96.0	4.0	79.2	13.8	62.0	297.7	0.0	190.0	0.0	19.9	0.0	4.5	254.6

C.W.U.A. WELL 21K (IRRIGATION)

DATE	EC	PH	NA	K	CA	MG	T12S R12E SEC.21 CAD				NO2/3	KJN	TCTN	HARD	
							CL	HCO3	CO3	SO4					
6/11/75	1.10	7.28	108.5	7.2	98.7	12.8	95.0	317.2	0.0	0.0	9.8	0.0	2.2	299.2	
8/21/75	1.14	7.41	129.0	6.4	94.5	11.8	87.0	300.1	0.0	0.0	21.4	0.0	4.8	264.6	
4/ 8/76	1.12	7.22	120.0	2.8	102.0	12.4	85.5	322.1	0.0	0.0	20.5	0.0	4.6	305.8	
3/10/77	.84	7.42	116.2	2.3	102.9	12.0	88.0	312.3	0.0	200.0	0.0	18.0	0.0	4.1	306.4
3/25/77	.98	7.45	110.1	2.3	105.3	11.9	82.0	312.3	0.0	198.0	0.0	18.6	0.0	4.2	312.0
6/ 6/77	1.09	7.40	135.8	3.5	98.5	13.8	84.0	313.5	0.0	190.0	0.0	15.9	0.0	3.6	302.9
6/20/77	1.09	7.22	113.9	2.5	80.3	12.4	81.0	316.0	0.0	185.0	0.0	19.0	0.0	4.3	251.6
7/ 5/77	1.16	7.30	183.0	2.5	74.4	14.0	80.0	312.3	0.0	190.0	0.0	21.3	0.0	4.8	243.5
8/12/77	1.22	7.60	105.5	4.6	71.0	12.6	76.0	229.4	0.0	170.0	0.0	20.4	0.0	4.6	229.2

C. W. U. A. WELL 210 (IRRIGATION)

T12S R12E SEC. 21 DCD

	DATE	EC	pH	Na	K	Ca	Mg	Cl	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD
	---	--	--	--	-	--	--	--	----	---	---	---	---	---	---	---
8/21/75	1.08	7.40	116.0	6.1	89.5	12.5	84.0	310.0	0.0	0.0	0.0	18.3	0.0	4.1	275.0	
4/ 8/76	1.09	7.30	98.0	2.4	89.0	13.5	82.5	329.4	0.0	0.0	0.0	19.2	0.0	4.3	277.9	
3/25/77	1.00	7.35	111.3	2.2	96.8	13.0	79.0	319.6	0.0	195.0	0.0	17.3	0.0	3.9	295.3	
4/ 1/77	1.11	7.26	104.1	1.7	92.0	12.8	79.0	317.2	0.0	175.0	0.0	17.3	0.0	3.9	282.5	
6/20/77	1.10	7.26	115.5	2.5	75.9	13.2	79.0	320.9	0.0	170.0	0.0	15.9	0.0	3.6	243.9	
7/ 5/77	1.13	7.40	115.0	1.6	100.8	15.3	78.0	323.3	0.0	180.0	0.0	18.2	0.0	4.1	314.6	
8/12/77	1.28	7.70	110.0	3.2	77.0	14.0	73.0	312.3	0.0	130.0	0.0	17.3	0.0	3.9	250.0	

C.W.Y.A. WELL 22D (IRRIGATION)

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C.W.U.A. WELL 22P (IRRIGATION)

T12S R12E SEC.22 DAC

DATE	EC	pH	NA	K	CA	Mg	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOIN	HAFD	
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1/17/75	.32	7.44	22.5	6.1	30.7	6.6	17.0	136.6	0.0	0.0	25.2	0.0	5.7	103.9		
6/11/75	.28	7.30	20.5	4.0	21.0	14.8	22.0	126.9	0.0	0.0	10.3	0.0	2.3	113.4		
8/21/75	.30	7.70	21.5	4.1	20.0	3.8	12.0	124.4	0.0	0.0	6.6	0.0	1.5	65.6		
4/ 8/76	.30	7.40	24.0	1.6	18.0	3.5	9.5	131.8	0.0	0.0	6.6	0.0	1.5	59.4		
2/17/77	.28	7.70	21.8	1.0	23.0	4.1	10.0	130.5	0.0	18.5	0.0	5.9	0.0	1.3	74.3	
2/25/77	.30	7.70	21.8	1.2	24.2	4.1	15.0	131.8	0.0	2.5	0.0	6.2	0.0	1.4	77.3	
F-26	3/10/77	.30	7.70	23.0	1.2	25.4	4.2	12.0	129.3	0.0	11.0	0.0	3.4	0.0	.8	80.7
3/25/77	.38	7.82	21.8	1.0	23.0	4.0	11.0	128.1	0.0	13.0	0.0	5.8	0.0	1.3	73.9	
4/15/77	.20	7.80	23.0	.7	24.2	3.6	8.0	127.4	0.0	10.0	0.0	6.2	0.0	1.4	75.3	
6/13/77	.28	7.73	28.0	2.1	29.3	4.5	7.0	126.9	0.0	14.0	0.0	4.9	0.0	1.1	91.7	
6/27/77	.28	7.50	27.0	1.1	15.8	3.7	8.0	126.9	0.0	18.0	0.0	4.9	0.0	1.1	54.7	
8/12/77	.38	7.90	22.0	1.8	21.0	4.0	6.3	126.9	0.0	15.0	0.0	6.2	0.0	1.4	68.9	

DATE	(IRRIGATION)					T12S R12E SEC.22DDC										
	EC	pH	Na	K	Ca	Mg	Cl	HCO ₃	CO ₃	SO ₄	NH ₃	NC 2/3	KJN	TOTN	HARD	
6/27/77	.57	7.30	54.5	2.0	33.0	9.4	29.0	169.6	0.0	75.0	0.0	12.8	0.0	2.9	121.1	
7/ 5/77	.56	7.40	50.5	1.8	28.1	15.8	28.0	170.8	0.0	75.0	0.0	14.2	0.0	3.2	135.3	

C.W.U.A. WELL 25K (IRRIGATION)

DATE	T12S R12E SEC.25 CBD						TOIN	KJN	NH3	NO2/3	HAKD	
	EC	FH	NA	K	CA	MG	CL	HG3	CO3	SO4	---	---
6/11/75	.24	7.35	20.0	3.4	18.6	4.4	12.0	107.4	0.0	0.0	10.4	0.0
8/21/75	.24	7.46	16.0	3.9	20.0	3.8	10.0	95.2	0.0	0.0	12.0	0.0
4/ 8/76	.22	7.30	15.0	1.4	12.5	3.0	8.5	95.2	0.0	0.0	8.8	0.0
2/25/77	.25	7.30	15.7	1.1	21.8	4.1	9.0	97.6	0.0	5.0	0.0	13.3
3/10/77	.58	7.55	55.7	1.2	46.0	4.5	31.0	158.6	0.0	86.0	0.0	10.5
3/25/77	.21	7.40	14.5	.4	20.6	3.9	12.0	96.4	0.0	5.0	0.0	11.1
4/15/77	.25	7.40	14.5	.4	21.8	3.8	8.0	98.1	0.0	3.0	0.0	11.8
4/29/77	.24	7.50	13.3	.6	20.6	3.6	9.0	96.4	0.0	0.0	12.4	0.0
5/16/77	.23	7.31	12.1	.6	21.8	3.9	8.0	95.2	0.0	0.0	11.1	0.0
6/ 1/77	.25	7.61	14.5	1.3	27.8	3.9	8.0	95.2	0.0	0.0	12.4	0.0
6/13/77	.24	7.30	16.0	1.7	28.0	5.1	6.5	95.2	0.0	0.0	12.4	0.0
6/27/77	.24	7.20	17.0	2.1	26.0	4.4	7.0	95.2	0.0	6.0	0.0	11.1
8/12/77	.26	7.50	14.3	1.3	18.0	3.7	8.0	92.7	0.0	0.0	12.4	0.0

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C.W.U.A. WELL 25M (IRRIGATION)

DATE	EC	PH	NA	K	CA	MG	T12S R12E SEC.25 CCC			NO2/3	KJN	TOIN	HARD		
							CL	HC03	CO3						
6/11/75	.36	7.30	89.0	6.9	76.8	10.3	55.0	253.8	0.0	0.0	11.9	0.0	2.7	234.2	
8/21/75	.85	7.50	92.0	5.8	74.0	8.0	56.0	202.5	0.0	0.0	11.5	0.0	2.6	217.8	
4/ 8/76	.79	7.43	85.0	2.3	67.0	7.5	49.0	209.8	0.0	0.0	11.2	0.0	2.5	198.2	
3/25/77	.80	7.52	75.0	2.2	75.2	9.0	53.0	205.0	0.0	185.0	0.0	12.0	0.0	2.7	224.9
4/15/77	.50	7.60	59.3	1.3	61.7	6.5	42.0	179.3	0.0	117.0	0.0	12.4	0.0	2.8	180.9
4/29/77	.67	7.60	55.7	1.2	59.2	6.3	38.0	176.9	0.0	104.0	0.0	12.8	0.0	2.9	173.8
5/16/77	.73	7.38	64.1	1.2	70.2	7.7	43.0	191.5	0.0	120.0	0.0	11.1	0.0	2.5	207.0
6/ 1/77	.74	7.67	70.8	2.2	71.4	7.9	44.0	192.8	0.0	150.0	0.0	10.6	0.0	2.4	210.9
6/13/77	.75	7.55	85.9	2.7	66.6	9.4	45.0	192.8	0.0	150.0	0.0	10.2	0.0	2.3	205.1
6/27/77	.79	7.40	79.5	2.5	50.3	9.1	47.0	200.1	0.0	150.0	0.0	11.1	0.0	2.5	163.1
8/12/77	.93	7.70	61.0	3.1	63.0	6.3	51.3	200.1	0.0	140.0	0.0	12.4	0.0	2.8	191.5

SHAMROCK DAIRY WELL (COMMERCIAL)

	T12S R12E SEC.26 ADE					
DATE	EC	pH	NA	CA	MG	CL
	--	--	--	--	--	--
4/ 1/77	.39	7.64	20.6	1.0	21.8	3.9
4/29/77	.29	8.00	19.4	1.2	24.2	3.2
6/ 1/77	.27	7.99	18.8	1.5	30.3	4.0
6/13/77	.28	7.90	26.0	2.5	30.6	4.8
6/27/77	.28	7.80	24.0	1.0	17.0	4.7
9/26/77	.40	8.10	24.0	2.1	22.0	4.1

C.W.U.A. WELL 26E (IRRIGATION)

DATE	T12S R12E SEC.26 BBD						NH3 ---	NO2/3 ---	KJN ---	TCIN ---	HAFI ---	
	EC --	pH --	NA --	K --	CA --	MG --	CL --	HCO3 --	CO3 --	SO4 --		
1/17/75	.47	7.30	37.2	6.1	50.0	6.8	31.0	153.7	0.0	0.0	27.2	0.0
6/11/75	.52	7.28	51.5	4.8	42.3	5.5	34.0	158.6	0.0	0.0	15.2	0.0
8/21/75	.40	7.40	28.0	4.2	32.5.	5.7	20.0	133.0	0.0	0.0	12.1	0.0
4/ 8/76	.38	7.30	28.5	1.1	26.0	5.2	16.0	144.0	0.0	0.0	11.8	0.0
2/17/77	.35	7.40	26.6	1.2	31.5	4.5	14.0	136.6	0.0	23.0	0.0	12.1
2/25/77	.35	7.30	26.6	1.3	31.5	5.2	14.0	139.1	0.0	21.0	0.0	11.0
3/10/77	.39	7.30	27.8	1.0	30.3	5.0	15.0	129.3	0.0	22.0	0.0	11.2
3/25/77	.31	7.41	25.4	.5	27.8	5.1	15.0	128.1	0.0	22.0	0.0	11.1
4/15/77	.35	7.40	24.2	.5	30.3	4.7	15.0	128.1	0.0	15.5	0.0	10.5
5/16/77	.33	7.30	21.8	1.2	31.5	4.8	12.0	126.9	0.0	16.0	0.0	10.6
6/ 1/77	.34	7.50	23.6	1.6	35.1	4.7	13.0	122.0	0.0	20.0	0.0	11.1
6/27/77	.34	7.30	0.0	0.0	0.0	0.0	0.0	126.9	0.0	18.0	0.0	10.6
8/12/77	.40	7.60	25.5	1.4	24.5	5.0	13.0	126.9	0.0	20.0	0.0	10.6

[3]

PEPPER TREE RANCH KELL (DOMESTIC)

DATE	EC	PH	NA	K	CA	MG	T12S R13E SEC.26 CPA			NH3	NO2/3	KJN	TOTN	HARD
							CL	HCO3	CO3					
4/22/77	1.19	7.50	130.7	1.2	111.3	10.7	83.0	309.9	0.0	228.0	0.0	12.4	0.0	2.8
4/29/77	1.23	7.70	123.4	1.8	101.6	10.9	80.0	295.2	0.0	234.0	0.0	13.7	0.0	3.1
5/ 9/77	1.22	7.90	123.4	1.2	101.6	9.9	85.0	309.9	0.0	237.0	0.0	15.1	0.0	3.4
6/ 1/77	1.14	7.95	131.3	2.7	99.2	11.1	83.0	301.3	0.0	220.0	0.0	9.7	0.0	2.2
9/26/77	1.75	8.00	142.5	3.2	78.5	10.6	138.5	298.5	0.0	198.0	0.0	21.3	0.0	4.8
														239.7

C.W.U.A. WELL 26J2 (IRRIGATION)

T12S R12E SEC.26 DBA

DATE	EC	pH	NA	K	CA	MG	CL	HC03	CO3	SO4	NH3	NO2/3	KJN	TOTN	HARD
	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1/17/75	.53	7.23	34.8	6.3	59.4	8.2	34.0	168.4	0.0	0.0	0.0	24.1	0.0	5.4	182.1
8/21/75	.33	7.40	21.0	4.1	27.5	4.7	15.0	122.0	0.0	0.0	0.0	13.2	0.0	3.0	88.0
2/17/77	.30	7.23	20.6	1.0	31.5	4.7	13.0	122.0	0.0	15.0	0.0	13.3	0.0	3.0	98.0
2/25/77	.35	7.40	19.4	1.2	30.3	4.6	14.0	122.0	0.0	15.5	0.0	9.3	0.0	2.1	94.6
3/10/77	.32	7.40	21.8	1.0	30.3	5.0	12.0	115.9	0.0	16.0	0.0	12.4	0.0	2.8	96.3
3/25/77	.24	7.35	16.9	.9	26.6	4.4	12.0	111.0	0.0	14.0	0.0	11.1	0.0	2.5	84.6
4/15/77	.29	7.50	16.9	.4	25.4	4.0	11.0	112.2	0.0	6.0	0.0	11.8	0.0	2.7	79.9
4/29/77	.30	7.40	15.7	1.2	29.0	4.0	10.0	109.8	0.0	3.0	0.0	12.0	0.0	2.7	88.9
5/ 9/77	.28	7.40	16.9	1.2	29.0	3.9	10.0	112.2	0.0	9.0	0.0	12.0	0.0	2.7	88.5
5/16/77	.27	7.29	14.5	.6	27.8	4.0	9.0	109.8	0.0	6.0	0.0	11.1	0.0	2.5	85.9
6/ 1/77	.28	7.43	17.8	1.5	32.7	4.1	10.0	109.8	0.0	13.0	0.0	9.7	0.0	2.2	98.6
6/13/77	.27	7.35	20.0	1.7	29.3	5.1	8.0	109.8	0.0	8.0	0.0	10.2	0.0	2.3	94.2
6/27/77	.27	7.20	19.5	1.3	17.0	5.7	8.0	108.6	0.0	11.0	0.0	9.7	0.0	2.2	65.5
8/12/77	.28	7.70	17.5	1.8	19.5	4.1	7.0	109.8	0.0	12.0	0.0	15.0	0.0	3.4	65.6

C.P.U.A. JELL 26J3 (IRRIGATION)

T12S R12E SEC.26 DBD

	DATE	EC	PH	NA	K	CA	MG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TCTN	HARD
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1/17/75	.90	7.47	105.0	6.5	78.5	7.9	73.0	222.0	0.0	0.0	0.0	19.1	0.0	0.0	0.0	228.6
1/17/75	.90	7.47	105.0	6.5	78.5	7.9	73.0	222.0	0.0	0.0	0.0	4.3	0.0	0.0	0.0	228.6
8/21/75	.90	7.60	108.0	5.9	71.0	6.6	65.0	203.7	0.0	0.0	0.0	14.9	0.0	3.4	204.5	
4/ 8/76	.82	7.43	96.5	1.6	54.5	5.5	5.2	205.0	0.0	0.0	0.0	13.0	0.0	2.9	158.8	
2/17/77	.83	7.40	105.3	2.3	105.3	14.0	58.0	209.8	0.0	210.0	0.0	12.0	0.0	2.7	320.7	
2/25/77	.68	7.50	92.0	1.9	69.0	6.8	56.0	212.3	0.0	188.0	0.0	13.6	0.0	3.1	200.3	
F-34 3/10/77	.89	7.60	90.8	1.7	67.8	6.8	56.0	207.4	0.0	160.0	0.0	14.6	0.0	3.3	197.3	
3/25/77	.78	7.50	85.9	1.8	70.2	6.4	67.0	203.7	0.0	185.0	0.0	12.8	0.0	2.9	201.7	
4/15/77	.85	7.50	85.9	1.0	72.6	6.2	55.0	205.0	0.0	162.0	0.0	11.2	0.0	2.5	206.9	
6/ 1/77	.95	7.57	91.4	2.2	71.4	6.5	55.0	207.4	0.0	165.0	0.0	12.0	0.0	2.7	205.1	
6/13/77	.85	7.50	111.8	2.4	73.2	8.0	57.0	208.6	0.0	160.0	0.0	9.3	0.0	2.1	215.8	
6/27/77	.87	7.40	98.0	2.3	52.5	8.1	56.0	204.4	0.0	150.0	0.0	12.8	0.0	2.9	164.5	
8/12/77	1.00	7.70	82.0	3.1	57.0	6.6	53.5	204.9	0.0	150.0	0.0	27.9	0.0	6.3	165.5	

C.W.U.A. WELL 27L (IRRIGATION)

T12S R12E SEC.27 CBB

DATE	EC	P _H	NH ₄	K	Ca	Mg	C _I	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD
---	---	---	---	-	--	--	--	--	--	--	--	--	--	--	---
6/11/75	.97	7.36	96.0	7.2	90.0	14.2	89.0	301.1	0.0	0.0	0.0	9.9	0.0	2.2	283.3
8/21/75	.97	7.33	104.0	6.1	79.5	13.8	81.0	285.5	0.0	0.0	0.0	9.7	0.0	2.2	255.4
4/ 8/76	1.30	7.19	100.0	2.3	75.0	14.0	79.5	307.4	0.0	0.0	0.0	8.7	0.0	2.0	245.0
3/10/77	1.05	7.40	95.6	2.3	76.2	14.0	78.0	302.6	0.0	150.0	0.0	6.2	0.0	1.4	248.0
3/25/77	.93	7.33	90.8	2.1	81.1	13.8	79.0	307.4	0.0	150.0	0.0	8.0	0.0	1.8	259.4
4/ 1/77	1.00	7.18	90.8	1.7	82.3	13.9	80.0	305.0	0.0	160.0	0.0	9.3	0.0	2.1	262.8
6/ 6/77	.96	7.56	113.9	3.2	87.9	17.2	78.5	306.2	0.0	125.0	0.0	8.9	0.0	2.0	290.4
6/20/77	1.00	7.13	97.4	2.5	67.1	14.5	79.0	309.9	0.0	135.0	0.0	8.9	0.0	2.0	227.3
7/ 5/77	1.02	7.30	103.5	2.8	64.5	16.8	79.0	313.5	0.0	130.0	0.0	8.9	0.0	2.0	230.3
8/12/77	1.66	7.60	98.5	3.8	66.3	14.2	76.5	302.6	0.0	130.0	0.0	16.8	0.0	3.6	224.1

L. JOHNSON (DOMESTIC)		PIMA COUNTY ANALYSIS						T12S R12E SEC 27 CBB							
DATE	EC	PH	NA	K	CA	MG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TOTN	HAFT
12/13/76	.80	7.40	133.1	0.0	106.5	9.7	70.0	158.6	0.0	121.0	0.0	9.3	0.0	2.1	305.9

(DOMESTIC)		PIMA COUNTY ANALYSIS						T12S R12E SEC 27 CCD							
DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HAFD
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
12/13/76	.83	7.30	121.0	0.0	102.9	14.5	74.0	152.5	0.0	130.0	0.0	7.1	0.0	1.6	316.7

T12S R12E SEC-28ADC																
(DOMESTIC)		EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD
DATE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9/26/77	1.50	7.80	91.0	3.4	84.5	15.2	136.0	301.2	0.0	189.0	0.0	22.1	0.0	5.0	273.7	

LIL ANSWERS		PIMA COUNTY ANALYSIS						T12S R12E SEC 28 ADC								
(DOMESTIC)		EC	pH	NH ₃	K	Ca	Mg	Cl	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TCTN	HARD
DATE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/14/76	.85	7.10	113.7	0.0	101.6	23.0	78.0	158.6	0.0	116.0	0.0	8.0	0.0	1.8	348.5	

(DOMESTIC)

T12S R12E SEC. 33 ACA

DATE	EC	PH	NA	K	CA	MG	CL	HCC3	C03	SO4	NH3	NO2/3	KJN	TOIN	HAKD
9/ 2/77	.82	7.90	56.5	4.2	47.5	15.8	36.2	185.4	0.0	81.8	0.0	7.0	500.0	1.7	183.7

(DOMESTIC)

T12S R12E SEC. 33 DAD

DATE	EC	PH	NA	K	CA	MG	SO ₄	CC ₃	HC ₀₃	CL	NH ₃	NO ₂ /3	KJN	TOTN	HARD
9/ 2/77	.75	8.20	56.5	4.1	63.5	12.8	45.0	226.9	0.0	20.8	0.0	24.4	0.0	5.5	211.3

(DOMESTIC)										T12S R12E SEC. 34BAA					
DATE	EC	PH	NA	K	CA	MG	CL	HCC3	CO3	SO4	NH3	NO2/3	KJN	TGTN	HAFD
-----	--	--	--	-	--	--	--	-----	-----	-----	-----	-----	-----	-----	-----
9/ 2/77	1.12	7.80	113.0	3.1	79.8	14.0	45.0	278.0	0.0	139.0	0.0	13.7	.4	3.5	257.0

(DOMESTIC)

T12S R12E SEC.34 CAD

DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD
9/ 2/77	.60	8.30	69.5	2.1	35.2	4.2	24.0	218.4	0.0	13.0	0.0	---	---	---	---

DATE	(DOMESTIC)					T12S R12E SEC. 34 CDA									
	EC	PH	NH	K	CA	MG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TOTN	HARD
9/ 2/77	.60	8.30	72.0	2.1	31.5	4.7	23.5	214.7	0.0	14.5	0.0	13.3	.4	3.4	98.0

C. D. EMMONS	(DOMESTIC)		PIMA COUNTY ANALYSIS						T12S R12E SEC 34 DAB							
	DATE	EC	PH	NA	K	CA	Mg	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	T01N	HAED
	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2/ 2/77	.29	9.99	79.9	0.0	6.1	1.2	30.0	48.8	0.0	33.0	0.0	4.0	0.0	.9	20.2	
3/30/76	.33	9.70	89.5	0.0	101.6	2.4	35.0	42.7	0.0	25.0	0.0	9.3	0.0	2.1	263.6	

(DOMESTIC)

T12S R12E SEC. 34 DAC

DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TION	HARD
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
9/ 2/77	.57	7.90	54.5	3.4	49.0	14.3	37.1	229.4	0.0	29.3	0.0	15.1	0.0	3.4	181.3

A.L.CORNELL		(DOMESTIC)		PIMA COUNTY ANALYSIS				T12S R12E SEC 34 DBC			
DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃
---	--	--	--	-	--	--	--	--	--	--	No 2/3
12/14/76	.39	8.70	117.4	0.0	30.3	30.3	18.0	103.7	0.0	21.0	0.0
											KJN
											TOTN
											HARD

(DOMESTIC)										T12S R12E SEC. 34 DCD					
DATE	EC	PH	NA	K	CA	MG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TOIN	HARD
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	---
9/ 2/77	.70	7.60	52.0	2.6	56.1	11.3	38.0	239.1	0.0	11.8	0.0	13.3	0.0	3.0	186.7

IRONWOOD RANCH (DOMESTIC)		PIMA COUNTY ANALYSIS					T12S R12E SEC 34 DCD								
DATE	EC	PH	NA	K	CA	MG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TOT N	HARL
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
1/13/77	.37	7.90	69.0	0.0	72.6	18.2	28.0	140.3	0.0	23.0	0.0	13.3	0.0	3.0	256.3

C.W.U.A. WELL 35H (IRRIGATION)

	T12S R12E SEC.35 ADD														
DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD
---	--	--	--	-	--	--	--	----	----	----	----	----	----	----	----
6/11/75	1.08	7.34	116.0	7.4	90.5	14.4	89.0	307.4	0.0	0.0	0.0	5.7	0.0	1.3	285.3
8/21/75	1.07	7.45	127.0	6.4	86.0	14.0	84.0	295.2	0.0	0.0	0.0	5.6	0.0	1.3	272.5
6/13/77	1.07	7.46	135.8	3.4	89.2	17.8	78.0	306.2	0.0	200.0	0.0	4.4	0.0	1.0	296.1
6/27/77	1.11	7.40	122.0	3.0	97.0	16.2	78.0	302.7	0.0	200.0	0.0	4.0	0.0	1.0	309.0
8/12/77	1.36	7.50	116.0	3.5	75.0	14.5	80.0	305.0	0.0	195.0	0.0	5.8	0.0	1.3	247.0

SANTA CRUZ RIVER AT INA ROAD

T12S R12E SEC.35 DDD

DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOT N	HARD
---	--	--	--	-	--	--	--	----	----	----	----	----	----	----	----
5/ 4/77	1.13	7.60	113.7	9.7	10.6	6.3	98.0	302.6	0.0	133.0	16.9	6.2	20.6	22.0	52.4
7/11/77	1.12	7.70	127.5	14.8	31.3	8.8	84.0	254.0	0.0	140.0	19.8	1.8	24.4	24.8	114.4
7/19/77	.90	7.80	77.0	18.5	117.0	8.0	64.0	201.3	0.0	100.0	3.9	17.3	19.0	23.0	325.2
8/ 1/77	.56	7.60	45.5	7.8	78.0	9.7	33.0	164.7	0.0	47.0	2.4	13.7	19.0	21.1	234.8
8/19/77	1.20	7.30	130.5	13.5	80.0	7.1	84.0	257.4	0.0	110.0	3.6	12.4	5.9	8.7	229.0

CONCRETE SAND AND GRAVEL EFFLUENT (GRAVEL WASH WATER)

DATE	EC	PH	NA	K	CA	MG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TOTN	HAFL
6/20/77	1.38	7.80	137.0	11.4	95.7	18.3	89.0	258.6	0.0	330.0	0.0	62.5	0.0	14.1	314.4

SAMPLE NO. 1 POP NITROGEN ISOTOPE STUDY (DOMESTIC WELL)										T12E R12S SEC.36 ACB					
DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TCTN	HAF
----	--	--	--	-	--	--	--	---	---	---	---	---	---	---	---
4 / 1/77	.91	7.24	81.1	1.6	100.4	10.9	78.0	234.2	0.0	210.0	0.0	24.8	0.0	5.6	295.7

SAMPLE NO. 3 FOR NITROGEN ISOTOPE STUDY (DOMESTIC WELL)										T12E R12S SEC.36 ADC					
DATE	EC	pH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SC 4	NH ₃	NO ₂ /3	KJN	TCTN	HARD
-----	---	--	--	-	--	--	--	--	--	---	---	---	---	---	---
4/ 1/77	.60	7.25	48.4	.6	70.2	7.1	34.0	205.0	0.0	120.0	0.0	21.3	0.0	4.8	204.6

C.W.U.A. WELL 36H (IRRIGATION)							112S R12E SEC.36 ADD								
DATE	EC	pH	NA	K	CA	Mg	CL	HCO3	CO3	SO4	NH3	N02/3	KJN	TCTN	HARD
---	--	--	-	--	--	--	--	--	--	--	--	--	--	--	---
6/11/75	.55	7.32	46.0	4.7	50.8	5.9	42.0	170.8	0.0	0.0	10.5	0.0	2.4	151.2	
8/21/75	.55	7.61	47.0	6.3	46.0	4.8	33.0	168.4	0.0	0.0	10.3	0.0	2.3	134.7	
4/ 8/76	.55	7.50	45.0	1.6	46.0	4.0	31.0	173.2	0.0	0.0	9.6	0.0	2.2	131.4	
3/25/77	.50	7.53	44.8	1.1	54.5	5.1	32.0	163.5	0.0	85.0	0.0	8.9	0.0	2.0	157.1
4/15/77	.30	7.55	43.6	.5	50.8	4.8	31.0	161.0	0.0	70.0	0.0	11.2	0.0	2.5	146.6
4/29/77	.56	7.60	41.1	1.2	54.5	4.8	30.0	163.5	0.0	66.0	0.0	11.5	0.0	2.6	155.9
5/16/77	.52	7.39	38.7	1.2	53.2	4.8	29.0	161.8	0.0	68.0	0.0	9.3	0.0	2.1	152.6
6/ 1/77	.52	7.85	43.6	1.5	54.5	5.1	29.0	162.3	0.0	70.0	0.0	9.7	0.0	2.2	157.1
6/13/77	.52	7.49	50.0	1.8	53.2	6.2	28.0	163.5	0.0	70.0	0.0	6.2	0.0	1.4	158.4
6/27/77	.52	7.30	47.5	1.8	36.3	6.6	27.0	161.0	0.0	70.0	0.0	10.6	0.0	2.4	117.8
8/12/77	.61	7.90	42.0	1.7	38.8	4.7	26.0	158.6	0.0	55.0	0.0	8.9	0.0	2.0	116.3

SAMPLE NO. 2 FOR NITROGEN ISOTOPE STUDY (DOMESTIC WELL)										T12E R12S SEC.36 BAA					
DATE	EC	P.H.	NA	K	CA	M.G.	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOT.N	CARD
4/ 1/77	.50	7.33	31.5	.7	48.4	5.1	19.0	172.0	0.0	43.0	0.0	12.8	0.0	2.9	141.9

C. W. U. A. WELL 36C (IRRIGATION)										T12S R12E SEC.36 BAB					
DATE	EC	PH	NA	K	CA	MG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TCTN	HARD
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
6/11/75	.59	7.30	62.5	5.4	50.8	5.3	44.0	170.8	0.0	0.0	12.4	0.0	2.8	148.7	
8/21/75	.54	7.59	58.0	4.9	39.0	4.0	33.0	153.7	0.0	0.0	10.9	0.0	2.5	113.9	
4/ 8/76	.51	7.50	52.5	1.6	35.5	3.6	28.0	167.1	0.0	0.0	11.2	0.0	2.5	103.5	
2/25/77	.62	7.55	58.1	1.3	56.9	5.6	40.0	170.8	0.0	120.0	0.0	12.4	0.0	2.8	165.2
3/10/77	.25	7.26	16.9	1.1	21.8	4.1	10.0	97.6	0.0	5.0	0.0	11.8	0.0	2.7	71.3
3/25/77	.51	7.42	50.8	1.3	46.0	4.1	36.0	152.5	0.0	82.0	0.0	8.9	0.0	2.0	131.8
4/15/77	.50	7.50	50.8	.7	41.4	3.5	30.0	145.3	0.0	67.0	0.0	8.7	0.0	2.0	117.8
4/29/77	.52	7.58	38.7	.6	36.3	3.2	28.0	153.7	0.0	63.0	0.0	10.6	0.0	2.4	103.8
6/ 1/77	.48	7.61	49.6	1.7	43.6	3.5	29.0	146.4	0.0	65.0	0.0	7.5	0.0	1.7	123.3
6/13/77	.48	7.51	62.0	2.3	42.6	4.0	27.0	150.1	0.0	60.0	0.0	7.5	0.0	1.7	122.9
6/21/77	.49	7.40	56.5	2.1	29.0	4.1	26.0	151.3	0.0	61.0	0.0	8.9	0.0	2.0	89.3
8/12/77	.57	7.70	49.5	2.2	30.0	3.2	25.8	156.2	0.0	45.0	0.0	9.7	0.0	2.2	89.1

J. GLENN		(DOMESTIC)		PIMA COUNTY ANALYSIS						T12S R12E SEC 36 BCD					
DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOIN	HAE/C
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
11/29/76	.87	7.30	168.2	0.0	123.4	12.1	81.0	152.5	0.0	247.0	0.0	11.1	0.0	2.5	358.0

COLUMBIA SAND AND GRAVEL WELL (COMMERCIAL)								T12S R12E SEC.36 CBC							
DATE	EC	P _H	KA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HAE
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6/27/77	1.15	7.50	132.0	2.4	53.8	14.0	84.0	303.8	0.0	175.0	0.0	14.2	0.0	3.2	192.0
6/27/77	1.15	7.30	127.5	1.6	55.0	14.3	83.0	303.8	0.0	180.0	0.0	12.8	0.0	2.9	196.3
9/ 9/77	1.48	7.50	148.5	2.9	122.0	12.8	97.5	307.4	0.0	160.0	0.0	15.1	.3	3.7	357.4

C. W. U. A. WELL 36N (IRRIGATION)							T12S R12E SEC.36 CCD								
DATE	EC	FH	NA	K	CA	MG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TOTN	HARD
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	----
8/21/75	1.25	7.37	140.0	7.1	107.0	14.5	100.0	290.4	0.0	0.0	21.0	0.0	4.7	327.0	
3/10/77	.60	7.60	47.2	1.2	52.0	5.0	32.0	163.5	0.0	75.0	0.0	8.7	0.0	2.0	
6/20/77	1.27	7.38	122.1	3.1	91.3	15.2	92.0	295.2	0.0	250.0	0.0	35.4	0.0	8.0	
6/27/77	1.28	7.40	127.0	3.3	92.5	17.3	92.0	292.8	0.0	240.0	0.0	18.6	0.0	4.2	
														302.3	

TRICO ELECTRIC CO-OP WELL (COMMERCIAL)						T12S R12E SEC.36 CDA									
DATE	EC	pH	Na	K	Ca	Mg	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TCTN	HARD
9/16/77	1.70	7.80	156.0	3.4	99.5	15.9	92.0	330.0	0.0	220.0	0.0	28.3	0.0	6.4	314.0

M. MAYNARD		PIMA COUNTY ANALYSIS						T12S R12E SEC 36 DAB								
(DOMESTIC)		EC	PH	NA	K	CA	Mg	CL	HCC3	CO3	SO4	NH3	NO2/3	KJN	TOTN	HAFD
DATE		--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
1/12/77	.71	7.30	121.0	0.0	136.7	20.6	81.0	109.8	0.0	172.0	0.0	17.3	0.0	3.9	426.3	

ARTHUR PARK POND (SEWAGE EFFLUENT)

T12S R13E SEC.7 ABB

DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TCTN	HARD
----	--	--	--	-	--	--	--	--	--	--	--	----	---	----	----
6/ 6/77	1.04	7.73	131.8	17.6	53.2	6.4	91.0	353.8	0.0	74.0	30.7	2.7	30.1	30.7	159.2

ARTHUR PARK WELL (DOMESTIC)

T12S R13E SEC-7 ABB

DATE	EC	PH	NA	K	CA	MG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TOTN	HARD
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	----
5/ 4/77	.28	7.50	12.1	1.2	19.3	4.8	6.0	122.0	0.0	6.0	0.0	7.1	0.0	1.6	68.0
6/ 6/77	.25	7.55	10.0	2.2	29.3	6.4	6.0	113.5	0.0	10.0	0.0	5.8	0.0	1.3	99.5

CITY WELL A-50 (MUNICIPAL)

DATE	EC	PH	NA	K	CA	MG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TOTN	HARD
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
7/11/77	.26	7.70	16.5	1.1	11.0	5.5	7.0	69.0	0.0	7.0	0.0	10.6	0.0	2.4	50.1
8/ 1/77	.28	7.60	18.0	1.1	19.5	3.0	4.0	109.8	0.0	4.0	0.0	8.0	0.0	1.8	61.1

CITY WELL Z-13 (MUNICIPAL)

DATE	EC	PH	NA	K	CA	T12S R13E SEC. 31 CCC						
						MG	CL	HCO3	CO3	SO4	NH3	NO2/3
6/22/76	1.08	7.32	77.4	1.2	96.8	9.7	86.0	222.0	0.0	190.0	0.0	27.9
7/ 6/77	.97	7.50	24.5	1.0	111.1	111.3	74.0	174.0	0.0	165.0	0.0	26.6
8/ 1/77	1.05	7.50	94.0	2.0	118.5	111.3	69.0	212.0	0.0	90.0	0.0	32.3

CITY WELL Z-14 (MUNICIPAL)

DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
7/11/77	.80	7.30	71.0	1.6	44.0	8.8	40.0	187.0	0.0	140.0	0.0	23.6	0.0	5.2	146.1
8/ 1/77	.83	7.30	66.0	1.5	52.0	8.8	37.0	229.0	0.0	110.0	0.0	19.9	0.0	4.5	166.1

CITY WELL Z-14 (MUNICIPAL)

PIMA COUNTY ANALYSIS								T12S R13E SEC.31 DCD							
DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD
--	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
11/29/76	.53	7.30	82.3	0.0	102.9	18.2	35.0	103.7	0.0	127.0	0.0	15.1	0.0	3.4	332.0

7541 N. SHANNON (COMMERCIAL)

T12S R13E SEC.32 DAD

DATE	ZC	PH	NA	K	CA	MG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TOT N	HARD
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	---
7/15/77	.22	7.70	13.5	.8	17.3	3.3	8.0	81.7	0.0	0.0	0.0	8.9	0.0	2.0	56.8

INA ROAD SEWAGE PLANT WELL (COMMERCIAL WELL)

DATE	T13S R12E SEC. 1					ACB					HARD -----			
	EC	PH	NA	K	CA	NG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN
5/ 2/77	1.14	7.20	110.1	2.4	101.8	10.0	78.0	380.6	0.0	120.0	0.0	4.9	0.0	1.1
7/15/77	1.10	7.60	135.0	2.9	61.5	10.3	26.0	355.0	0.0	140.0	0.0	11.1	0.0	2.5
9/ 9/77	1.20	8.10	131.0	3.0	115.0	9.5	75.0	344.0	0.0	108.8	0.0	5.8	0.0	1.3

MONITOR WELL TRA1

T13S R12E SEC. 1 ACC

DATE	EC	PH	K	CA	HG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD	
---	--	--	-	--	--	--	--	--	--	--	--	--	--	--	--
7/ 3/74	1.18	7.67	133.0	15.0	68.0	15.8	95.0	447.0	0.0	0.0	1.2	1.8	0.0	0.0	234.9
7/10/74	1.12	7.66	120.0	15.0	75.0	17.5	94.0	505.0	0.0	0.0	1.0	1.8	0.0	0.0	259.4
8/14/74	.96	7.70	123.5	5.3	41.0	19.0	95.0	0.0	0.0	0.0	1.3	3.7	1.2	0.0	180.7
8/29/74	.99	7.67	125.5	5.7	39.0	18.8	93.0	0.0	0.0	0.0	1.3	2.8	1.3	0.0	174.8
9/ 5/74	1.05	7.97	142.0	6.0	25.0	18.5	99.0	0.0	0.0	0.0	1.2	3.1	1.0	0.0	138.6
9/12/74	1.01	7.92	115.5	4.3	35.5	13.5	93.0	0.0	0.0	0.0	1.0	2.3	1.0	0.0	144.3
9/26/74	.92	8.25	96.5	4.0	24.0	10.8	100.0	434.0	0.0	0.0	.9	2.3	1.0	0.0	104.4
10/17/74	.75	8.27	174.0	5.5	31.0	17.0	69.0	402.6	0.0	0.0	1.1	2.6	.7	0.0	147.5
10/31/74	.80	9.06	166.0	6.5	8.0	15.7	93.0	356.2	10.8	0.0	.9	2.5	2.2	2.6	84.7
11/21/74	.83	8.83	161.0	9.5	13.5	17.2	107.0	339.6	9.6	0.0	.7	3.0	.7	1.4	104.6
12/ 5/74	.83	8.98	153.0	9.8	6.0	0.0	97.0	380.6	10.8	0.0	.9	2.6	1.0	1.6	15.0
12/31/74	.88	8.92	166.5	9.5	7.2	14.3	90.0	385.5	7.2	0.0	.7	3.4	1.8	2.6	76.9
2/21/75	.89	8.66	179.0	7.3	10.0	14.3	88.0	446.5	4.2	0.0	.2	.5	.7	.6	83.9
3/14/75	.99	8.48	186.0	7.3	13.5	14.3	90.0	456.7	1.6	0.0	.6	1.5	1.7	2.1	92.6
3/27/75	.93	8.33	187.0	7.0	25.0	15.2	89.0	500.2	0.0	0.0	.6	.9	1.3	1.5	125.1
4/ 9/75	.98	8.13	134.0	7.2	15.6	14.4	85.0	527.0	0.0	0.0	.8	.9	1.4	1.6	98.3
4/23/75	1.13	7.72	183.1	7.2	12.4	14.3	85.0	534.4	0.0	0.0	.7	0.0	1.2	1.2	89.9
5/21/75	1.00	7.71	117.0	8.9	6.5	20.9	85.0	514.8	0.0	0.0	.3	1.0	8.1	8.3	102.3
6/10/75	1.04	7.65	110.5	7.6	75.0	23.3	90.0	475.8	0.0	0.0	.5	2.0	1.1	1.6	283.3
7/ 3/75	0.00	0.00	100.0	5.5	63.0	20.1	0.0	0.0	0.0	0.0	.5	0.0	1.3	1.3	240.1

1/ 7/77	.97	7.57	98.0	2.8	72.6	19.8	88.0	434.3	0.0	24.0	1.0	0.0	2.0	2.0	262.9
1/14/77	.98	7.50	93.0	2.8	78.7	16.8	92.0	449.0	0.0	29.0	1.1	.4	2.0	2.1	274.0
1/26/77	.80	8.05	92.0	3.6	31.5	16.0	95.0	346.5	0.0	13.0	1.3	.4	1.9	2.0	144.6
2/ 4/77	.72	8.36	106.5	5.5	31.5	15.3	82.0	280.6	0.0	13.0	1.4	.4	2.5	2.6	141.7
2/10/77	.68	8.50	93.2	4.2	14.5	14.5	79.0	224.5	89.4	7.5	1.2	0.0	2.2	2.2	95.9
2/18/77	.67	8.64	96.8	4.0	16.9	14.5	82.0	214.7	7.2	6.0	1.1	5.8	1.5	2.9	101.9
3/ 4/77	.70	9.01	98.0	5.8	26.6	14.3	84.0	161.0	13.2	7.0	.8	.4	1.5	1.6	125.3
3/11/77	.67	8.06	99.2	4.5	38.7	18.0	82.0	251.3	.1	0.0	1.1	0.0	2.1	2.1	170.8
4/15/77	.67	8.44	95.6	1.3	12.1	12.3	82.0	213.7	8.6	5.0	1.3	.4	2.5	2.7	80.9
5/16/77	.80	8.20	98.0	4.2	35.1	18.2	76.0	360.0	0.0	24.0	1.5	0.0	2.1	2.1	162.6
6/ 1/77	.94	7.90	110.7	5.1	50.8	24.8	75.0	412.4	0.0	15.0	1.7	0.0	2.2	2.2	229.0
6/13/77	1.02	7.62	125.8	6.1	73.2	34.6	76.0	505.1	0.0	12.0	1.3	0.0	2.1	2.1	325.3
6/27/77	1.01	7.60	117.0	5.3	39.5	26.7	80.0	466.0	0.0	18.0	1.5	1.8	3.3	3.3	208.6
8/19/77	1.25	7.90	123.0	15.3	52.0	24.3	86.0	389.0	0.0	22.0	1.5	0.0	13.7	13.7	230.0

DATE	(DOMESTIC)						T113S R12E SEC. 1 BAB								
	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NO ₂ /3	KJN			
9/16/77	.95	7.50	82.5	2.9	49.0	9.1	22.5	166.2	0.0	117.5	0.0	7.5	0.0	1.7	159.9

(DOMESTIC)							T13S R12E SEC. 1 BBB								
DATE	EC	pH	NA	K	CA	Mg	CL	HCO ₃	CC ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOT N	HARD
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
9/ 9/77	1.02	7.60	99.0	2.5	82.5	10.4	57.0	124.5	0.0	84.8	0.0	43.8	0.0	9.8	248.9

V. VALLES	(DOMESTIC)	PIMA COUNTY ANALYSIS							T113S R12E SEC. 1 BBB						
DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD
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1/12/77	.90	7.10	121.0	0.0	159.7	26.6	95.0	140.3	0.0	150.0	0.0	51.8	0.0	11.7	508.4

C.K.U.A. WELL 1-F (IRRIGATION)

DATE	T13S R12E SEC.1 BDD						NH3 ---	NO2/3 ---	KJN ---	TOTN ---	HARD ---
	EC	pH	NA	K	CA	Mg	CL	HCO3	CO3	SO4	
8/21/75	1.25	7.29	134.0	7.1	114.5	16.4	94.0	327.0	0.0	0.0	23.9
4/ 8/76	1.23	7.19	121.5	3.0	106.0	15.8	86.0	346.5	0.0	0.0	22.9
3/18/77	1.27	7.20	116.2	2.5	121.0	18.0	91.0	336.7	0.0	290.0	16.1
4/15/77	.92	7.30	108.9	1.9	123.4	16.4	89.0	339.4	0.0	234.0	0.0
4/29/77	1.33	7.30	112.5	3.0	123.4	15.9	86.0	344.0	0.0	225.0	0.0
7/ 5/77	1.28	7.20	122.5	3.2	85.7	19.3	87.0	352.6	0.0	210.0	0.0
9/ 9/77	1.52	7.40	120.5	3.6	151.5	17.1	92.0	324.5	0.0	171.3	0.0

MONITOR WELL TAA2												T135 R12E SEC. 1 BPD											
DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HA/C								
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1/16/74	.82	3.55	125.0	10.0	34.0	10.8	0.0	0.0	0.0	0.0	0.0	0.0	8.3	0.0	129.4								
1/30/74	.81	8.40	132.0	13.0	26.0	10.4	0.0	0.0	0.0	4.8	3.2	9.3	0.0	107.3									
2/7/74	.85	8.20	124.0	15.0	19.0	7.4	0.0	0.0	0.0	5.3	0.0	9.1	0.0	77.9									
2/13/74	0.00	8.50	0.0	0.0	22.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	54.9									
2/20/74	.80	9.50	128.0	16.0	0.0	0.0	0.0	0.0	0.0	5.1	1.7	4.3	0.0	0.0									
2/27/74	.99	7.20	128.0	13.0	0.0	0.0	0.0	0.0	0.0	3.9	1.0	1.2	0.0	0.0									
3/6/74	0.00	8.30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	.6	5.0	0.0	0.0									
3/13/74	.90	8.05	124.0	0.0	48.0	13.0	0.0	0.0	0.0	4.3	1.0	0.0	0.0	173.4									
3/20/74	.85	8.31	134.0	0.0	41.0	11.0	0.0	0.0	0.0	3.8	1.4	7.0	0.0	147.7									
3/29/74	.33	8.40	128.0	0.0	36.0	8.0	115.0	0.0	0.0	3.8	1.5	8.1	0.0	122.9									
4/3/74	.45	8.20	128.0	0.0	39.0	11.0	88.0	0.0	0.0	3.0	1.6	2.8	0.0	142.7									
4/10/74	.65	7.00	132.0	0.0	38.0	10.0	89.0	0.0	0.0	3.3	1.7	5.0	0.0	136.1									
4/17/74	.91	7.45	0.0	0.0	0.0	0.0	86.0	295.0	0.0	0.0	3.1	1.6	6.4	0.0	0.0								
5/8/74	.68	8.00	0.0	0.0	0.0	0.0	97.0	0.0	0.0	0.0	.8	.7	0.0	0.0	0.0								
5/17/74	.89	8.05	120.0	0.0	44.0	13.0	91.0	300.0	0.0	0.0	1.9	2.2	.3	0.0	163.4								
5/22/74	.80	8.49	0.0	0.0	0.0	0.0	93.0	224.0	0.0	0.0	.9	1.2	0.0	0.0	0.0								
5/29/74	.89	8.32	128.0	18.0	41.0	13.0	94.0	255.0	0.0	0.0	1.9	3.5	0.0	0.0	155.9								
6/5/74	.84	8.00	109.0	18.0	143.0	28.0	93.0	283.0	0.0	0.0	1.7	2.2	0.0	0.0	472.5								
6/12/74	.83	7.83	64.0	18.0	93.0	14.0	86.0	300.0	0.0	0.0	1.3	1.3	0.0	0.0	289.9								
6/19/74	1.10	8.00	108.0	15.0	53.0	13.8	9.0	334.0	0.0	0.0	1.7	2.2	0.0	0.0	189.2								

6/26/74	.88	7.90	105.0	15.0	43.0	12.3	0.0	273.0	0.0	0.0	1.5	1.8	0.0	0.0	158.1
7/ 3/74	1.00	7.69	113.0	15.0	45.0	11.8	95.0	320.0	0.0	0.0	-1	2.7	0.0	0.0	161.0
7/10/74	.95	7.95	118.0	15.0	51.0	12.5	90.0	325.0	0.0	0.0	2.0	2.7	0.0	0.0	178.9
8/14/74	.90	7.90	122.0	6.3	47.0	13.0	91.0	0.0	0.0	0.0	1.4	4.0	1.5	0.0	170.9
8/25/74	.93	7.91	114.0	6.8	46.0	11.8	93.0	0.0	0.0	0.0	2.3	3.4	2.2	0.0	163.5
9/ 5/74	.93	8.05	103.0	5.5	39.0	11.5	90.0	0.0	0.0	0.0	2.0	2.7	1.7	0.0	144.8
9/12/74	.92	8.08	119.0	5.5	54.0	12.0	90.0	0.0	0.0	0.0	2.2	2.8	1.9	0.0	184.3
9/26/74	.83	8.20	115.5	5.5	42.5	10.8	91.0	0.0	0.0	0.0	1.3	3.2	1.4	0.0	150.6
10/ 8/74	.92	8.57	91.0	5.8	42.5	10.8	98.0	218.9	1.6	0.0	1.9	3.9	1.6	2.5	150.6
10/17/74	.70	8.60	103.0	5.0	48.0	13.2	105.0	242.0	0.0	0.0	1.6	5.6	1.4	0.0	174.3
10/31/74	.79	8.03	106.0	5.5	40.0	14.0	115.0	251.3	0.0	0.0	1.3	2.7	1.3	0.0	157.6
11/21/74	.72	8.63	110.0	7.7	25.0	12.3	112.0	187.9	2.4	0.0	1.1	3.4	1.3	2.1	113.1
12/ 5/74	.66	9.03	107.0	8.8	17.2	0.0	119.0	180.6	7.2	0.0	1.3	2.7	1.1	1.7	43.0
12/31/74	.65	9.09	105.0	9.0	9.5	10.2	110.0	180.6	6.0	0.0	1.5	3.2	1.7	2.4	65.7
1/29/75	.62	8.95	103.5	5.8	13.0	11.8	113.0	202.5	4.2	0.0	1.6	4.1	1.6	2.5	81.1
2/21/75	.63	8.62	105.5	6.5	15.5	12.5	112.0	212.3	4.2	0.0	1.1	.9	1.4	1.6	90.2
3/14/75	.73	8.70	112.0	6.4	26.0	13.0	99.0	39.1	1.8	0.0	1.1	1.1	1.7	2.0	118.5
3/27/75	.73	8.50	114.3	5.8	31.0	11.9	95.0	283.0	0.0	0.0	1.0	0.0	1.5	1.5	126.4
4/ 9/75	.86	8.07	110.8	5.9	28.4	12.2	88.0	334.3	0.0	0.0	1.7	.5	1.7	1.8	121.2
4/23/75	1.00	7.87	111.3	6.2	27.9	12.4	91.0	373.3	0.0	0.0	.9	0.0	1.2	1.2	120.8
5/21/75	.83	8.08	100.0	9.3	48.3	10.9	90.0	339.2	0.0	0.0	1.2	.6	2.4	2.5	165.5
6/10/75	.99	7.82	116.5	8.5	55.3	14.7	9900.0	339.2	0.0	0.0	1.2	0.0	2.0	2.0	198.7

7/ 3/75	0.00	0.00	107.0	10.4	42.0	12.3	0.0	0.0	0.0	0.0	13.2	3.2	15.7	16.5	155.6
1/ 7/77	.94	7.72	112.5	4.0	35.1	12.5	87.0	344.0	0.0	110.0	1.1	0.0	2.1	2.1	139.2
1/14/77	.92	7.70	110.1	3.4	61.7	12.8	90.0	334.0	0.0	89.0	1.0	.4	1.5	1.7	206.8
1/26/77	.90	7.99	111.3	3.9	47.2	12.3	92.0	339.2	0.0	85.0	.6	.4	1.4	1.5	168.6
2/ 4/77	.92	7.69	111.3	3.9	56.9	12.5	86.0	334.0	0.0	86.0	.7	.4	1.5	1.7	193.6
2/10/77	.97	7.49	119.8	4.4	66.6	14.0	88.0	356.2	0.0	100.0	.8	0.0	1.3	1.3	224.0
2/11/77	.93	7.83	105.3	5.6	56.9	13.2	80.0	346.5	0.0	85.0	.8	.4	1.4	1.5	196.5
4/22/77	.89	7.19	106.5	2.9	67.8	11.1	77.0	340.4	0.0	58.0	.6	0.0	2.2	2.2	215.1
5/16/77	.95	7.14	102.9	3.6	72.6	15.1	78.0	380.6	0.0	61.0	.7	0.0	1.0	1.0	243.5
6/ 1/77	1.02	7.60	112.5	4.5	82.3	14.9	77.0	380.6	0.0	95.0	.4	0.0	.7	.8	266.9
6/17/77	.98	7.46	131.8	4.5	77.2	16.0	79.0	366.0	0.0	75.0	.4	0.0	1.0	1.0	256.7
6/27/77	.96	7.40	117.0	3.6	21.0	11.6	82.0	358.7	0.0	68.0	.3	0.0	2.1	2.1	100.2

INA ROAD OXIDATION POND DISCHARGE NO. 1							T13S R12E SEC. 1 DBA								
DATE	EC	Pd	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TCTN	H A E
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1/ 7/77	1.00	7.20	101.6	7.6	48.4	5.6	101.0	414.8	0.0	12.0	28.6	2.7	38.1	38.6	143.9
1/14/77	.99	7.16	98.0	8.7	47.2	5.5	93.0	427.0	0.0	3.0	28.6	3.1	36.8	37.5	140.5
1/26/77	1.00	7.48	106.5	9.1	49.6	5.7	405.0	0.0	0.0	17.0	28.6	3.1	39.0	39.7	147.4
2/ 4/77	.98	7.30	99.2	8.5	48.4	5.3	101.0	434.3	0.0	4.0	27.6	4.9	36.4	37.4	142.7
2/10/77	.99	7.17	93.2	11.6	44.8	5.8	93.0	424.6	0.0	9.0	28.3	2.2	35.2	35.7	135.8
2/18/77	.98	7.33	94.4	11.6	44.8	5.5	78.0	422.1	0.0	24.0	28.2	2.7	35.4	36.1	134.5
3/ 4/77	.94	7.30	104.1	11.1	47.2	5.5	90.0	412.3	0.0	25.0	38.6	2.7	36.7	37.3	140.5
3/18/77	1.00	7.30	105.3	12.1	48.4	5.6	101.0	429.4	0.0	8.0	29.1	2.7	33.5	34.1	143.9
4/29/77	1.05	7.42	95.6	12.1	50.8	4.6	84.0	422.1	0.0	7.0	27.0	3.1	33.3	34.0	145.6
5/ 4/77	1.06	7.39	96.8	9.7	50.8	4.6	80.0	358.7	0.0	69.0	25.5	3.5	37.2	38.1	145.8
5/16/77	.95	7.40	100.4	12.1	47.2	4.7	77.0	348.9	0.0	52.0	21.3	3.1	33.8	34.5	137.2
6/ 1/77	1.02	7.43	105.9	15.3	48.4	5.3	82.0	363.6	0.0	41.0	24.1	3.5	41.7	42.5	142.7
6/13/77	.99	7.29	131.7	14.9	50.6	5.3	87.0	336.7	0.0	60.0	21.3	1.8	32.1	32.5	148.2
6/21/77	.98	7.40	117.0	11.1	34.0	5.6	87.0	324.5	0.0	58.0	22.1	3.1	27.3	28.0	106.0

INA ROAD OXIDATION POND DISCHARGE NO. 2

T13S R12E SEC. 1 DBD

DATE	EC	PH	NA	K	CA	MG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TON	HARD
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1/ 7/77	1.00	7.30	101.6	8.0	46.0	5.7	90.0	381.9	0.0	48.0	30.2	1.8	38.6	39.1	138.4
1/14/77	.99	7.33	99.2	7.6	47.2	5.5	98.0	392.8	0.0	53.0	31.4	3.1	39.7	40.4	140.5
1/26/77	1.00	7.65	102.9	11.7	48.4	5.8	95.0	380.6	0.0	47.0	30.7	2.7	40.6	41.2	144.8
2/ 4/77	1.00	7.32	102.9	7.5	64.1	5.9	89.0	400.2	0.0	45.0	28.7	1.3	36.4	36.7	184.4
2/10/77	1.01	7.33	105.3	12.1	47.2	5.7	80.0	397.7	0.0	48.0	29.7	1.8	37.8	37.7	141.4
2/18/77	1.01	7.33	101.6	11.9	48.4	5.5	78.0	402.6	0.0	54.0	31.5	2.7	37.8	38.5	143.5
3/ 4/77	.97	7.45	95.6	12.6	43.6	5.3	85.0	383.0	0.0	54.0	30.1	3.5	37.2	38.0	130.7
3/18/77	1.05	7.37	107.7	12.1	46.0	6.3	97.0	417.2	0.0	48.0	27.2	3.5	33.0	33.8	140.8
4/29/77	1.07	7.38	99.2	13.3	49.6	5.1	79.0	366.0	0.0	66.0	26.2	3.5	35.8	36.6	144.9
5/16/77	1.01	7.44	107.7	12.1	47.2	5.3	85.0	361.1	0.0	56.0	27.7	1.8	38.4	38.8	139.7
6/ 1/77	1.02	7.55	107.1	15.7	49.6	5.3	82.0	361.1	0.0	70.0	26.3	4.4	36.4	38.4	145.7
6/13/77	1.03	7.40	129.8	14.9	49.2	6.1	82.0	353.8	0.0	70.0	24.2	3.1	35.0	35.7	148.0
6/27/77	1.02	7.30	145.5	11.2	31.0	5.3	77.0	351.4	0.0	65.0	24.8	3.5	30.9	31.7	99.3

SAMPLE NO. 4	FOR NITROGEN ISOTOPE STUDY (IRRIGATION WELL)							#135 R12E SEC. 2 AAB			KJN ---	TOT N ---	HARD ---	
	DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄			
4/ 1/77	1.10	7.30	100.4	2.3	93.2	16.2	70.0	316.4	0.0	210.0	0.0	12.4	0.0	2.8
6/13/77	1.07	7.37	129.8	2.7	97.2	21.3	68.0	323.3	0.0	200.0	0.0	10.2	0.0	2.3
7/11/77	1.13	7.30	114.0	3.0	17.8	18.8	67.0	266.0	0.0	200.0	0.0	12.4	0.0	2.8
														121.9

CITY WELL Z-11 (MUNICIPAL)

DATE	EC	T13S R12E SEC. 2 BAB													
		PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	S04	NH ₃	NO ₂ /3	KJN	TOTN	HARD
6/22/76	.70	7.55	44.7	1.8	41.1	15.1	40.0	234.2	0.0	80.0	0.0	13.7	0.0	3.1	164.8
7/11/77	.67	7.60	51.5	1.8	32.5	19.0	27.0	193.0	0.0	80.0	0.0	15.1	0.0	3.4	159.4
9/ 9/77	.77	7.80	53.5	1.9	81.5	16.5	27.5	236.7	0.0	86.3	0.0	14.2	0.0	3.2	271.5

(DOMESTIC)							T13S R12E SEC. 2 DAA								
DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOT N	HARD
-----	--	--	--	-	--	--	--	-----	-----	-----	-----	-----	-----	-----	-----
9/16/77	1.55	7.90	145.5	3.8	89.0	17.0	84.0	385.0	0.0	246.2	0.0	2.7	0.0	.6	292.3

T13S R12E SEC. 2 DDC															
DATE	EC	PH	NA	K	CA	MG	CL	HC03	CO3	SO4	NH3	NO2/3	KJN	TOTN	HARD
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
9/16/77	1.30	8.00	96.0	2.9	78.0	19.6	39.0	360.0	0.0	193.7	0.0	11.1	0.0	2.5	275.5

SAMPLE NO. 11 FOR NITROGEN ISOTOPE STUDY (IRRIGATION WELL)

	T13S R12E SEC-12 AAB														
DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TON	HARD	
4/ 5/77	1.23	7.40	123.4	2.2	111.3	15.0	84.0	339.2	0.0	260.0	0.0	21.7	0.0	4.9	
9/26/77	1.90	7.70	145.5	4.1	106.5	16.3	135.5	338.7	0.0	249.8	0.0	5.8	0.0	1.3	
														333.1	

(DOMESTIC)									
DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	SO ₄
9/ 9/77	1.50	7.70	152.0	3.8	140.0	19.0	62.0	300.1	0.0
									259.0

NH₃ NO₂/3 KJN TOIN HARD

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T13S R12E SEC. 12BAA

CITY WELL A-22 (MUNICIPAL)							T13S R12E SEC.12 CAA								
DATE	EC	PH	NA	K	CA	MG	CL	HC03	C03	S04	NH3	NO2/3	KJN	TOTN	HARD
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
7/11/77	1.22	7.70	137.5	3.7	53.8	19.3	48.0	262.0	0.0	260.0	0.0	5.8	0.0	1.3	213.9
9/ 9/77	.97	7.90	92.5	2.4	79.5	9.3	56.8	196.4	0.0	111.0	0.0	5.8	0.0	1.3	236.9

CITY WELL A-22 (MUNICIPAL)					PIMA COUNTY ANALYSIS					T13S R12E SEC.12 CAA					
DATE	SC	PH	NA	K	CA	MG	CL	HC03	C03	S04	NH3	NO2/3	RJN	TOTN	HARD
----	--	--	--	-	--	--	--	---	---	---	---	---	---	---	---
4/ 1/77	.63	7.70	64.1	0.0	87.1	27.8	62.0	112.9	0.0	93.0	0.0	8.9	0.0	2.0	332.1
5/18/77	1.18	7.30	173.0	0.0	134.3	19.4	53.0	173.2	0.0	250.0	0.0	2.7	0.0	.6	415.3

DATE	(DOMESTIC)					T13S R12E SEC.12CAC					HARD -----				
	PC ---	PH ---	NA ---	K --	CA --	MG --	CL --	HCO3 ----	CO3 ----	SO4 ----	NH3 ----	NO2/3 ----	KJN ----	TOTN -----	
9/ 9/77	.85	9.00	84.0	2.3	64.5	5.9	58.0	166.4	0.0	100.0	0.0	6.2	0.0	1.4	185.4

D. GONZALES (DOMESTIC) PIMA COUNTY ANALYSIS T13S R13E SEC. 6 ABC
DATE EC PH NA K CA MG CL HCO3 CO3 SO4 NH3 NO2/3 KJN TOTN HARD
--- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --

11/29/76	1.00	7.00	111.3	0.0	242.0	52.0	85.0	146.4	0.0	346.0	0.0	30.6	0.0	6.9	818.6
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C.R. YOUNG (DOMESTIC)		PIMA COUNTY ANALYSIS						T13S R13E SEC. 6 BDB							
DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOIN	HARD
---	--	--	--	-	--	--	--	---	---	---	---	---	---	---	---
12/ 1/76	1.00	7.00	106.5	0.0	174.2	23.0	78.0	134.2	0.0	250.0	0.0	44.7	0.0	10.1	529.8

TUCSON ROCK AND SAND WELL (COMMERCIAL)

T13S R13E SEC.06 DCB

DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD
6/27/77	1.22	7.30	0.0	0.0	0.0	0.0	0.0	316.0	0.0	195.0	0.0	43.4	0.0	9.8	0.0

DATE	T13S R13E SEC. 6CBA													
	EC	PH	NA	K	CA	Mg	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	XJN	TOT N
7/15/77	1.09	7.60	53.0	2.1	101.3	11.8	34.0	316.0	0.0	130.0	0.0	4.9	0.0	1.1 301
9/ 9/77	1.27	7.50	106.5	2.3	158.0	10.4	76.4	313.0	0..0	104.3	0.0	8.0	0.0	1.8 437.

CITY WELL Z-15 (MUNICIPAL)

DATE	EC	PH	NA	K	CA	MG	T13S R13E SEC.06 DDD				NH3	NO2/3	KJN	TCTN	HARD
							CL	HCO3	CO3	SO4					
7/ 6/77	1.30	7.50	65.5	1.5	93.8	21.5	115.0	180.0	0.0	310.0	0.0	26.6	0.0	6.0	322.8

SAMPLE NO. 12 FOR NITROGEN ISOTOPE STUDY (DOMESTIC WELL)										T13S R13E SEC. 7	CAA				
DATE	EC	pH	Na	K	Ca	Mg	Cl	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD
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4/ 5/77	.96	7.30	99.2	1.8	87.1	11.7	84.0	323.3	0.0	116.0	0.0	4.4	0.0	1.0	265.7

CITY WELL Z-7 (MUNICIPAL)

DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	C0 ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
7/ 6/77	.52	7.70	50.0	1.3	114.4	5.5	31.5	165.9	0.0	70.0	0.0	6.2	0.0	1.4	308.4
8/ 1/77	.71	7.60	65.4	1.4	101.3	10.8	36.0	201.0	0.0	150.0	0.0	7.5	0.0	1.7	297.5

SUNSET DAIRY WELL (COMMERCIAL)

T13S R13S SEC.8 CCC

DATE	EC	pH	NA	K	CA	Mg	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HAF
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5/ 9/77	1.17	7.50	84.7	1.2	159.7	10.7	111.0	128.1	0.0	314.0	0.0	31.0	0.0	7.0	442.9
9/ 9/77	1.68	7.70	102.0	3.3	182.0	11.0	108.8	127.7	0.0	220.5	.3	27.5	.6	6.8	499.9

T13S R13E SEC. 9DCB															
DATE	EC	PH	NA	K	CA	MG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TOIN	HANRD
7/15/77	.35	7.50	21.5	.8	43.3	4.5	10.0	151.0	0.0	20.0	0.0	8.9	0.0	2.0	126.7

(IRRIGATION)

DATE	T13S R13E SEC. 9 DCC						HARD -----
	EC	PH	NA	K	CA	MG	
7/15/77	.38	7.70	24.5	.9	34.0	4.3	14.0 150.1 0.0 24.0 0.0 2.7 0.0 .6 102.6

CITY WELL A-55 (MUNICIPAL)

DATE	EC	PH	NA	K	CA	T13S R13E SEC.14 CAD									
						NG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TCTN	HRD
8/ 1/77	.34	7.50	16.0	.9	46.0	2.8	10.0	119.8	0.0	25.0	0.0	15.9	0.0	3.6	126.4

(IRRIGATION)

T13S R13E SEC. 15BCD

DATE	EC	PH	NA	K	CA	MG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TOT N	HARD
7/11/77	.35	7.50	24.0	.9	17.3	4.3	7.0	110.0	0.0	22.0	0.0	12.8	0.0	2.9	60.9

CITY WELL A-52 (MUNICIPAL)

DATE	T13S R13E SEC. 15 DAA														
	EC	PH	NA	K	CA	MG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TOT N	HART
7/15/77	.40	7.60	25.0	.9	44.2	3.3	18.0	134.2	0.0	30.0	0.0	13.7	0.0	3.1	124.0
8/ 1/77	.30	7.40	16.0	.8	38.8	2.8	6.0	109.8	0.0	17.0	0.0	18.6	.1	4.3	108.4

(IRRIGATION)

T13S R13E SEC. 15 DBB

DATE	(IRRIGATION)				T13S R13E SEC. 15 DBB				NO2/3 ----	KJN ----	TOTN ----	HARD ----			
	EC	pH	NA	K	CA	Mg	Cl	HCO3							
7/15/77	.38	7.80	18.0	.9	38.4	3.8	7.0	144.0	0.0	28.0	0.0	111.1	0.0	2.5	111.6

CITY WELL A-53 (MUNICIPAL)

T13S R13E SEC.15 DAC

	DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TCTN	HARD
	--	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
8/ 1/77	.35	7.30	20.0	.9	42.8	4.8	10.0	126.8	0.0	18.0	0.0	15.9	.1	3.7	126.7	

(IRRIGATION)

T13S R13E SEC. 16AAA

DATE	EC	PH	NA	K	CA	MG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TOTN	HARD
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7/11/77	.36	7.10	19.0	.9	20.3	4.8	8.0	114.0	0.0	21.0	0.0	18.2	0.0	4.1	70.5

CITY WELL Z-5 (MUNICIPAL)		T13S R13E SEC. 16 EDB													
DATE	EC	PH	NA	K	CA	MG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TOTN	HARD
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
6/22/76	.62	7.48	41.1	1.2	61.7	6.4	41.0	193.9	0.0	76.0	0.0	7.5	0.0	1.7	180.5
7/ 6/77	.54	7.50	41.5	1.4	28.0	7.0	26.0	147.0	0.0	65.0	0.0	4.9	0.0	1.1	98.8
8/ 1/77	.60	7.60	45.0	1.5	26.3	6.3	22.0	163.0	0.0	75.0	0.0	6.7	0.0	1.5	91.6

(IRRIGATION)

T13S R13E SEC. 16 BDC

DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TCTN	HARD	
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--	--
7/11/77	.59	7.50	48.0	1.6	32.5	7.8	28.0	163.0	0.0	80.0	0.0	7.5	0.0	1.7	113.3	

(IRRIGATION)

DATE	EC	pH	NA	K	CA	Mg	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD
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7/11/77	.59	7.20	55.0	1.2	34.3	8.0	24.0	168.0	0.0	75.0	0.0	15.9	0.0	3.6	118.6
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CITY WELL Z-3 (MUNICIPAL)

DATE	EC	T13S R13E SEC.16 CCD										KJN	NO2/3	TCTN	HARD
		H	Na	K	Ca	Mg	Cl	HC03	CO3	SO4	NH3				
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6/22/76	.98	7.68	49.6	1.8	99.2	8.7	133.0	131.7	0.0	25.0	0.0	6.6	0.0	1.5	283.6
7/ 6/77	.53	7.90	39.5	1.6	114.0	5.3	30.0	139.0	0.0	63.0	0.0	7.5	0.0	1.7	306.5
8/ 1/77	1.08	7.70	53.0	2.4	101.3	10.8	111.0	151.3	0.0	105.0	0.0	6.6	0.0	1.5	297.5

E-110

CITY WELL Z-2 (MUNICIPAL)

T13S R13E SEC-16 DDA

DATE	EC	PH	NA	K	CA	MG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TOT N	HAED
---	---	---	---	-	---	--	--	---	---	---	---	---	---	---	---
6/22/76	.50	7.55	33.8	.6	49.6	3.8	35.0	169.6	0.0	46.0	0.0	6.6	0.0	1.5	139.5
7/ 6/77	.47	7.70	39.0	1.4	59.2	8.8	33.0	139.0	0.0	47.0	0.0	7.5	0.0	1.7	164.1
8/ 1/77	.49	7.70	34.5	1.3	51.5	2.4	19.0	163.5	0.0	13.0	0.0	4.9	0.0	1.1	138.5

CITY WELL Z-6 (MUNICIPAL)								T13S R13E SEC. 17 AAA							
DATE	EC	PH	NA	K	CA	MG	CL	HC03	CO3	SO4	NH3	NO2/3	KJN	TCTN	HARD
6/22/76	.31	7.42	64.1	.6	62.9	8.6	49.0	146.4	0.0	150.0	0.0	12.4	0.0	2.8	192.5
7/ 6/77	.60	7.60	51.5	1.5	75.9	7.8	29.0	151.0	0.0	100.0	0.0	8.9	0.0	2.0	221.7
8/ 1/77	.87	7.50	55.0	1.7	70.5	9.8	36.0	195.0	0.0	115.0	0.0	9.8	0.0	2.2	216.4

TANNER COMPANY WELL (COMMERCIAL)

DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TCTN	HARD
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9/16/77	1.50	7.90	114.0	3.5	126.5	10.6	91.5	244.5	0.0	157.9	0.0	6.2	0.0	1.4	359.6
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(DOMESTIC)

T13S R13E SEC. 17DBB

DATE	EC	F _H	NA	K	CA	MG	CL	HC03	C03	SO4	NH3	NO2/3	KJN	TCIN	HARD
9/16/77	.90	7.90	60.0	2.7	69.0	5.4	56.5	130.0	0.0	140.0	0.0	7.5	0.0	1.7	194.6

SAMPLE NO. 15 FOR NITROGEN ISOTOPE STUDY (DOMESTIC WELL)

DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TCTN	HARD
4/ 5/77	2.98	7.38	171.8	3.9	423.5	33.9	291.0	395.3	0.0	1050.0	0.0	92.6	0.0	20.9	1197.3
4/29/77	3.05	7.40	205.7	4.7	405.4	36.3	293.0	405.0	0.0	1080.0	0.0	91.7	0.0	20.7	1162.0
5/ 9/77	3.00	7.40	232.3	4.8	430.8	38.2	293.0	395.3	0.0	1045.0	0.0	70.9	0.0	16.0	1233.3
6/13/77	3.05	7.30	290.2	7.5	419.3	55.9	309.0	395.3	0.0	1025.0	0.0	98.8	0.0	22.3	1277.5
7/ 5/77	3.10	7.30	273.5	6.6	402.3	45.0	310.0	403.8	0.0	950.0	0.0	94.3	5.4	26.7	1190.1

V.CHALDLER (DOMESTIC)		PIMA COUNTY ANALYSIS						T13S R13E SEC.18 ABB							
DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOIN	HARD
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
12/13/76	.91	7.60	157.3	0.0	62.9	12.1	76.0	146.4	0.0	108.0	0.0	20.4	0.0	4.6	206.9

SAMPLE NO. 10 FOR NITROGEN ISOTOPE STUDY (DOMESTIC WELL)							T13S R13E SEC. 18 ABB								
DATE	EC	PH	NA	K	CA	MG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TOTN	HARD
4/ 5/77	1.04	7.70	154.9	1.8	52.0	10.5	84.0	319.6	0.0	114.0	0.0	17.3	0.0	3.9	173.1
5/ 4/77	1.06	7.70	137.9	1.2	55.6	10.7	81.0	322.1	0.0	128.0	0.0	23.5	0.0	5.3	182.9
6/ 6/77	1.02	7.59	181.7	2.5	58.6	13.2	85.0	316.0	0.0	110.0	0.0	24.4	0.0	5.5	200.7
9/ 9/77	1.30	7.70	168.0	3.2	66.0	12.3	84.0	326.0	0.0	104.3	0.0	31.0	0.0	7.0	215.5

(DOMESTIC)							T13S R13E SEC. 18 ACA								
DATE	EC	pH	Na	K	Ca	Mg	Cl	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD
---	--	--	-	-	--	--	--	---	---	---	---	---	---	---	---
9/10/77	1.25	7.60	120.0	4.0	73.5	17.6	91.3	322.1	0.0	163.8	0.0	19.0	0.0	4.3	256.1

T13S R13E SEC. 16ADB
(DOMESTIC)

SAMPLE NO. 9 FOR NITROGEN ISOTOPE STUDY (DOMESTIC WELL)								T13S R13E SEC.18 BCA							
DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	NH ₃	NO ₂ /3	KJN	ICTN	HAED	
4/ 5/77	1.50	7.40	88.3	2.4	127.1	21.8	105.0	451.4	0.0	260.0	0.0	66.5	0.0	15.0	407.2

(DOMESTIC)									
DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃
9/10/77	1.95	7.50	177.5	4.0	128.0	29.7	104.3	420.0	0.0
									317.3
									0.0
									58.9
									0.0
									13.3
									442.0

E. HFASTON		(DOMESTIC)		PIMA COUNTY ANALYSIS						T13S R13E SEC. 18 CAC					
DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOT N	HARD
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
1/13/77	1.23	7.30	179.1	0.0	174.2	47.2	122.0	201.3	0.0	271.0	0.0	44.7	0.0	10.1	629.5

SAMPLE NO. 8 FOR NITROGEN ISOTOPE STUDY (DOMESTIC WELL)		T13S R13E SEC.18 CAC													
DATE	EC	pH	Na	K	Ca	Mg	Cl	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD
4/ 5/77	1.53	7.46	160.9	2.3	134.3	23.7	106.0	451.4	0.0	280.0	0.0	68.7	0.0	15.5	433.0
9/10/77	1.90	7.50	181.3	3.9	114.0	29.7	110.0	439.2	0.0	294.8	0.0	63.8	0.0	14.4	407.1

(DOMESTIC)

T13S R13E SEC.18 CAD

DATE	EC	pH	NA	K	CA	Mg	Cl	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOIN	HARD
9/10/77	1.85	7.50	191.4	3.9	90.5	26.9	112.3	419.7	0.0	247.5	0.0	68.6	0.0	15.5	336.8

(DOMESTIC)		PIMA COUNTY ANALYSIS						T13S R13E SEC.18 CAD							
DATE	EC	PH	NA	K	CA	MG	CI	HC03	CO3	SO4	NH3	NO2/3	KJN	TCTN	HAFD
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
1/13/77	1.11	7.30	190.0	0.0	154.9	37.5	120.0	213.5	0.0	250.0	0.0	23.5	0.0	5.3	541.3
1/18/77	1.14	7.30	181.5	0.0	139.2	33.9	110.0	219.6	0.0	260.0	0.0	24.4	0.0	5.5	487.3

(DOMESTIC)										T13S R13E SEC. 18 CCB					
DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD
9/10/77	1.52	7.30	145.0	3.6	88.5	18.7	47.4	346.5	0.0	365.0	0.0	4.4	0.0	1.0	298.1

(DOMESTIC)

T13S R13E SEC. 18CCB

DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	KH ₃	NO ₂ /3	KJN	TOIN	HARD
---	--	--	--	-	--	--	--	---	---	---	---	---	---	---	---
9/10/77	1.63	7.40	60.0	3.7	122.5	17.0	47.5	357.5	0.0	206.5	0.0	.4	0.0	.1	376.0

(DOMESTIC)								T13S R13E SEC. 18 CDD							
DATE	EC	PH	NA	K	CA	MG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TCIN	HAFD
9/10/77	1.60	7.40	142.0	3.3	73.5	19.8	48.0	297.7	0.0	287.0	0.0	8.0	0.0	1.8	265.1

(DOMESTIC)									
DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃
9/10/77	1.79	7.30	167.5	3.6	112.0	18.8	53.4	348.9	0.0
									294.8

NO ₂ /3	KJN	TOT N	HARD
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5.8	0.0	1.3	357.2

CITY WELL A-43 (MUNICIPAL)

	T13S R13E SEC. 19 CDC										
DATE	SC	PH	HA	K	CA	MG	CL	HC03	CO3	SO4	NH3
7/15/77	.70	7.80	26.5	1.7	51.5	25.8	74.0	217.2	0.0	90.0	0.0
9/10/77	.98	7.70	82.0	1.7	51.0	24.0	67.5	220.8	0.0	135.0	0.0

T13S R13E SEC. 19 CDC

HAFD -----

KJN -----

TOTN -----

NH3 -----

NO2/3 -----

SO4 -----

CO3 -----

CL -----

HC03 -----

K -----

MG -----

CA -----

K -----

HA -----

PH -----

SC -----

DATE -----

CITY WELL A-43 (MUNICIPAL)		BIMA COUNTY ANALYSIS						T13S R13E SEC.19 CDC							
DATE	EC	pH	Na	K	Ca	Mg	Cl	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD
--	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
4/ 7/77	.67	7.30	56.9	0.0	96.8	29.0	63.0	122.0	0.0	96.0	0.0	14.2	0.0	3.2	361.2
5/18/77	.66	7.20	50.8	0.0	99.2	18.2	75.0	104.9	0.0	100.0	0.0	15.1	0.0	3.4	322.7

(DOMESTIC)

T13S R13E SEC. 19 DCB

DATE	EC	pH	NA	K	CA	Mg	Cl	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HAE
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9/19/77	1.35	7.30	128.8	3.6	73.5	18.2	71.1	274.5	0.0	238.5	0.0	36.8	0.0	8.3	258.5

SAMPLE NO. 5 FOR NITROGEN ISOTOPIC STUDY (DOMESTIC WELL)							T13S R13E SEC.20 BBA								
DATE	EC	pH	NA	K	CA	MG	CL	HCO ₃	CO ₃	NH ₃	NO ₂ /3	KJN	10TN	HAF E	
4/ 5/77	.86	7.67	82.3	1.6	78.7	4.4	52.0	224.5	0.0	174.0	0.0	6.6	0.0	1.5	214.7

CITY WELL Z-09 (MUNICIPAL)		PIMA COUNTY ANALYSIS								T13S R13E SEC.20 BBD							
DATE	EC	PH	NA	K	CA	MG	CL	HC03	CO3	SO4	NH3	NO2/3	KJN	TCTN	HARD		
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
2 / 7/77	.48	7.80	90.8	0.0	67.8	3.6	43.0	91.5	0.0	84.0	0.0	9.3	0.0	2.1	184.2		
4 / 6/77	.67	7.50	106.5	0.0	96.8	2.4	53.0	109.8	0.0	133.0	0.0	4.0	0.0	.9	251.6		
5/18/77	.83	7.50	130.7	0.0	81.1	9.7	71.0	119.6	0.0	173.0	0.0	8.9	0.0	2.0	242.5		

CITY WELL Z-9 (MUNICIPAL)

T13S R13E SEC.20 BBD

DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TCTN	HARD
---	--	--	--	-	-	--	--	----	---	---	---	---	---	---	---
6/22/76	1.28	7.82	123.4	3.0	35.1	14.5	92.0	346.5	0.0	160.0	0.0	25.3	0.0	5.7	147.4
7/11/77	.95	7.90	112.5	2.8	20.3	13.5	64.0	210.0	0.0	170.0	0.0	16.8	0.0	3.8	106.3

RABBIT CONTROL CENTER WELL (COMMERCIAL)

T13S R13E SEC.20 DCA

DATE	EC	PH	NA	K	CA	NG	CL	HC03	CO3	SO4	NH3	NO2/3	KJN	ICTN	HAF
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4/ 5/77	1.17	7.38	123.4	2.2	108.9	15.1	42.0	327.0	0.0	360.0	0.0	5.8	0.0	1.3	334.2
6/13/77	1.25	7.39	165.8	3.8	109.1	23.5	64.0	341.6	0.0	275.0	0.0	17.3	0.0	3.9	369.3
7/ 5/77	1.43	7.30	149.0	3.7	102.3	25.8	82.0	359.9	0.0	261.0	0.0	47.8	.8	11.5	361.6
9/16/77	1.60	8.10	153.0	3.9	116.5	17.0	198.0	372.5	0.0	272.3	0.0	4.9	0.0	1.1	361.0

CITY WELL Z-1 (MUNICIPAL)

T13S R13E SEC.21 BAA

DATE	EC	PH	NA	K	CA	MG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TOTN	HARD
---	--	--	--	-	--	--	--	----	----	----	----	----	----	----	----
6/22/76	1.10	7.55	56.9	2.4	123.4	3.4	132.0	152.5	0.0	165.0	0.0	14.2	0.0	3.2	322.2
7/ 6/77	.78	7.70	54.5	2.1	134.0	8.0	81.0	131.0	0.0	120.0	0.0	12.4	0.0	2.8	367.6
8/ 1/77	1.10	7.70	61.0	2.6	131.3	9.9	120.0	146.4	0.0	70.0	0.0	15.1	0.0	3.4	368.7

NELSON'S LIVESTOCK WELL (COMMERCIAL)

T113S R13E SEC.21 BBD

DATE	EC	PH	NA	K	CA	MG	CL	ECO3	SO4	NH3	NO2/3	KJN	TOTN	HARD
---	--	--	--	-	--	--	--	---	---	---	---	---	---	---
10/10/77	1.90	8.00	91.0	3.9	116.5	8.6	154.0	157.1	0.0	235.0	0.0	15.9	0.0	4.5

SAMPLE NO. 13 FOR NITROGEN ISOTOPE STUDY (COMMERCIAL WELL)							T13S R13E SEC. 21 DCC								
DATE	EC	PH	NA	K	CA	MG	CL	HC03	CO3	SO4	NH3	NO2/3	KJN	ICIN	HARD
4/ 5/77	2.00	7.68	174.2	2.9	140.4	23.0	146.0	353.8	0.0	650.0	0.0	52.3	0.0	11.8	445.4
9/16/77	1.70	8.00	150.0	3.8	126.0	16.3	106.5	300.0	0.0	186.4	0.0	43.0	0.0	9.7	381.8

CITY WELL A-56 (MUNICIPAL)

DATE	T13S R13E SEC.23 BEB						NO2/3	KJN	TOTN	FAED					
	EC	PH	NA	K	CA	MG					CL	HCO3	CO3	SO4	
8/ 1/77	.29	7.10	16.0	.7	38.6	2.5	4.0	120.6	0.0	13.0	0.0	8.4	0.0	1.9	106.7

CITY WELL A-37 (MUNICIPAL)

T13S R13E SEC.23 DBC

DATE	EC	pH	NA	K	CA	Mg	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD
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7/ 6/77	.44	7.60	35.5	1.2	38.5	5.8	18.0	139.0	0.0	28.0	0.0	12.4	0.0	2.8	120.0
8/ 1/77	.45	7.60	38.0	1.2	32.3	5.5	13.0	168.4	0.0	30.0	0.0	8.0	0.0	1.8	103.3

CITY WELL A-32 (MUNICIPAL)

T13S R13E SEC.26 CAA

DATE	EC	PH	NA	K	CA	HG	CL	HC0 ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TCTN	RAFD
7/ 6/77	.76	8.10	106.0	2.1	51.0	1.8	97.0	83.0	0.0	120.0	0.0	4.4	0.0	1.0	134.8

(DOMESTIC)

T13S R13E SEC.27CCB

DATE	EC	PH	NA	K	CA	MG	CL	HC03	CO3	SO4	NH3	NO2/3	KJN	TOTN	HARD
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	--
9/16/77	1.60	7.80	150.0	3.8	94.5	15.2	63.0	415.0	0.0	258.8	0.0	24.4	0.0	5.5	298.6

SAMPLE NC. 14 FOR NITROGEN ISOTOPE STUDY (COMMERCIAL WELL)										T13S R13E SEC.27 CCD					
DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	----
4/ 5/77	1.47	7.38	160.9	2.4	123.4	14.3	136.0	246.4	0.0	390.0	0.0	40.3	0.0	9.1	367.1
9/16/77	2.10	7.80	190.5	4.3	128.0	17.7	148.5	325.0	0.0	297.0	.7	32.8	.9	8.3	392.6

SAMPLE NO. 7 FOR NITROGEN ISOTOPE STUDY (DOMESTIC WELL)							T113S R13E SEC.29 ABB								
DATE	EC	pH	NA	K	CA	Mg	Cl	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD
4/ 5/77	1.90	7.44	168.2	2.8	158.5	29.3	146.0	500.2	0.0	400.0	0.0	7.5	0.0	1.7	516.6
9/10/77	2.50	7.30	238.0	4.0	138.5	34.5	145.6	490.5	0.0	324.0	0.0	99.6	0.0	22.5	488.0

SAMPLE NO. 6 FOR NITROGEN ISOTOPE STUDY (DOMESTIC WELL)							T113S R13E SEC.29 BAB								
DATE	EC	P _H	NA	K	CA	MG	CL	HC0 ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TOTN	HARD
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4/ 5/77	1.11	7.63	122.2	2.1	84.7	15.7	46.0	283.0	0.0	320.0	0.0	11.1	0.0	2.5	276.2

CITY WELL A-39 (MUNICIPAL)

T13S R13E SEC.33 ABB

DATE	EC	PH	NA	K	CA	Mg	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TCIN	HAFD
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9/10/77	1.00	7.70	92.0	2.7	60.5	11.5	40.6	200.1	0.0	243.0	0.0	5.8	0.0	1.3	198.5

		T13S R13E SEC. 33 ACC														
(DOMESTIC)		EC	PH	NA	K	CA	MG	CL	HC03	CO3	SO4	NH3	NO2/3	KJN	TCTN	HARD
DATE	---	--	--	-	--	--	--	--	--	--	--	--	---	---	---	---
9/16/77	1.90	8.00	168.0	4.3	47.0	23.4	160.0	436.0	0.0	158.8	0.0	7.5	.3	2.0	213.8	

(IRRIGATION)

T13S R13E SEC. 34BDA

DATE	EC	PH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TCTN	HARD
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9/16/77	2.40	7.70	187.5	4.1	142.0	25.2	114.5	425.0	0.0	317.3	0.0	26.6	0.0	6.0	456.5

CITY WELL A-24 (MUNICIPAL)

T13S R13E SEC.34 CDC

DATE	SC	PH	MA	K	CA	MG	CL	HC03	SO4	NH3	NO2/3	KJN	TOTN	HARD	
---	--	--	--	-	--	--	--	--	--	--	--	--	--	--	
7/15/77	1.10	7.50	136.5	3.6	133.5	19.5	34.0	286.7	0.0	240.0	0.0	6.2	0.0	1.4	413.7
8/ 1/77	1.33	7.40	106.0	3.5	138.0	20.0	81.0	287.8	0.0	70.0	0.0	6.2	.2	1.6	427.0

CITY WELL A-24 (MUNICIPAL)

T13S R13E SEC.34 CDC

DATE	PIMA COUNTY ANALYSIS										KJN	TOTN	HARD
	BC	PH	NA	K	CA	MG	CL	HCO3	CO3	SO4			
--	--	--	-	--	--	--	--	--	--	--	--	--	--
4/ 7/77	1.03	7.20	142.8	0.0	125.8	26.6	77.0	152.5	0.0	321.0	0.0	4.0	0.0

CITY WFLL A-35 (MUNICIPAL)

T13S R13E SEC.35 ACA

DATE	EC	PH	NA	K	CA	MG	CL	HCO3	CO3	SO4	NH3	NO2/3	KJN	TOTN	HARD
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8/ 1/77	.45	8.00	58.0	1.8	36.3	2.3	26.0	119.6	0.0	58.0	0.0	5.8	0.0	1.3	100.1

CITY WELL A-34 (MUNICIPAL)

DATE	EC	FH	NA	K	CA	MG	CL	HCO ₃	CO ₃	SO ₄	NH ₃	NO ₂ /3	KJN	TCTN	HARD
8/ 1/77	.37	8.00	36.5	1.3	35.8	.3	10.0	126.7	0.0	25.0	0.0	7.5	0.0	1.7	90.6

T13S R13E SEC.36 BBB