Potential Environmental Impact of the Abandoned La Bajada Uranium Mine on Cochiti Pueblo

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EXECUTIVE SUMMARY

An important question concerning potential environmental impact of La Bajada Uranium Mine on Cochiti Pueblo is what would happen if all the mine spoil now present at the site were to wash into Cochiti Lake? It is unlikely that all of the mine spoil present at La Bajada uranium mine would reach the Rio Grande Arm of Cochiti Lake during a flood event. Rather, most would be deposited near the mouth of Santa Fe River Canyon. However, because of the importance of Cochiti Lake to the region, mass balance calculations were performed to assess potential impacts if all of the mine spoil present at the surface at La Bajada Uranium Mine were to wash into Cochiti Lake.

Mass balance calculations based on reasonable minimum and maximum spoil volumes at La Bajada Uranium Mine, spoil concentrations of radioactive components, and a typical yearly minimum volume of Cochiti Lake, suggest if a significant portion of the spoil present at the mine site were to wash into Cochiti Lake, that it might be possible for the dissolved total radium concentration to exceed the 30 pCi/l regulatory standard. However, solubility controls would probably keep total dissolved radium below 30 piC/l.

Heavy metals, such as copper or lead, etc., are generally more soluble in low pH waters (pH < 5.0). Surface waters in the Cochiti Pueblo area typically have pH values in the range of 7.0 to 8.5. Because pH controls solubility, washing all of the spoil into the lake would probably not raise most heavy metal concentrations above regulatory limits. For example, water in La Bajada mine pit, in intimate contact with mine spoil, is above regulatory limits only for Al and Hg. However, sediment containing significant concentrations of heavy metals and radionuclides might accumulate in bottom feeders if the mine spoil were washed into the lake, and these heavy metals might then enter the food chain. It is possible that some biomagnification and eventual toxicity to man would result; however, potential toxicity cannot be quantified in this report.

Because it is more likely that La Bajada uranium mine spoil could be deposited at the mouth of Santa Fe Canyon during high magnitude flood events, and because Cochiti Fishery is likely to receive water and sediment from such events, Cochiti Fishery is at somewhat greater risk than Cochiti Lake until remediation is completed at La Bajada mine site.

The remediation plan proposed by the U.S. Forest Service seems quite reasonable. As planned, remediation should effectively prevent negative environmental impacts on Cochiti Pueblo from La Bajada Mine Site. However, the following points should be considered: 1) erosion control on the two gullies which presently cross mine spoil is imperative, 2) soil and vegetation cover should be sufficiently thick to inhibit erosion and the soil cover thickness necessary to control erosion may be greater than that needed to control radioactivity levels, and 3) the site should be monitored at regular intervals for erosion and gullying after remediation and, if found, these areas should be mitigated before mine spoil is exposed.

Cochiti Pueblo may want to implement a water quality monitoring program for water entering the Pueblo via the Santa Fe River, especially at times when such waters are used in Cochiti Fishery. The sampling program should include a minimum of the following parameters: Fecal colliform, total uranium, total radium, gross alpha radiation, gross beta radiation, as well as heavy metals including lead, cadmium, copper, silver, total arsenic, chromium, and mercury. It would be advisable for Cochiti Pueblo to use an U. S. Environmental Protection Agency-certified environmental testing laboratory to perform these analyses.

Mr. Russell Smith, Cochiti Lake Project Manager, U.S. Army Corps of Engineers stated that he believes that representatives of Los Alamos National Laboratories take fish and possibly water samples for testing from Cochiti Lake every other year. The results of these analyses might be of interest to Cochiti Pueblo.

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INTRODUCTION

Purpose

On Friday, June 3rd, 1994, Drs. John Hawley, David Love, Virginia McLemore, Mike Whitworth, and student Pat Phillips met with Governor Andrew Quintana and Lt. Governor Jose Herrera at Cochiti Pueblo. We briefly discussed the location and history of La Bajada Uranium Mine (located in the NW 1/4 of Section 9, Township 15 north, Range 7 east; also known as the Lone Star Mine) and then examined the mine site in the Santa Fe River canyon. We met Robert Remillard of the U. S. Forest Service (USFS) near the mine and he accompanied us to the site. A brief summary of that meeting is included in Appendix A.

This report addresses concerns expressed by Governor Andrew Quintana and Lt. Governor Jose Herrera about possible environmental impact on Cochiti Pueblo from La Bajada Mine site. To evaluate possible environmental impacts, data were requested from Dr. Jim Piatt, Chief of the Surface Water Quality Bureau, New Mexico Environment Department, and Forest Service hydrologist Bruce Sims. A copy of data they provided for review is given in Appendix B. Topographic maps, a file on La Bajada Uranium mine maintained by the New Mexico Bureau of Mines and Mineral Resources (NMBMMR) in the Mineral Data Archives, geological reports, and historical flow data for the Santa Fe River were also examined.

Scope

Four questions are addressed in this report:

1. What is the potential environmental impact on Cochiti Reservoir from La Bajada Mine?
2. Are there possible impacts on the Cochiti Fishery from La Bajada Mine site?
3. Is the remediation plan proposed by the U.S.F.S. reasonable?

4. Should Cochiti Pueblo consider setting up a water quality monitoring program?

This report is concerned only with the Santa Fe River drainage and La Bajada Uranium Mine. It does not consider potential pollutant sources for Cochiti Lake from the Rio Grande. This report was prepared by Mike Whitworth, and reviewed by Chuck Chapin, New Mexico State Geologist, Bill Haneberg, John Hawley, David Love, and Virginia McLemore of the NMBMMR, Bruce Sims, U. S. Forest Service (USFS) Hydrologist, and Jim Piatt, Chief, Surface Water Quality Bureau, N. M. Environment Department (NMED). Dr. Virgina McLemore provided the discussion of the history and geology of La Bajada Uranium mine. Because available data were limited, conclusions in this report should be considered preliminary.

DISCUSSION

Location

La Bajada Mine is located adjacent to the Santa Fe River in section in the NW 1/4 of Section 9, Township 15 north, Range 7 east in Santa Fe County, New Mexico. The Santa Fe River flows a little south of west past the mine site, and after leaving Santa Fe Canyon, turns and flows approximately northwest into the lower reservoir of Cochiti Lake (Figure 1).

Surface Water

The three surface water bodies of concern in the area are Cochiti Lake, the Rio Grande, and the Santa Fe River. Cochiti lake consists of two arms, the Rio Grande arm and the Santa Fe arm (Figure 1), each primarily fed by its namesake river. The two arms are connected by a conveyance channel. The altitude of the conveyance channel inlet is 5,355 feet above mean sea level (Blanchard, 1993). When the water level in the Rio Grande arm is above 5,355 feet, water

flows from the Rio Grande arm through the conveyance channel and into the Santa Fe Arm. When the water level in the Rio Grande arm is less than 5,355 feet, water flows into the Rio Grande Arm from the Santa Fe arm.

The inundated area in Cochiti Lake increases rapidly with rising water levels in the Lake (Blanchard, 1993). According to Blanchard (1993) at a water level of 5,323 feet, the lake covers about 1.2 square miles; and at water levels of 5,400 and 5,450 feet covers 3.7 and 8.6 square miles respectively.

The Santa Fe River is a perennial stream within about three miles of the Santa Fe Arm of Cochiti Lake. Prior to the filling of Cochiti Lake, the Santa Fe River was not perennial in this reach (Geohydrology Associates, Inc., 1982). The flow in the Santa Fe River is highly variable. It ranges from periods of no flow to a recorded high flow of 11,400 cfs in 1971.

Groundwater

Even though there have been several monitoring wells installed around La Bajada Mine pit, Bruce Sims of the USFS informed the NMBMMR that, to his knowledge, only one groundwater sample has been taken and he was unable to obtain a copy of the analysis. No information on groundwater quality or the nature of the aquifer in the vicinity of La Bajada Mine site was available. However, Blanchard (1993) presented maps of the groundwater surface in the Cochiti Dam-Peña Blanca area for 1982, 1988 and 1989. Blanchard's maps indicate that the direction of groundwater flow downstream of La Bajada Mine site is generally westward and approximately parallel to the course of the Santa Fe River. No major changes in groundwater flow direction are indicated during the period 1982-1989. It is reasonable to assume the groundwater flow in the vicinity of La Bajada Mine site is also generally westward along the

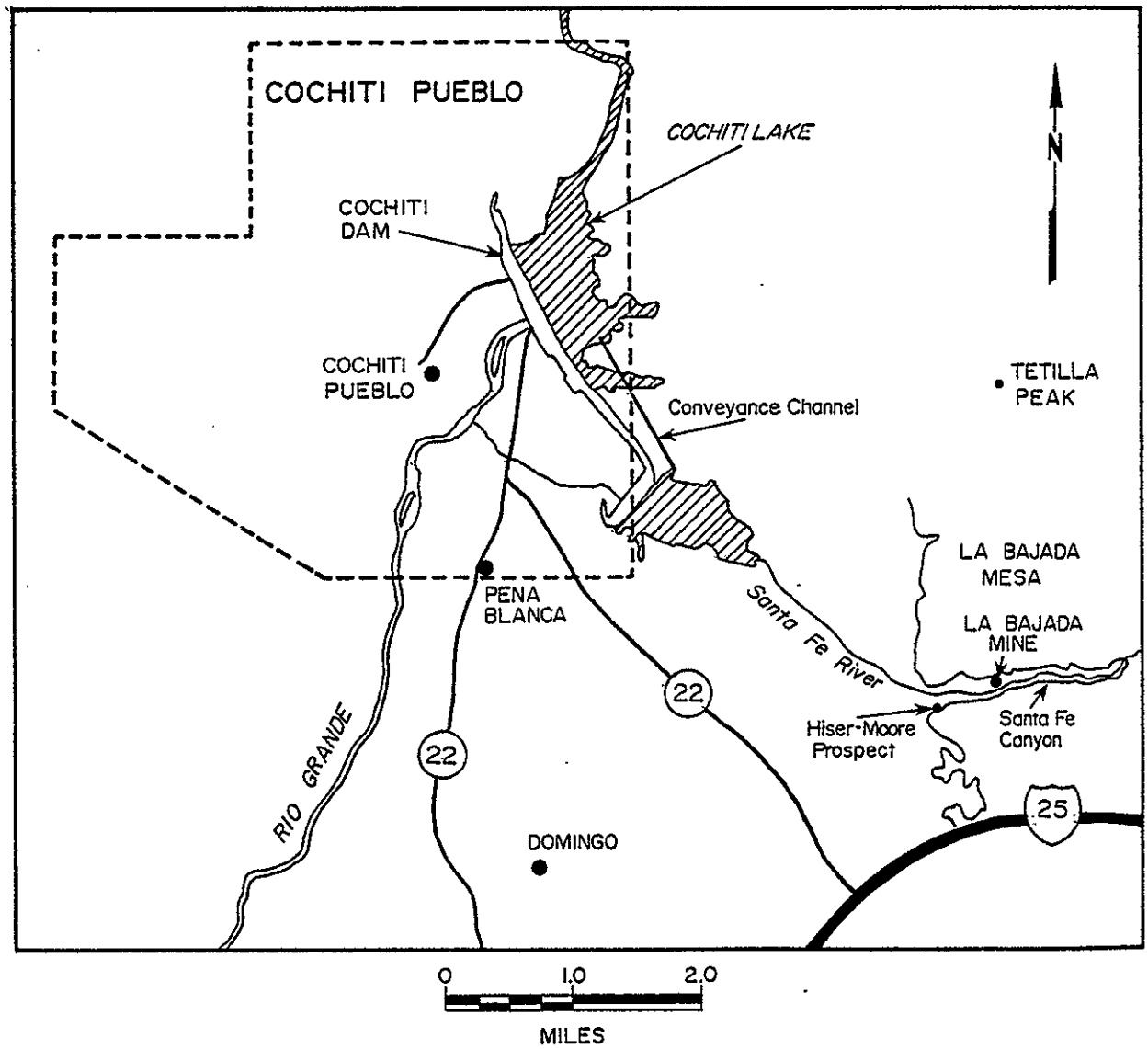

Figure 1. Location map of study area.

course of the Santa Fe River canyon. According to Blanchard (1993) after entering the Rio Grande valley sediments, groundwater begins to flow southwest toward the Rio Grande.

CH2M Hill and Resource Technology, Inc. (1984) estimated the volume of recharge to the groundwater system from Cochiti Lake. They calculated the seepage volume to be 84,000 acre-feet per year when the water level in Cochiti Lake is at an elevation of 5,387 feet, and 21,000 acre-feet per year when the water level is near 5,323 feet elevation.

LA BAJADA MINE

History

Copper was first discovered at La Bajada in 1915 or 1916. La Bajada Mining Company was formed in 1923 and by 1928, the American Smelting and Refining Company controlled the deposit. In 1928-1929, the deposit was mined by two shafts and 17 tons of ore were produced (McLemore and North, 1984)

Uranium was discovered at La Bajada Mine in 1950. From 1956 to 1966, 9,649 tons were produced. In 1957, the underground workings were declared unsafe. Further development was by open pit (Chenoweth, 1979). In the late 1970s, Bokum Resources and Union Carbide Corporation drilled numerous test holes in the vicinity and built the many drill roads along the canyon escarpment. No additional economic deposits were found (McLemore and North, 1984).

Geology

La Bajada deposit is a low-temperature, base-metal vein deposit that formed during Oligocene or Miocene time. Thin veins of uranium and base-metal sulfides occur along the

footwall of a limburgite[1] dike that was emplaced along a north-trending fault in the Oligocene Espinaso Formation. Lustig (1957) described 23 minerals from La Bajada Mine which contain anaomalous amounts of U, Fe, Cu, Pb, Zn, Th, As, Sn, V, Co, Ni, Mo, Ge, An, Ag, S, And C. One select sample assayed 0.04 % U_3O_8, 1.51 % Cu, 0.0019 % Th, 0.06 % Pb, 0.031 % Zn, and 0.54 oz/ton Ag (McLemore and North, 1984).

Mine Waste Characterization

Mine waste characterization involves determining the potential of the waste to impact beneficial uses of water (Hutchison and Ellison, 1992). Normally, mine waste characterization is done using either batch extraction or column leach tests. Batch tests are generally easier to conduct but column tests may be more representative of actual site conditions (Hutchison and Ellison, 1992). Ideally the fluids used in the waste characterization testing should closely resemble the pH of the waste itself. However, deionized water or a simulated rainwater at a pH of 5 to 5.5 is often used (Hutchison and Ellison, 1992).

The only data on mine waste characterization testing was from Los Alamos National Laboratory ((Appendix B, data source 1) and Radian Corporation (Appendix B, data source 9). Los Alamos reported the results of mine spoil batch extraction at a pH of 5.0 (Table 1). Silver, arsenic, cadmium, chromium, mercury, nitrate, phosphorous, and lead are consistently at the detection limit. Of the heavy metals, only cobalt, copper, manganese, radium-226, selenium, zinc, and possibly vanadium show significant concentration increases during extraction. Radian Corporation data appear to be either from rock dissolution or leaching tests. Even though the

[1] A dark basaltic rock.

surface spoil at La Bajada Mine site has been inadequately characterized, enough information exists to draw preliminary conclusions.

Table 1. Results of mine spoil batch extraction at a pH of 5.0. (Data from Appendix B, data source 1). The < sign to the left of the numbers means that the results are at the detection limit for the analytical method used.

	Sample 87.01713	Sample 87.01714	Sample 87.01715
Analysis	Extract Concentration	Extract Concentration	Extract Concentration
Ag	< 0.05 ± 0.05 mg/l	< 0.05 ± 0.05 mg/l	< 0.05 ± 0.05 mg/l
As	< 0.05 ± 0.05 mg/l	< 0.05 ± 0.05 mg/l	< 0.05 ± 0.05 mg/l
Ba	0.80 ± 0.50 mg/l	0.50 ± 0.50 mg/l	0.60 ± 0.50 mg/l
Cd	< 0.01 ± 0.01 mg/l	< 0.2 ± 0.02 mg/l	< 0.01 ± 0.01 mg/l
Cl	3.2 ± 0.6 mg/l	2.4 ± 0.4 mg/l	2.6 ± 0.4 mg/l
CN	0.01 ± 0.01 mg/l	0.01 ± 0.01 mg/l	0.01 ± 0.01 mg/l
Co	0.52 ± 0.05 mg/l	0.44 ± 0.04 mg/l	0.55 ± 0.06 mg/l
Cr	< 0.05 ± 0.05 mg/l	< 0.05 ± 0.05 mg/l	< 0.05 ± 0.05 mg/l
Cu	< 2.0 ± 2.0 µg/l	< 2.0 ± 2.0 µg/l	13.5 ± 4.0 µg/l
F	0.537 ± 0.054 mg/l	0.553 ± 0.055 mg/l	0.633 ± 0.063 mg/l
Fe	135.0 ± 13.0 mg/l	70.0 ± 7.0 mg/l	200.0 ± 20.0 mg/l
Hg	< 0.002 ± 0.002 mg/l	< 0.002 ± 0.002 mg/l	< 0.002 ± 0.002 mg/l
Mn	9.7 ± 0.97 mg/l	8.98 ± 0.9 mg/l	10.7 ± 1.1 mg/l
Mo	0.002 ± 0.001 mg/l	0.002 ± 0.001 mg/l	0.002 ± 0.001 mg/l
NH_3-N	4.0 ± 0.4 mg/l	1.99 ± 0.199 mg/l	4.12 ± 0.412 mg/l
Ni	1.22 ± 0.12 mg/l	1.12 ± 0.11 mg/l	1.28 ± 0.13 mg/l
NO_3-N	< 0.20 ± 0.20 mg/l	< 0.20 ± 0.20 mg/l	< 0.20 ± 0.20 mg/l
P	< 0.20 ± 0.20 mg/l	< 0.20 ± 0.20 mg/l	< 0.20 ± 0.20 mg/l
Pb	< 0.05 ± 0.05 mg/l	< 0.05 ± 0.05 mg/l	< 0.05 ± 0.05 mg/l
pH	4.47 ± 0.1 units	4.39 ± 0.1 units	4.46 ± 0.1 units
Ra-226	23.5 ± 2.3 pci/l	9.2 ±0.9 pci/l	21.5 ± 2.1 pci/l
Se	9.1 ± 1.0 µg/l	< 1.0 ± 1.0 µg/l	1.0 ± 1.0 µg/l
SO_4	21.3 ± 2.1 mg/l	39.1 ± 3.9 mg/l	37.3 ± 3.7 mg/l
TDS	2518 ± 252 mg/l	2826 ± 283 mg/l	2685 ± 269 mg/l
Th	0.001 ± 0.001 mg/l	0.001 ± 0.001 mg/l	0.001 ± 0.001 mg/l
U	0.008 ± 0.005 mg/l	0.02 ± 0.005 mg/l	0.009 ± 0.005 mg/l
V	< 0.01 ± 0.01 mg/l	0.017 ± 0.01 mg/l	< 0.01 ± 0.01 mg/l
Zn	0.187 ± 0.038 mg/l	0.425 ± 0.043 mg/l	0.193 ± 0.019 mg/l

Applicable New Mexico Water Quality Regulations

Drinking water standards do not apply to La Bajada Mine pit water, the Santa Fe River, or Cochiti Lake (New Mexico Water Quality Control Commission, 1991). The designated uses for each of these water bodies is as follows:

- *Cochiti Lake*: Designated for livestock and wildlife watering, warmwater fishery, coldwater fishery, and primary contact recreation.
- *Santa Fe River*: Designated for irrigation, livestock and wildlife watering, marginal coldwater fishery, secondary contact recreation, and warmwater fishery.
- *La Bajada Mine pit*: This small water body is not specifically classified under New Mexico water quality regulations. However, since it is adjacent to the Santa Fe River, it is assumed that the same water quality standards apply to it as to the Santa Fe River.

There are three general water quality concerns for the surface waters discussed in this report. The first is the State of New Mexico's antidegradation policy which states in part:

> "Degradation of waters the quality of which is better than the stream standards established by the New Mexico Water Quality Control Commission is not reasonable degradation and is subject to abatement under the authority granted the Commission by the New Mexico Water Quality Act, as amended, unless it is justifiable as a result of necessary economic and social development. Existing instream water uses and water quality necessary to sustain existing uses shall be maintained and protected in all surface waters of the State. No degradation shall be allowed in high quality waters of designated national and state monuments, parks and wildlife refuges including waters designated by the U. S. Congress under

> the Wild and Scenic Rivers Act, if such degradation would impair any of the qualities which caused designation of these waters, parks and wildlife refuges. To protect the existing quality of water, the Commission under the act will require the highest and best degree of effluent treatment practicable..."

Thus, it is the expectation of the State that surface waters are not to be unnecessarily degraded in quality even though such degradation might meet the minimum water quality standards.

The second is the general standards which apply to all surface waters of the state. Only those general standards which concern the potential contaminants discussed in this report are quoted here:

> "Hazardous substances: Toxic substances, such as, but not limited to, pesticides, herbicides, heavy metals, and organics, shall not be present in receiving waters in concentrations which will change the ecological conditions of receiving waters to an extent detrimental to man or other organisms of direct or indirect commercial, recreational, or aesthetic value. Toxicities of substances in receiving waters will be determined by appropriate bioassay techniques, or other acceptable means, for the particular form of aquatic life which is to be preserved with the concentrations of toxic substances not to exceed 5% of the LC-50[2] provided that: toxic substances which, through uptake in the aquatic food chain and/or storage in plant and animal tissues, can be magnified to levels which are toxic to man or other organisms, shall not be present in concentrations which result in this biological magnification or exceed 1% of the LC-50...

---

[2] "LC-50" means the concentration of a substance that is lethal to 50% of test organisms within a defined time period. The length of the time period, which may vary from 24 hours to one week or more depends on the test method selected to yield the information desired.

> Radioactivity: The radioactivity of surface waters shall be maintained at the lowest practical level and shall in no case exceed the standards set forth in Part 4 of New Mexico Environmental Improvement Board Radiation Protection Regulations, filed March 10, 1989."

Thus the only radioactivity standard which applies to the surface waters discussed in this report is 30 pCi/l for combined radium 226 and radium-228.

Third, the specific water quality regulations which apply to each of the surface waters are as follows:

- Cochiti Lake: un-ionized ammonia (as N) shall not exceed 0.03 mg/l, dissolved oxygen shall be greater than 6.0 mg/l, pH shall be in the range of 6.6 to 8.8, temperature shall be less than 25°C, turbidity shall be less than 25 NTU, and total chlorine residual shall be less than 0.002 mg/l.
- Santa Fe River: dissolved oxygen shall be greater than 4.0 mg/l, pH shall be within the range of 6.6 to 8.8, temperature shall be less than 30°C, and turbidity shall be less than 50 NTU.

Thus, other than specific regulations for total radium, and pH, no other constituents are clearly regulated under New Mexico Law. However, all heavy metals and radioactive constituents are regulated under the general degradation rule in addition to the regulatory limits for specific uses listed in Tables 2, 3, and 4.

Table 2. New Mexico regulatory standards for waters used for irrigation.

Parameter	Regulatory Standard (mg/l)
Dissolved aluminum	5.0
Dissolved arsenic	0.10
Dissolved boron	0.75
Dissolved cadmium	0.01
Dissolved chromium	0.10
Dissolved cobalt	0.05
Dissolved copper	0.20
Dissolved lead	5.0
Dissolved selenium	0.13
Dissolved selenium in the presence of < 500 mg/l SO_4	0.25
Dissolved vanadium	0.1
Dissolved zinc	2.0

Table 3. New Mexico regulatory standards for waters used for livestock and wildlife watering.

Parameter	Regulatory Standard (mg/l except as noted)
Dissolved aluminum	5.0
Dissolved arsenic	0.02
Dissolved boron	5.0
Dissolved cadmium	0.05
Dissolved chromium[3]	1.0
Dissolved cobalt	1.0
Dissolved copper	0.5
Dissolved lead	0.1
Total mercury	0.01
Dissolved selenium	0.05
Dissolved vanadium	0.1
Dissolved zinc	25.0
Radium 226 + Radium 228	30 pCi/l

[3] The criteria for chromium shall be applied to an analysis which measures both the trivalent and hexavalent ions.

Table 4. New Mexico regulatory standards for waters used in fisheries.

Chronic Criteria	
Parameter	Regulatory Standard (mg/l)
Dissolved aluminum	0.087
Dissolved beryllium	0.0053
Total mercury	0.000012
Dissolved selenium	0.005
Dissolved silver	0.00012
Total cyanide	0.0052
Total chlordane	0.0000043
Dissolved cadmium[4]	exp(0.7852 (ln (hardness)) - 3.49)
Dissolved chromium[5]	exp(0.819 (ln (hardness)) + 1.561)
Dissolved copper	exp(0.8545 (ln (hardness)) - 1.465)
Dissolved lead	exp(1.273 (ln (hardness)) - 4.705)
Dissolved nickel	exp(0.846 (ln (hardness)) - 1.1645)
Dissolved zinc	exp(0.8473 (ln (hardness)) + 0.7614)
Acute Criteria	
Parameter	Regulatory Standard (mg/l)
Dissolved aluminum	0.750
Dissolved beryllium	0.130
Total mercury	0.0024
Dissolved selenium	0.0200
Dissolved silver	exp(1.72 (ln (hardness)) - 6.52)
Total cyanide	0.0220
Total chlordane	0.0024
Dissolved cadmium	exp(1.128 (ln (hardness)) - 3.828)
Dissolved chromium[2]	exp(0.819 (ln (hardness)) + 3.688)
Dissolved copper	exp(0.9422 (ln (hardness)) - 1.464)
Dissolved lead	exp(1.273 (ln (hardness)) - 1.46)
Dissolved nickel	exp(0.76 (ln (hardness)) + 0.4.02)
Dissolved zinc	exp(0.8473 (ln (hardness)) + 0.8604)

Results of Water Analyses

Standards which apply to La Bajada Mine pit are a limit of 30 pCi/l for combined radium 226 and radium-228, and a pH range of from 6.6 to 8.8. Applicable standards for heavy metal

[4] For numeric standards dependent upon hardness, hardness (as mg $CaCO_3$/l) shall be determined as needed from available verifiable data sources including, but not limited to, the U. S. Environmental Protection Agency's STORET water quality database.

[5] The criteria for chromium shall be applied to an analysis which measures both the trivalent and hexavalent ions.

concentrations are listed in Tables 2, 3, and 4. The total radium standard is met by the pit waters (Table 5). The pH in the pit has historically ranged between 7.8 and 8.8 and meet the pH standard.

Drinking water standards do not apply to La Bajada Mine pit water. However, because specific New Mexico standards for some radioactivity parameters are lacking, it is informative to compare water quality in the mine pit to drinking water standards in order to obtain an idea of relative water quality. The drinking water regulatory limits for radioactive elements are as follows: gross alpha radiation, 15 pCi/l; total radium-226 and -228, 5 pCi/l; radium-226, 3.0 pCi/l, gross beta radiation, 50 pCi/l; and uranium, 30 pCi/l (currently proposed by the U. S. Environmental Protection Agency [USEPA] as a drinking water standard). Analyses of radioactive elements for La Bajada Mine Pit are summarized in Table 1. Gross alpha is consistently over the drinking water limit. However, gross beta radiation, total uranium are not always over their respective drinking water limits and total radium is often under its limit. Total uranium typically exceeds 30 pCi/l in the pit waters. In conclusion, it is apparent that, even though La Bajada Mine pit water does not meet drinking water standards, it does not pose an immediate and life-threatening danger to man.

Parameters which were at the detection limit for all analyses include Ag, Ba, Be, Cd, Co, Ni, Pb, and V. Since results at the detection limit have a very large uncertainty (typically ± 100%) it is not scientifically valid to say, for example, that for a detection limit of 0.05 mg/l, that the actual concentration might not be several orders of magnitude less. Therefore, results at the detection limit are inconclusive and should be ignored or reanalyzed using a method with a lower detection limit. As, B, CN, Cu, and Se were below New Mexico water quality regulations for La

Table 5. Analyses for Radioactive Parameters from La Bajada Mine Pit[6].

Gross Alpha (ref U-238) pCi/l	Gross Alpha (ref AM-241) pCi/l	Gross Beta pCi/l	^{226}Ra pCi/l	^{228}Ra pCi/l	Total Ra pCi/l	Total Uranium pCi/l	Sample #	Date	Appendix B data source
--	--	--	0.21 ± 0.021	--	--	8 ± 0.7	87.01708	05-19-87	1
--	--	--	0.19 ± 0.190	--	--	57.6 ± 6	97.01709	05-19-87	1
45 ± 6	32 ± 3	19 ± 3	0.17 ± 0.02	0.4 ± 0.2	0.57	46.64	0049	03-87	3
111 ± 14	82 ± 8	194 ± 14	3.93 ± 0.23	0.9 ± 0.3	4.83	56.64	0050	03-87	3
42 ± 6	32 ± 4	42 ± 6	0.98 ± 0.06	1.1 ± 0.4	2.08	47.67	0051	03-87	3
131 ± 16	95 ± 9	111 ± 11	5.5 ± 0.3	1.2 ± 0.3	6.7	69.04	0052	03-87	3
--	--	--	0.7 ± 0.4	--	--	37.5	--	11-09-82	12
44.8 ± 6*	--	--	--	--	--	--	82176	06-04-81	12
--	--	--	0.22 ± 0.06	--	--	14.8	--	01-26-79	8
--	--	--	2.8	--	--	48.7	--	01-11-79	3
--	--	--	0.1	--	--	60.1	--	12-27-78	3
--	--	--	--	--	--	56.5	--	12-13-78	12
--	--	--	0.22 ± 0.2	0.6 ± 0.8	--	--	KA-0280	07-11-74	8

*Analysis reported simply as gross alpha radiation.

Note: in some cases total uranium has been converted from mg/l to pCi/l by the following equation (Milvey and Cothern, 1990) Total U (pCi/l) = Xmg/l · (1000 μg/mg) · (0.67 pCi/μg). The symbol -- means no data given in source. Each analysis is listed only once although the same analysis was sometimes present in more than one source.

[6] Some of the laboratory reports provided were indecipherable. These were excluded.

Table 6. Inorganic analyses from La Bajada Mine pit.

Data source	1	1	6	8
Parameter	Concentration	Concentration	Concentration	Concentration
Ag	< 0.05 ± 0.05 mg/l	< 0.05 ± 0.05 mg/l	< 0.1 mg/l	
Al	0.19 ± 0.10 mg/l	0.35 ± 0.10 mg/l	< 0.1 mg/l	
As	< 0.05 ± 0.05 mg/l	< 0.05 ± 0.05 mg/l	0.009 mg/l	
B	0.20 ± 0.10 mg/l	0.20 ± 0.10 mg/l	0.3 mg/l	
Ba	< 0.50 ± 0.50 mg/l	< 0.50 ± 0.50 mg/l	< 0.1 mg/l	
Be			< 0.1 mg/l	
Ca			55 mg/l	62.0 mg/l
Cd	<0.010 ± 0.010 mg/l	<0.010 ± 0.010 mg/l	< 0.1 mg/l	
Cl	52.0 ± 5.0 mg/l	59.0 ± 6.0 mg/l		42.0 mg/l
CN	0.0 ± 0.01 mg/l	0.0 ± 0.01 mg/l		
Co	< 0.05 ± 0.05 mg/l	< 0.05 ± 0.05 mg/l	< 0.05 mg/l	
Cr	< 1.00 ± 1.00 µg/l	< 1.00 ± 1.00 µg/l	< 0.1 mg/l	
Cu	5.60 ± 0.60 µg/l	3.0 ± 0.30 µg/l	< 0.1 mg/l	
F	1.50 ± 0.30 mg/l	1.50 ± 0.30 mg/l		
Fe			< 0.1 mg/l	
HCO_3				333.3 mg/l
Hg	0.90 ± 0.20 µg/l	0.20 ± 0.20 µg/l		
K				9.75 mg/l
Mg			40 mg/l	
Mn	4.50 ± 2.0 µg/l	0.183 ± 0.018 mg/l	< 0.05 mg/l	
Mo	< 0.05 ± 0.05 mg/l	< 0.05 ± 0.05 mg/l	< 0.1 mg/l	
Na				98.9 mg/l
NH_3-N	0.0 ± 0.04 mg/l	0.0 ± 0.04 mg/l		
Ni	< 0.05 ± 0.05 mg/l	< 0.05 ± 0.05 mg/l	< 0.1 mg/l	
NO_3-N	< 0.20 ± 0.20 mg/l	< 0.20 ± 0.20 mg/l		
P	< 0.20 ± 0.20 mg/l	< 0.30 ± 0.20 mg/l		
Pb	< 0.05 ± 0.05 mg/l	< 0.05 ± 0.05 mg/l	< 0.1 mg/l	
pH	8.63 ± 0.1 units	8.15 ± 0.1 units		
Se	1.70 ± 1.0 µg/l	1.50 ± 1.0 µg/l	< 0.005 mg/l	
Si			2.7 mg/l	
Sn			< 0.1 mg/l	
SO_4	201 ± 20 mg/l	226 ± 23 mg/l		209.4 mg/l
Sr			0.5 mg/l	
TDS	646 ± 65 mg/l	672 ± 67 mg/l		626
V	< 0.05 ± 0.05 mg/l	< 0.05 ± 0.05 mg/l	< 0.1 mg/l	
Zn	3.0 ± 0.2 µg/l	14.4 ± 2.0 µg/l	< 0.1 mg/l	

Note: Total hardness (mg/l $CaCO_3$) = 2.497 (Ca in mg/l) + 4.118 (Mg in mg/l)

Bajada Mine pit. Based on available data, only Al and Hg can conclusively be shown to be above New Mexico regulatory standards in the pit. Examination of the chemical analyses in Table 6 show that the water in La Bajada Mine pit should not be used for drinking or swimming. However, U.S.F.S. divers did an aquatic life survey in the mine pit in 1970. As far as we can ascertain, the divers suffered no ill effects.

Limited radioactive analyses were available for four sites other than La Bajada Mine pit. These are 1) the Santa Fe river 1/4 mile upstream of the mine, 2) the U.S.G.S. gauging station on the Santa Fe River below the mine, 3) a spring or infiltration gallery located 50 feet east of the mine pit, and 4) the drinking water supply at Domingo. These data are tabulated in Table 7.

According to the State of New Mexico, the water in the Santa Fe River upstream of Cochiti Lake is designated for use in irrigation, livestock and wildlife watering, marginal coldwater fishery, secondary contact recreation, and warmwater fishery. It is not designated as a drinking water supply. As designated, the only radioactive standard which applies is that radium-

Table 7. Background Surface Water Analyses for Radioactives.

Location	Gross Alpha (ref AM-241) (PcI/L)	Gross Alpha (ref Unat) (PcI/L)	Gross Beta (ref Cs-137) (pCi/L)	Gross Beta (ref Sr/Y-90)	Uranium, total(pCi/l)	^{226}Ra (pCi/l)	Date	Appendix B data source
Santa Fe River 1/4 mile	–	–	–	–	3.8	0.08	12-27-78	3
upstream of mine site	–	–	–	–	5.1	0.51	01-11-79	3
Santa Fe River at U.S.G.S.	–	–	–	–	2.9	0.31	12-27-78	3
gauging station below mine	–	–	–	–	3.5	2.9	01-11-79	3
Domingo Drinking Water	2.9 ± 0.66	4.5 ± 1.1	7.6 ± 1.0	7.6 ± 1.0	–	–	03-87	3
Spring 50' east of mine pit	–	–	–	–	14.5	0.3	12-27-78	3
	–	–	–	–	13.5	0.31	01-11-79	3

226 plus radium-228 must be below 30 pCi/l (New Mexico Water Quality Control Commission, 1991). This standard is met.

The uranium content of the Santa Fe River seems to be slightly higher upstream of La Bajada mine than downstream. Old mining records available at the New Mexico Bureau of Mines and Mineral Resources in the Mineral Data Archives show that another uranium prospect, La Majada, is located approximately 3 miles upstream of La Bajada Mine site in the northeast 1/4 of Section 2, Township 15 north, Range 7 east (Geologic map of La Bajada Area showing uranium deposits adapted and modified after Disbrow and Stoll, 1957 in NMBMMR collection). La Majada uranium prospect is also located on the banks of the Santa Fe River. La Majada site is a potential source of naturally-derived, dissolved uranium and other possible contaminants in the Santa Fe River. However, if analytical uncertainties for the analyses (which generally were not available) were be considered, there may be no significant difference in the upstream and downstream values. Another uranium prospect is also located on the south side of the Santa Fe River about 3,000 feet downstream of La Bajada Mine site. This prospect is known as the Hiser-Moore prospect and is depicted on the same map as La Majada prospect. No further information is available on either La Majada or the Hiser-Moore prospects in the NMBMMR files.

In general, the uranium content of the Santa Fe river is only 1/10th that of the average uranium concentration in La Bajada Mine pit waters. The maximum uranium concentration in the Santa Fe River, which occurred upstream of the mine, is only about 1/6th of the proposed USEPA 30 pCi/l drinking water limit. The radium-226 concentrations in the Santa Fe River are only 1/4 of the radium-226 concentrations in the mine pit. All of the reported concentrations of radium-226 in the Santa Fe River are below the EPA suggested limit of 3.0 pCi/l for drinking

water. Both gross alpha and gross beta radiation are much lower than the drinking water regulatory limits of 15 pCi/l for gross alpha radiation and 50 pCi/l for gross beta radiation in the Domingo drinking water. Even the waters of the mine seep or infiltration gallery, although higher in uranium than the waters of the Santa Fe River, are well below suggested EPA drinking water standards for uranium, although drinking water standards do not apply to these waters.

For other water parameters, a study by Potter (1985) concluded that all water quality standards were met upstream of Cochiti Lake between May 27th and May 29th, 1985. Water quality in the Santa Fe River, as evidenced by examination of the sources listed in Appendix B- demonstrates that the Santa Fe River water almost always meets drinking water standards with three occasional exceptions. These are nitrate, fecal colliform, and lead. In 1986, Potter found that total nitrogen and fecal colliform were high in Cienega creek. She stated that action was taken the same year to correct the problem. Lead has been reported at 42 micrograms per liter (µg/l) upstream of Cochiti Pueblo and La Bajada Mine from the Santa Fe River at Tetilla Peak access road bridge on 07-08-84. This is above the 15 µg/l drinking water standard but below New Mexico standards for irrigation, livestock and wildlife watering, and fisheries. However, other lead analyses were well below 15 µg/l. The source of lead is unknown but may be natural.

POTENTIAL ENVIRONMENTAL IMPACTS

Acid Mine Drainage Potential

Since some pyrite was observed in the surface spoil on site, there is the possibility that acid mine water might be produced. No data were found that would allow quantification of acid mine drainage potential. However, several scattered, discolored patches on the surface were

observed during the site visit. These rusty-colored patches are indicative of pyrite or marcasite oxidation. Acid mine drainage is the result of the exposure of pyrite to oxygen at the surface due to excavation and the resulting oxidation (rusting) of pyrite, which causes water which comes in contact with the pyrite to become acidic, with pH values lower than 4.5 (Drever, 1988). At these low pH's, water is still not particularly harmful to man. Cola Cola®, for example has a pH of between 2.0 to 3.0. The problem with acid mine drainage is that heavy metals such as lead and copper, etc., are more soluble at low pH than they are in a more typical surface and groundwater pH range of from 6.0 to 8.5. Acidic waters tend to mobilize these heavy metals.

However, low pH waters produced by acid mine drainage should be quickly buffered by the more alkaline waters of the Santa Fe River. This should cause heavy metals to precipitate, thus they will no longer be transported in solution. Due to the presence of the Santa Fe River, with its alkaline waters and the distance between the fishery and the mine site, it is unlikely that acid mine drainage could significantly affect the Cochiti fish hatchery even without mine remediation. Placement of cover material over La Bajada Mine site will help prevent the production of acid mine waters and potential transference of heavy metals and radioactives to the Santa Fe River. However, it is advisable to examine the cover soil carefully and ensure that it does not contain large amounts of pyrite.

Acid mine drainage entering the groundwater should also be buffered by water-rock interaction to pH values in the neighborhood of 7.0 to 8.5. This typically results in precipitation of solids such as amorphous $Fe(OH)_3$ and $Al(OH)_3$ in the soil (Peterson et. al, 1986). Uranium, other radioactives, and heavy metals tend to adsorb to these precipitates, as well as clays and iron compounds in the soil and thus are, at least partially, prevented from further migration. However,

given an infinite source of acid mine waters, the buffering capacity of the groundwater and sediments will be exhausted, causing the pH to drop. As a result, previously precipitated solids will dissolve, freeing contaminants into solution once more. At La Bajada Mine site however, the potentially small volume of acid mine drainage produced due to infiltration of meteoric water in the semiarid climate is not likely to have a significant impact on the regional groundwater system.

Potential Environmental Impact on Cochiti Lake

Even though it is much more likely that a high-stage flood event would deposit eroded mine spoil at the mouth of Santa Fe River canyon rather than transporting it all of the way to Cochiti Lake, a major question proposed by Dr. Jim Piatt concerning La Bajada Uranium Mine is what would be the expected range of possible contaminants in Cochiti Lake if all of the mine waste at the site were to be washed into Cochiti Lake. Simple mass balance calculations can be used to answer this question. Calculations were done for estimated minimum and maximum amounts of mine waste thought to be present on site.

Spoil Volume

The total production of La Bajada Mine was approximately 9649 tons of uranium ore (McLemore and North, 1985). This ore was removed and processed off-site during active mining operations. Mr. Bob Eveleth, Senior Mining Engineer for the NMBMMR, estimates that a typical mine would produce 1.5 tons of spoil per ton of ore. To be on the conservative side, an estimate of two tons of spoil per ton of ore will be used. The assumption is that the minimum amount of spoil and protore present at the surface on site is approximately 19,300 tons.

The maximum estimate is arrived at by subtracting the produced tonnage (9649 tons shipped off site) from tonnage which would have been produced from the open pit. For these calculations the pit size is assumed to be two acres, and the pit depth is assumed to be 50 feet (a generous estimate since some other estimates are only 30 feet). Using these figures, the maximum amount of spoil and protore possible to be present at the surface on site is approximately 107,550 tons.

Concentration of Radioactives in Spoil

Three types of material have been identified on site: 1) soil, 2) spoil, and 3) protore by J. Margo Keele, Ph. D. in her 1987 report to Robert Salter, Bureau Chief of the Abandoned Mines Program (Appendix B, data source 3). Soil is not enriched in ore metals; spoil is slightly enriched in ore metals; and protore is material of higher grade than spoil but cannot be processed economically. For the purposes of these calculations, it is assumed that only spoil and protore are present on site. An undated report by R. L. Borton of the New Mexico State Engineer's Office, which is on file at the NMBMMR in the Mineral Data Archives, states that in 1967, a stockpile of 2150 cubic yards of ore was stored on site. Assuming a weight of 1.5 tons per cubic yard, this would be 1433 tons of ore. Active mining at La Bajada ceased in 1966. Therefore, the assumption is that this 1433 tons of ore is the "protore" referred to by Dr. Keele in 1987 (Appendix B, data sources 2 and 3). To be conservative, a value of 2,000 tons of "porotore" remaining on site was used. The remaining tonnage is presumed to be spoil.

The average concentrations of radioactives in the spoil and protore were obtained by averaging analyses presented by Keele (Table 8).

Table 8. Average radioactive concentrations in spoil and protore.

	^{238}U	^{234}U	Total Uranium	^{230}Th	^{226}Ra	^{210}Pb
Spoil	24.4	24.3	48.76	29	28.2	27.1
protore	75	81	156	293.5	613.5	570.5

Note: all concentrations are in pCi/l.

Volume of Cochiti Lake

John Kimble, hydrological technician, Lake Control, U.S. Army Corps of Engineers stated in a telephone interview that the minimum lake volume in 1994 was approximately 54,500 acre-feet (6.72×10^{10} liters). While, it is possible that the minimum volume may be smaller at times (Dr. Jim Piatt informed me that the minimum volume in 1992 was 45,450 acre feet and that the absolute minimum volume, or dead storage, is 560 acre feet), the 54,500 figure is sufficient for the preliminary calculations in this report. The high volume this spring (June, 1994) was 122,000 acre-feet.

Mass Balance Calculations

These calculations are based on what could happen if all of the spoil at the mine site were washed into Cochiti Lake and all of the radioactive components actually dissolved when the Lake is at minimum volume of 54,500 acre-feet. This is an extreme example, which sets maximum limits on possible environmental impact on Cochiti Lake. The equation used in these calculations is

$$CT_i = \frac{P_T \cdot \frac{2000\,lb}{ton} \cdot \frac{2.2046\,kg}{lb} \cdot \frac{1000\,g}{kg} \cdot C_P + S_T \cdot \frac{2000\,lb}{ton} \cdot \frac{2.2046\,kg}{lb} \cdot \frac{1000\,g}{kg} \cdot C_S}{V_C}$$

Where CT_i is the estimated maximum concentration of a given radioactive in Cochiti Lake in pCi/l, P_T is the weight of protore in tons, C_P is the average concentration of a given radioactive in the protore in pCi/g, S_T is the weight of the spoil in tons, C_S is the average concentration of a given radioactive in the spoil in pCi/g, and V_C is the minimum volume of Cochiti Lake in liters. The results of the calculations for both minimum and maximum assumptions of spoil and protore amounts present on site are shown in Table 9.

Table 9. Results of mass balance calculations. The calculations assume that all of the mine waste at La Bajada Mine site is washed into Cochiti Lake at a representative low volume of 54,500 acre-feet and that all of the radioactives present in the spoil dissolve into the water. Note that, due to solubility limitations, it may not be possible to dissolve all radioactives present in the water.

	^{238}U	^{234}U	Total Uranium	^{230}Th	^{226}Ra	^{210}Pb
Maximum estimate	166.6	166.7	333.7	224.8	261.7	0.0000032
Minimum estimate	33.9	34.6	68.5	67.1	108.3	0.0000013

Note: All concentrations are in pCi/l except Pb-210 which is in µg/l. (1 pCi/l of Pb-210 = 1.3 x 10^{-8} µg/l of Pb-210)

Chemical controls on solubility, many of which are a function of pH, would be the deciding factor in the actual concentrations of the various radioactive and heavy metal contaminants in Cochiti Lake if a significant portion of the mine spoil were to be washed into it. However, in examining Table 9, it is obvious that, excluding solubility controls, it is possible to reach unwanted concentrations of radioactives if this unlikely event occurs.

During spring runoff, where Cochiti Lake may reach volumes significantly over 100,000 acre-feet, the maximum possible concentrations (discounting solubility controls) shown in Table 9

would be less than 1/2 the values shown. The largest potential for washing significant amounts of mine spoil into Cochiti Lake would occur during spring runoff. An event large enough to do this would certainly be larger than the 100 year flood of 10,300 cfs and substantially larger than the maximum runoff measured at the U.S.G.S. gauging station of 11,400 cfs in 1971 since it was installed in 1970. However, subsequent seasonal evaporation would tend to concentrate solutes in the lake.

The best guide for what possible contaminant concentrations might be in Cochiti Lake if all of the mine spoil washed into it, are the concentrations of these parameters measured in La Bajada Mine pit, where water is in intimate contact with mine spoil. In essence, La Bajada Mine pit serves as an on site pilot test for the maximum likely degradation of Cochiti Lake water quality as long as sufficient potential contaminants are present in the spoil to achieve similar concentrations in Cochiti Lake. The mass balance calculations suggest that sufficient radioactives are present in the mine spoil. No calculations were done for heavy metals due to data insufficency and because solubilities are typically low in neutral pH waters. Since it is unlikely that the pH of the lake waters would be decidedly more acidic due to influx from storm events, then radioactive and heavy metal concentrations should be similar to those in La Bajada Mine pit. This would constitute degradation of the water quality in Cochiti lake for recreational purposes. Swimming would probably have to be banned. Also, due to the potential for particulate heavy metals and radioactives to enter the food chain, fishing might also be significantly impacted.

Potential impacts on Cochiti Fishery

Cochiti Fishery derives at least some of its water from the Santa Fe River upstream of Cochiti Lake. Due to its much smaller water volume, potential impacts on the fishery could occur more easily than upon Cochiti Lake. The fishery has been active since May of 1992 (according to Officer Don Suina of Cochiti Pueblo). Therefore, it has not been in operation long enough to demonstrate if there are any environmental impacts from La Bajada Mine site during precipitation events.

However, once remediation is complete, there should be little chance of either mine spoil or dissolved contaminants reaching the fishery from La Bajada Mine site. It is unlikely that, even if significant acid mine drainage develops, any significant amounts of dissolved heavy metals will reach the Cochiti Fishery. Due to the typically neutral pH of the Santa Fe River, precipitation should severely reduce the concentrations of any heavy metals which reach the Santa Fe River in solution. However, there is a possibility that bottom feeders might ingest elevated concentrations of heavy metals or radioactives if significant amounts of spoil are washed into the fishery and that these heavy metals might then enter the food chain. In such a situation it is possible that some biomagnification might occur, resulting in eventual toxicity to man. However, toxicity potential cannot be quantified in this report.

REMEDIATION PLAN EVALUATION

In brief, the mine remediation plan is to 1) cover the mine spoil with several feet of soil to reduce radiation levels at the surface, 2) Regrade and armor the channel of the Santa Fe river to

prevent erosion of the mine waste at flows of less than 15,000 cfs, 3) fill the mine pit and replace it with another wetland at the fill site, and 4) reestablish vegetation at the site.

Covering the mine spoil with a foot or so of soil will reduce radiation to acceptable levels. However, more than one foot of soil cover may be necessary to minimize erosion.

At present, the U.S.F.S. plans to let the mine pit overflow as it is filled and let the soil soak up the overflow. Based on mass balance calculations, this procedure should not be a problem.

The design flow for the Santa Fe River suggested by Bruce Sims is in excess of 15,000 cfs. Thus the channel of the Santa Fe River would be regraded and armored to handle a maximum flow of greater than 15,000 cfs. The 100 year flood for this site is 10,300 cfs and the design value of 15,000 cfs is larger than the highest recorded flow of 11,400 cfs. However, it should be noted that flow records have only been kept at the U.S.G.S. gauging station below the mine site since 1970. Based on the information available, the 15,000 cfs design flow seems reasonable. This is certainly a much more conservative design criteria than the often-used 100 year flood.

There are two gullies which cross mine spoil at the site. Bruce Sims of the U.S.F.S. informs me that these will be regraded and armored to prevent erosion of mine spoil into the Santa Fe River during precipitation events. Preventing erosion of mine spoil in these two gullies is important and should not be overlooked.

Covering the mine spoil with a layer of soil will significantly diminish the hazard of mine spoil being washed into the river during precipitation events. However, care must be taken to grade contours such that the soil cover will not be easily eroded during precipitation events. After

remediation is completed, there should be regular inspection of the soil cover at the site so that minor erosion problems can be fixed before problems occur. As little as one foot of cover soil should be sufficient to mitigate radiation hazards at the site.

WATER QUALITY MONITORING PROGRAM

Cochiti Pueblo may wish to implement a water quality monitoring program for waters entering the Pueblo via the Santa Fe River for the following reasons: 1) The U.S.Geological Survey has, or is going to, abandon their gauging station on the Santa Fe River below La Bajada Uranium Mine. Therefore, there will be no more chemical analyses available from that site unless some other agency decides to maintain the gauging station, 2) In addition to La Bajada Uranium Mine, there are other potential upstream pollution sources including several wastewater treatment plants which discharge either into the Santa Fe River or into waters which join the Santa Fe River.

I spoke with Russell Smith, Project Manager for Cochiti Lake for the U.S. Army Corps of Engineers. He said that the Corps of Engineers does not do any water sampling for radioactives or heavy metals. However, he also said that he believes someone from Los Alamos does take water and fish samples every two years or so from Cochiti Lake. It may be possible for Cochiti Pueblo to obtain this information.

We recommend sampling be done for the following parameters: Fecal colliform, total uranium, total radium, gross alpha, gross beta, as well as heavy metals including lead, cadmium, copper, silver, total arsenic, chromium, and mercury. Dr. Jim Piatt of N.M.E.D. suggests one sample during base flow (October to snow melt) and one sample during a high intensity thunderstorm. Unless the thunderstorm is sampled, an artificially "rosy" picture of water quality

might be generated. It would be advisable for Cochiti Pueblo to have an EPA-certified environmental laboratory perform these analyses.

CONCLUSIONS

- The mine spoil and protore at La Bajada Mine site has been inadequately characterized. There is insufficient information available to quantify acid mine drainage potential, although it appears to be small. Furthermore, the monitoring wells at the mine site should be sampled periodically, and analyses conducted, to determine if there is potential for uranium, radium, or heavy metal migration off site.
- Without remediation of La Bajada Mine site, there is a danger that influx of mine spoil into Cochiti Lake or Cochiti Fishery during major flood events along the Santa Fe River might have an adverse impact on water quality and fisheries.
- The U.S.F.S. remediation plan is adequate and should be implemented as soon as feasible.
- Cochiti Pueblo may want to implement a water quality monitoring program to monitor potential adverse impacts on Cochiti Fishery.

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APPENDICES

Appendix A: Summary of June 3rd meeting.

On Friday, June 3rd, 1994, Drs. John Hawley, David Love, Virginia McLemore, Mike Whitworth and student Pat Phillips met with Governor Andrew Quintana and Lt. Governor Jose Herrera at Cochiti Pueblo. We briefly discussed the location and history of La Bajada uranium mine and then went to examine the mine in the Santa Fe River Canyon. We met Robert Remillard of the U. S. Forest Service near the mine and he accompanied us to the site. We were joined at the site by Officer Don Suina of Cochiti Pueblo.

At the mine we discussed the history of mining, the past and present course of the Santa Fe River, examined the mine pond and mine waste, and discussed possible problems relating to mine reclamation. Although much of the mine waste was covered, we did note the presence of several minerals including iron sulfides (pyrite, marcasite), other sulfides, alteration sulfates, and carbonates of copper (azurite, malachite). We also noted local evidence of sulfide oxidization on the surface. At the time we examined the site, the Santa Fe River contained some water from spring runoff, however, we noted no sediment from the mine waste actually entering the river.

We also discussed broader water issues including the general flow of groundwater from the Jemez Mountains, the upper Rio Grande, and the Santa Fe River through Cochiti Pueblo lands, and how water quality on the pueblo might be affected by development upstream. The effects of downstream changes in the Albuquerque basin were also discussed.

Possible water quality issues could not be addressed at the meeting because we did not have the necessary chemical analyses. We were told that Jim Piatt of the New Mexico Environment Department and Bruce Sims of the U. S. Forest Service have a file of chemical analyses which should be available to us. We also discussed the possibility that the U. S. Army Corps of Engineers might have some water chemistry data for Cochiti Lake.

We discussed the feasibility of Cochiti Pueblo starting their own water quality monitoring program. If, after examining the chemical analyses from various sources, we and Cochiti Pueblo agree that a water quality monitoring program is advisable, we agreed to help them establish the criteria for such a program, and to train several Cochiti Pueblo staff in the necessary water sampling protocol if Cochiti Pueblo so desires. We advised Cochiti Pueblo of the necessity of sending any samples they may collect to an unbiased and qualified commercial laboratory for analysis.

Appendix B. Data Used to Prepare Report

Table B-1. Data Provided by Jim Piatt, Ph.D., Chief, Surface Water Quality Bureau and Bruce Sims, USFS Hydrologist.

1. Report dated April 28, 1988 from William D. Purtymun of Los Alamos National Laboratory to Corey Wong, Espanola Ranger District, U.S.F.S. containing analytical results of water and sediment samples from La Bajada Mine pit.

2. Report dated September 14, 1987 from J. Margo Metzger-Keele, Ph.D., Program Manager, Surveillance and Monitoring Section, New Mexico Health and Environment Department to Robert Salter, Bureau Chief, Abandoned Mine Land Program, Energy and Minerals Department, Mining and Minerals Division.

3. Report dated May 29, 1987 from J. Margo Metzger-Keele, Ph.D., Program Manager, Surveillance and Monitoring Section, New Mexico Health and Environment Department to Robert Salter, Bureau Chief, Abandoned Mine Land Program, Energy and Minerals Department, Mining and Minerals Division.

4. Analytical report for water sample from Domingo/La Bajada dated March 25, 1987 from the Radiochemistry Section of the Scientific Laboratory Division of the New Mexico Health and Environment Department to the Water Supply Section, New Mexico Health and Environment Department, Santa Fe, New Mexico.

5. Analytical report for water sample from La Bajada Mine Pit dated April 8, 1987 from the Radiochemistry Section of the Scientific Laboratory Division of the New Mexico Health and Environment Department to the Ground Water/Hazardous Waste Bureau, Environmental Improvement Division, New Mexico Health and Environment Department, Santa Fe, New Mexico.

6. Analytical report for water sample from La Bajada Mine Pit dated April 24, 1987 from the Radiochemistry Section of the Scientific Laboratory Division of the New Mexico Health and Environment Department to the Ground Water/Hazardous Waste Bureau, Environmental Improvement Division, New Mexico Health and Environment Department, Santa Fe, New Mexico.

7. Two printouts of STORET data (water analyses) from the Santa Fe River through June 8, 1994.

8. Eleven water analyses from the Energy Development Monitoring program from the U.S.G.S. gauging station below La Bajada Mine and La Bajada Mine pit from 1974-79 reported to the Water Pollution Control Section, Environmental Improvement Division, Health and Environment Department, Santa Fe, New Mexico.

9. Report of analyses for soil samples Pecos and La Bajada Mine site done by Radian Corporation, Radian analytical Services, 10395 Old Placerville Rd., Sacramento, CA 95827 on August 2, 1990 for the Santa Fe National Forest.

10. Printout of La Bajada Mine History apparently provided by Bill Hatchell, Chief, Bureau of Economic Geology, Mining and Minerals Division, State of New Mexico dated June 12, 1989.

11. Radiological Survey of The La Bajada Mine, New Mexico Radiation Protection Bureau, August, 1987

12. Memorandum from John M. Andrews, Jr., Environmental Scientist, Albuquerque District Mining Office, USFS. concerning surface reclamation of site with attached water analyses.

13. La Bajada Quarry Fishery Investigation by Donald A. Duff, Wildlife Management Biologist and L. Eric Silvers, Hydrologist dated March 19, 1970, USFS.

Copies of these documents follow and are organized by number.

Data Source 1. Report dated April 28, 1988 from William D. Purtymun of Los Alamos National Laboratory to Corey Wong, Espanola Ranger District, U.S.F.S. containing analytical results of water and sediment samples from La Bajada Mine pit.

Los Alamos
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Espanola Ranger District
P.O. Box R
Espanola, NM 87532

ANALYTICAL RESULTS FROM LA BAJADA MINE PIT

Dear Mr. Wong:

Attached are the analytical results of samples, water and sediments, from the mine pit. They were collected and analyzed for Ed Collins, U.S. Forest Service, who has since been transferred. I understand that this project has been transferred to you. The samples were collected about May 19, 1987.

If you have any questions contact me at 667-0810 or Daryl Knab at 667-7094.

Sincerely,

William D. Purtymun

William D. Purtymun
Environmental Surveillance

WDP:bjh

Attachments: a/s

Cy: J. Puckett, HSE-DO, K491
CRM-4 (2), MS A150

ESPANOLA R.D.
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	Info	Action
DFR		
A&E DOE	Cmc	
R&L		
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Range		
FMO		
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Res Clerk		
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Water sample analyses for La Bajada Mine Pit. Sample 87.01708 is a surface water sample, 87.01709 a deep water sample, and 87.01716 is the filtrate solution from the three sediment samples 87.01713-1315.

SAMPLE NUM	ANALYSIS	SYMBOL	RESULT	UNCERTAINTY	UNITS
87.01708	AG	<	0.0500	0.0500	MG/L
87.01708	AL		0.1900	0.1000	MG/L
87.01708	AS	<	0.0500	0.0500	MG/L
87.01708	B		0.2000	0.1000	MG/L
87.01708	BA	<	0.5000	0.5000	MG/L
87.01708	CD	<	0.0100	0.0100	MG/L
87.01708	CL		52.0000	5.0000	MG/L
87.01708	CN		0.0000	0.0100	MG/L
87.01708	CO	<	0.0500	0.0500	MG/L
87.01708	CR	<	1.0000	1.0000	UG/L
87.01708	CU		5.6000	0.6000	UG/L
87.01708	F		1.5000	0.3000	MG/L
87.01708	HG		0.9000	0.2000	UG/L
87.01708	MN		4.5000	2.0000	UG/L
87.01708	MO	<	0.0500	0.0500	MG/L
87.01708	NH3-N		0.0000	0.0400	MG/L
87.01708	NH3-N		0.0000	0.0400	MG/L
87.01708	NI	<	0.0500	0.0500	MG/L
87.01708	NO3-N	<	0.2000	0.2000	MG/L
87.01708	P	<	0.2000	0.2000	MG/L
87.01708	PB	<	0.0500	0.0500	MG/L
87.01708	PH		8.6300	0.1000	UNITS
87.01708	RA-226		0.2100	0.0210	PCI/L
87.01708	SE		1.7000	1.0000	UG/L
87.01708	SO4		201.0000	20.0000	MG/L
87.01708	TDS		646.0000	65.0000	MG/L
87.01708	TH	<	0.0100	0.0100	MG/L
87.01708	U		0.0120	0.0010	MG/L
87.01708	V	<	0.0500	0.0500	MG/L
87.01708	ZN		3.0000	2.0000	UG/L

SAMPLE NUM	ANALYSIS	SYMBOL	RESULT	UNCERTAINTY	UNITS
87.01709	AG	<	0.0500	0.0500	MG/L
87.01709	AL		0.3500	0.1000	MG/L
87.01709	AS	<	0.0500	0.0500	MG/L
87.01709	B		0.2000	0.1000	MG/L
87.01709	BA	<	0.5000	0.5000	MG/L
87.01709	CD	<	0.0100	0.0100	MG/L
87.01709	CL		59.0000	6.0000	MG/L
87.01709	CN		0.0000	0.0100	MG/L
87.01709	CO	<	0.0500	0.0500	MG/L
87.01709	CR	<	1.0000	1.0000	UG/L
87.01709	CU		3.0000	0.3000	UG/L
87.01709	F		1.5000	0.3000	MG/L

87.01709	HG	<	0.2000	0.2000	UG/L
87.01709	MN		0.1830	0.0180	MG/L
87.01709	MO	<	0.0500	0.0500	MG/L
87.01709	NH3-N		0.0000	0.0400	MG/L
87.01709	NH3-N		0.0000	0.0400	MG/L
87.01709	NI	<	0.0500	0.0500	MG/L
87.01709	NO3-N	<	0.2000	0.2000	MG/L
87.01709	P		0.3000	0.2000	MG/L
87.01709	PB	<	0.0500	0.0500	MG/L
87.01709	PH		8.1500	0.1000	UNITS
87.01709	RA-226		0.1900	0.0190	PCI/L
87.01709	SE		1.5000	1.0000	UG/L
87.01709	SE		1.5000	1.0000	UG/L
87.01709	SO4		226.0000	23.0000	MG/L
87.01709	TDS		672.0000	67.0000	MG/L
87.01709	TH	<	0.0100	0.0100	MG/L
87.01709	U		0.0860	0.0090	MG/L
87.01709	V	<	0.0500	0.0500	MG/L
87.01709	ZN		14.4000	2.0000	UG/L

SAMPLE NUM	ANALYSIS	SYMBOL	RESULT	UNCERTAINTY	UNITS
87.01716	AG	<	0.0500	0.0500	MG/L
87.01716	AL		0.3600	0.1000	MG/L
87.01716	AS	<	0.0500	0.0500	MG/L
87.01716	B		0.3000	0.1000	MG/L
87.01716	BA	<	0.5000	0.5000	MG/L
87.01716	CD	<	0.0100	0.0100	MG/L
87.01716	CL		23.6000	2.4000	MG/L
87.01716	CN		0.0000	0.0500	MG/L
87.01716	CO	<	0.0500	0.0500	MG/L
87.01716	F		2.1000	0.3000	MG/L
87.01716	HG		0.8000	0.2000	UG/L
87.01716	MO		0.3000	0.0500	MG/L
87.01716	NH3-N		6.0500	0.6050	MG/L
87.01716	NH3-N		6.5000	0.6500	MG/L
87.01716	NI		0.0600	0.0500	MG/L
87.01716	NO3-N		0.3000	0.2000	MG/L
87.01716	P	<	0.2000	0.2000	MG/L
87.01716	PB	<	0.0500	0.0500	MG/L
87.01716	PH		7.7400	0.1000	UNITS
87.01716	SO4		379.0000	38.0000	MG/L
87.01716	TDS		104.0000	10.0000	MG/L
87.01716	TH	<	0.0100	0.0100	MG/L
87.01716	U		0.1330	0.0130	MG/L
87.01716	V	<	0.0500	0.0500	MG/L

Analytical results for sediment samples collected from the bottom of the La Bajada Mine Pit. The locations of the three samples were not designated on the original samples. The analyses were run on a water extract at pH 5 according to RCRA procedures, SW 846 method 1310, for EPTOX metals. The Ra-226 values reported in PCi/G were determined by GeLi gamma counting of the original sediment samples.

SAMPLE NUM	ANALYSIS	SYMBOL	RESULT	UNCERTAINTY	UNITS
87.01713	AG	<	0.0500	0.0500	MG/L
87.01713	AS	<	0.0500	0.0500	MG/L
87.01713	BA		0.8000	0.5000	MG/L
87.01713	CD	<	0.0100	0.0100	MG/L
87.01713	CL		3.2000	0.6000	MG/L
87.01713	CN		0.0100	0.0100	MG/L
87.01713	CO		0.5200	0.0500	MG/L
87.01713	CR	<	0.0500	0.0500	MG/L
87.01713	CU	<	2.0000	2.0000	UG/L
87.01713	F		0.5370	0.0540	MG/L
87.01713	FE		135.0000	13.0000	MG/L
87.01713	HG	<	0.0020	0.0020	MG/L
87.01713	MN		9.7000	0.9700	MG/L
87.01713	MO		0.0020	0.0010	MG/L
87.01713	NH3-N		4.0000	0.4000	MG/L
87.01713	NH3-N		4.1200	0.4120	MG/L
87.01713	NI		1.2200	0.1200	MG/L
87.01713	NO3-N	<	0.2000	0.2000	MG/L
87.01713	P	<	0.2000	0.2000	MG/L
87.01713	PB	<	0.0500	0.0500	MG/L
87.01713	PH		4.4700	0.1000	UNITS
87.01713	RA-226		23.5000	2.3000	PCI/L
87.01713	RA-226		8.5500	1.3100	PCI/G
87.01713	SE		9.1000	1.0000	UG/L
87.01713	SO4		21.3000	2.1000	MG/L
87.01713	TDS		2518.0000	252.0000	MG/L
87.01713	TH		0.0010	0.0010	MG/L
87.01713	U		0.0080	0.0050	MG/L
87.01713	V	<	0.0100	0.0100	MG/L
87.01713	ZN		0.1870	0.0380	MG/L

SAMPLE NUM	ANALYSIS	SYMBOL	RESULT	UNCERTAINTY	UNITS
87.01714	AG	<	0.0500	0.0500	MG/L
87.01714	AS	<	0.0500	0.0500	MG/L
87.01714	BA		0.5000	0.5000	MG/L
87.01714	CD		0.2000	0.0200	MG/L
87.01714	CL		2.4000	0.4000	MG/L
87.01714	CN		0.0100	0.0100	MG/L
87.01714	CO		0.4400	0.0400	MG/L
87.01714	CR	<	0.0500	0.0500	MG/L
87.01714	CU	<	2.0000	2.0000	UG/L
87.01714	F		0.5530	0.0550	MG/L
87.01714	FE		70.0000	7.0000	MG/L
87.01714	HG	<	0.0020	0.0020	MG/L
87.01714	MN		8.9800	0.9000	MG/L

87.01714	MO		0.0020	0.0010	MG/L
87.01714	NH3-N		1.9900	0.1990	MG/L
87.01714	NH3-N		1.9800	0.1980	MG/L
87.01714	NI		1.1200	0.1100	MG/L
87.01714	NO3-N	<	0.2000	0.2000	MG/L
87.01714	P	<	0.2000	0.2000	MG/L
87.01714	PB	<	0.0500	0.0500	MG/L
87.01714	PH		4.3900	0.1000	UNITS
87.01714	RA-226		9.2000	0.9000	PCI/L
87.01714	RA-226		4.0300	0.6200	PCI/G
87.01714	SE	<	1.0000	1.0000	UG/L
87.01714	SO4		39.1000	3.9000	MG/L
87.01714	TDS		2826.0000	283.0000	MG/L
87.01714	TH		0.0010	0.0010	MG/L
87.01714	U		0.0200	0.0050	MG/L
87.01714	V		0.0170	0.0100	MG/L
87.01714	ZN		0.4250	0.0430	MG/L

SAMPLE NUM	ANALYSIS	SYMBOL	RESULT	UNCERTAINTY	UNITS
87.01715	AG	<	0.0500	0.0500	MG/L
87.01715	AS	<	0.0500	0.0500	MG/L
87.01715	BA		0.6000	0.5000	MG/L
87.01715	CD	<	0.0100	0.0100	MG/L
87.01715	CL		2.6000	0.4000	MG/L
87.01715	CN		0.0100	0.0100	MG/L
87.01715	CO		0.5500	0.0600	MG/L
87.01715	CR	<	0.0500	0.0500	MG/L
87.01715	CU		13.5000	4.0000	UG/L
87.01715	F		0.6330	0.0630	MG/L
87.01715	FE		200.0000	20.0000	MG/L
87.01715	HG	<	0.0020	0.0020	MG/L
87.01715	MN		10.7000	1.1000	MG/L
87.01715	MO		0.0020	0.0010	MG/L
87.01715	NH3-N		4.1200	0.4120	MG/L
87.01715	NH3-N		4.3700	0.4370	MG/L
87.01715	NI		1.2800	0.1300	MG/L
87.01715	NO3-N	<	0.2000	0.2000	MG/L
87.01715	P	<	0.2000	0.2000	MG/L
87.01715	PB	<	0.0500	0.0500	MG/L
87.01715	PH		4.4600	0.1000	UNITS
87.01715	RA-226		5.7400	0.8800	PCI/G
87.01715	RA-226		21.5000	2.1000	PCI/L
87.01715	SE		1.0000	1.0000	UG/L
87.01715	SO4		37.3000	3.7000	MG/L
87.01715	TDS		2685.0000	269.0000	MG/L
87.01715	TH		0.0010	0.0010	MG/L
87.01715	U		0.0090	0.0050	MG/L
87.01715	V	<	0.0100	0.0100	MG/L
87.01715	ZN		0.1930	0.0190	MG/L

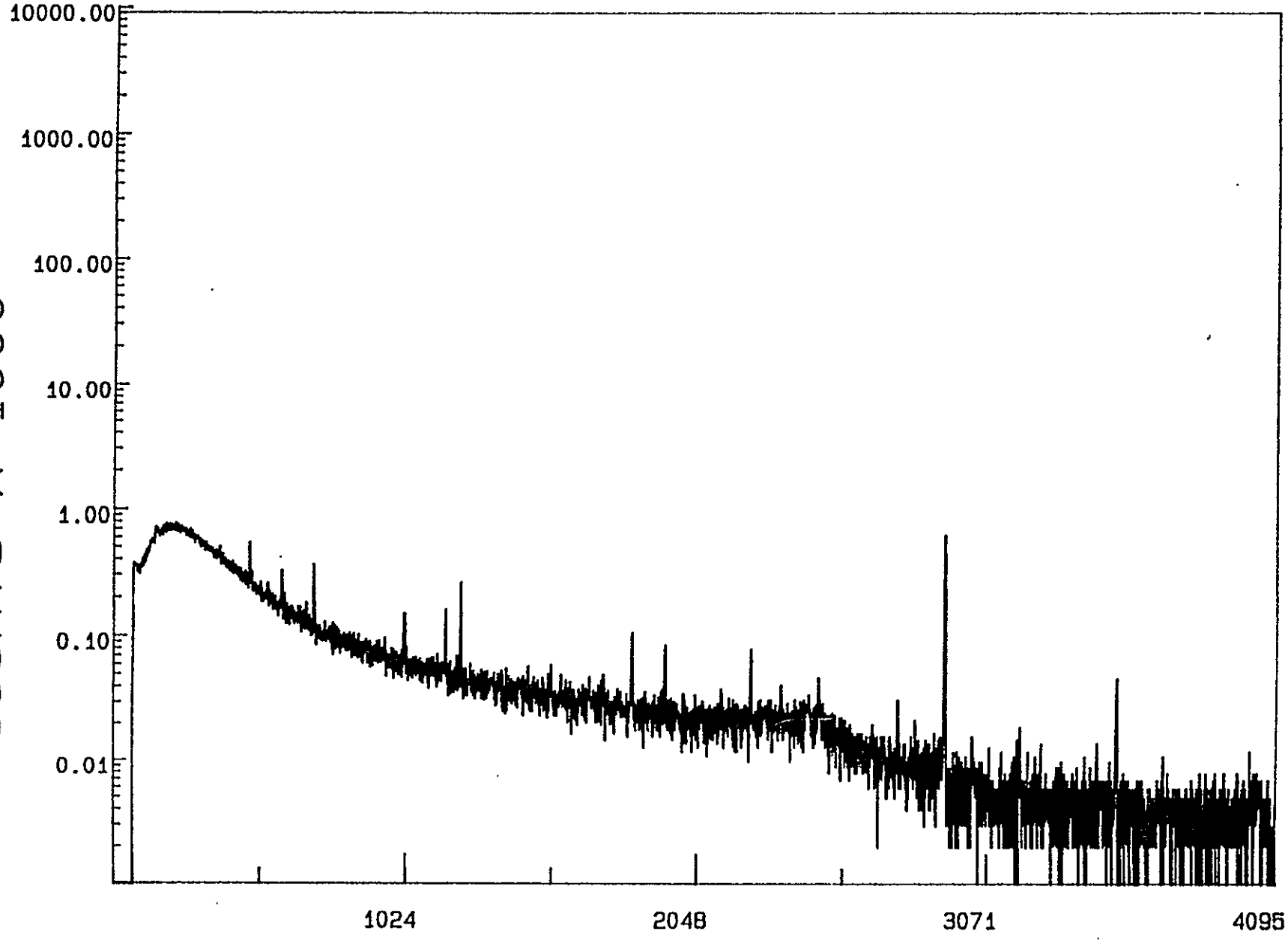
Analytical results for animal samples.

	SAMPLE NUM	ANALYSIS	SYMBOL	RESULT	UNCERTAINTY	UNITS
KANGAROO RATS	87.08317	GSCAN		0.0000	0.0000	
#42 59g	87.08317	MSCAN		no elevated metals observed		
#43 69g	87.08317	RA-226		2.8800	1.0300	PCI/G
ASH WT 6.7g	87.08317	TH		1.3980	0.1400	UG/G
	87.08317	U		1.8890	0.1890	UG/G
PEROMYSCUS	87.08318	GSCAN		0.0000	0.0000	
#9 29g	87.08318	MSCAN		no elevated metals observed		
#17 11.5g	87.08318	RA-226		4.0000	1.9700	PCI/G
#22 21g	87.08318	TH		1.6090	0.1610	UG/G
ASH WT 3.4g	87.08318	U		3.7010	0.3700	UG/G
SUNFISH	87.08319	GSCAN		0.0000	0.0000	
600g WET WT	87.08319	MSCAN		no elevated metals observed		
38g ASH WT	87.08319	RA-226		1.7700	0.4400	PCI/G
	87.08319	TH		0.2490	0.0250	UG/G
	87.08319	U		1.0260	0.1030	UG/G
BULLHEAD	87.08320	GSCAN		0.0000	0.0000	
471g WET WT	87.08320	MSCAN		No elevated metals observed		
14g ASH WT	87.08320	RA-226		2.8100	0.5500	PCI/G
	87.08320	TH		0.2300	0.0230	UG/G
	87.08320	U		5.8040	0.5800	UG/G

The samples were dry ashed at 450 deg C to constant weight, and aliquots were taken for the individual analyses from the ash. The entire animal was ashed for the rats on the assumption that anything that ate a rat would consume all of it. The heads and intestines of the fish were removed on the assumption that people might consume the fish.

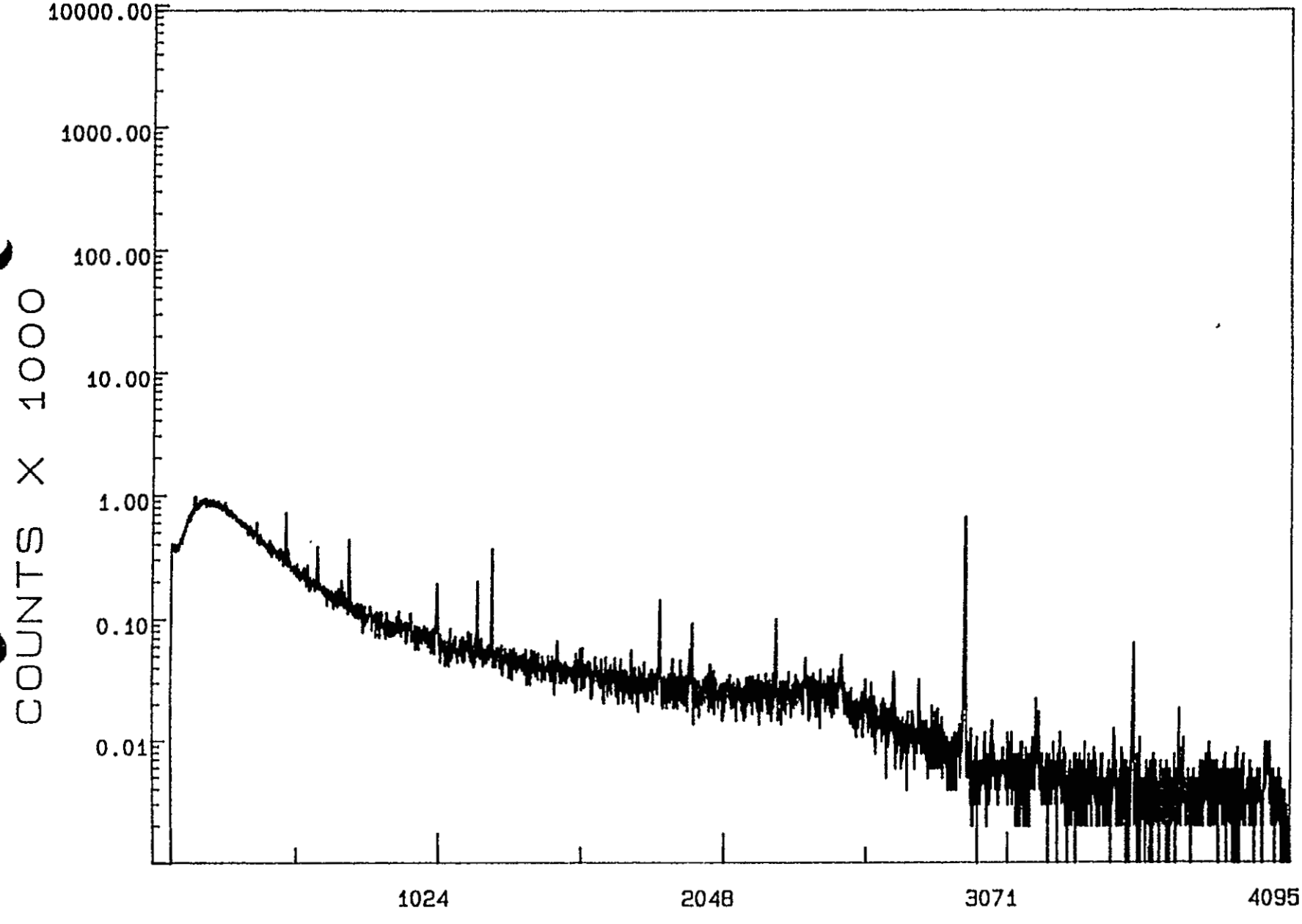
The GSCAN results are attached on separate reports.

TYPE = -1 MCA # 1 SEGMENT # 1
REALTIME = 10029.96 SECONDS, LIVETIME = 10000.00 SECONDS
DATA COLLECTED AT 16:43:00 ON 30-NOV-87



8708317.CHN

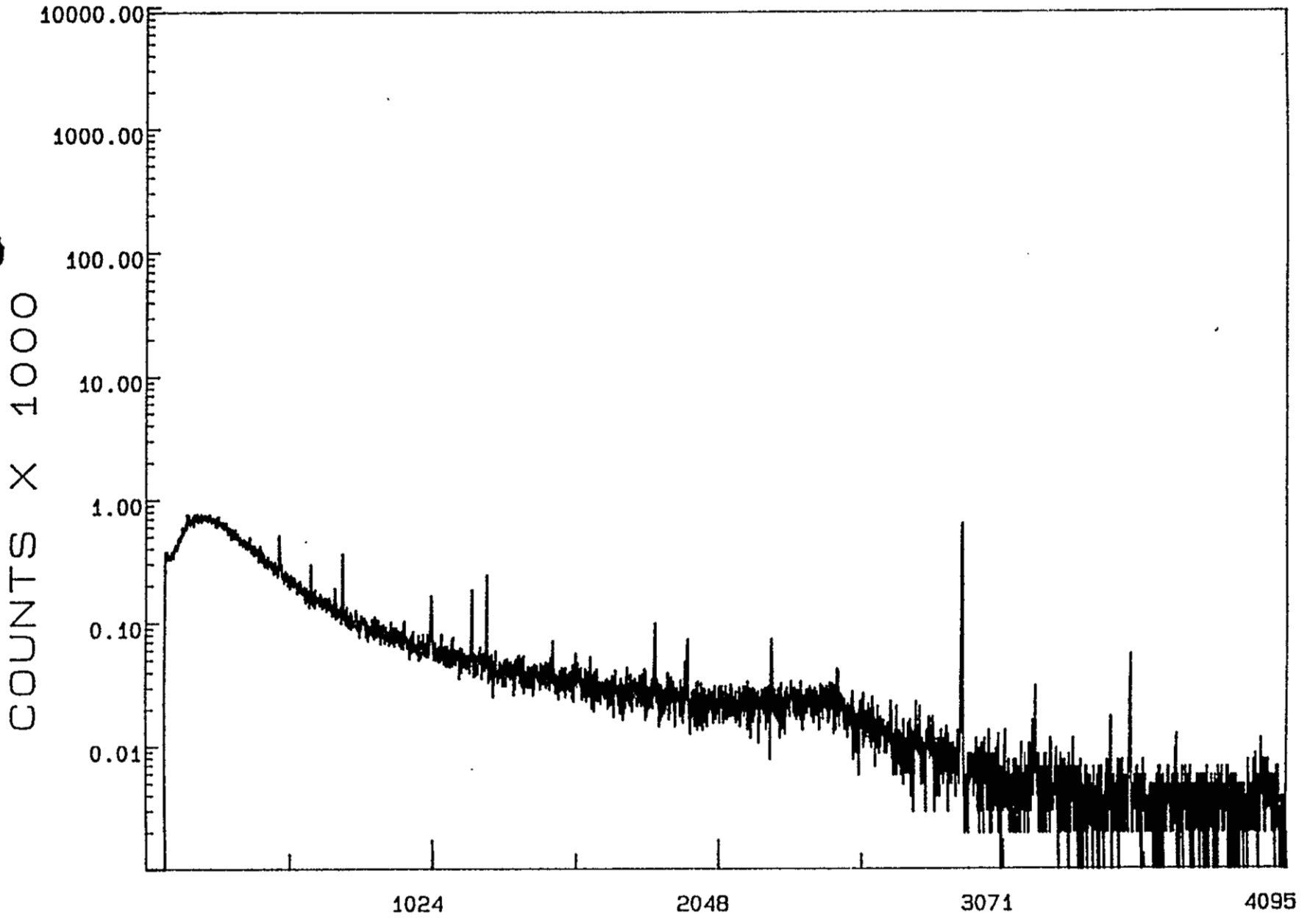
TYPE = -1 MCA # 1 SEGMENT # 2
REALTIME = 10029.96 SECONDS, LIVETIME = 10000.00 SECONDS
DATA COLLECTED AT 16:43:00 ON 30-NOV-87



8708318.CHN

CHANNEL NUMBER

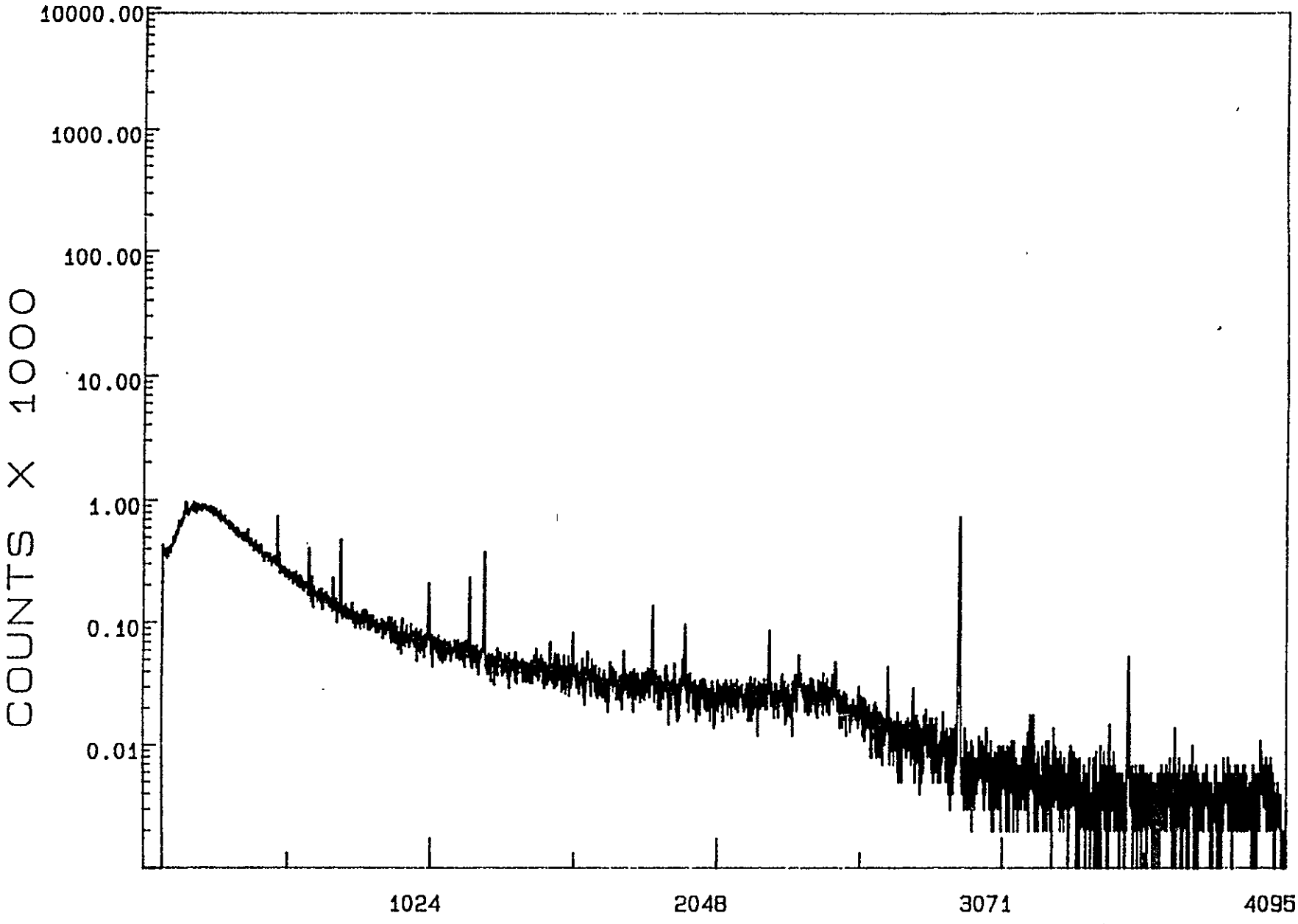
TYPE = -1 MCA # 1 SEGMENT # 1
REALTIME = 10030.24 SECONDS, LIVETIME = 10000.00 SECONDS
DATA COLLECTED AT 08:58:00 ON 01-DEC-87



8708319.CHN

CHANNEL NUMBER

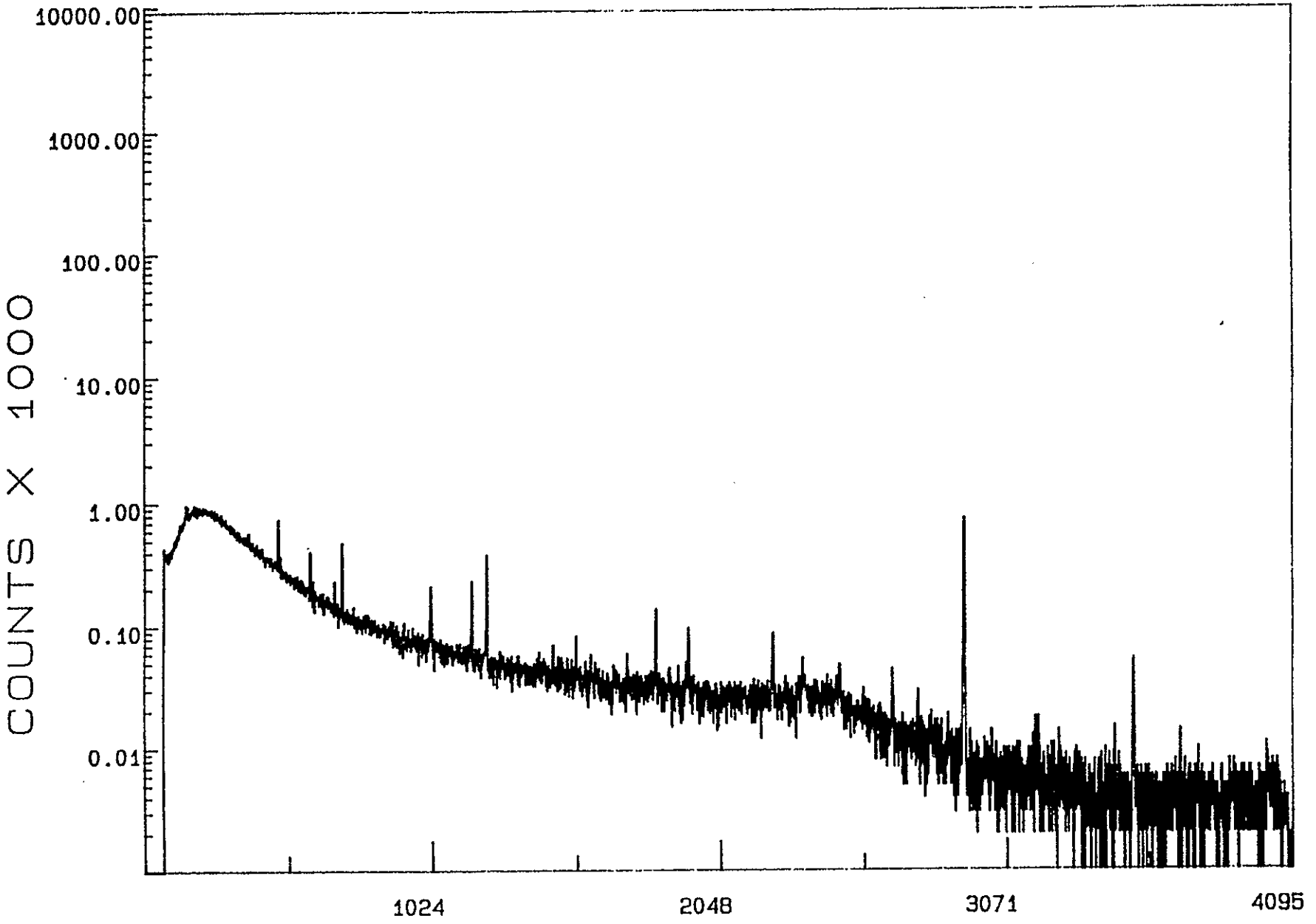
TYPE = -1 MCA # 1 SEGMENT # 2
REALTIME = 10030.24 SECONDS, LIVETIME = 10000.00 SECONDS
DATA COLLECTED AT 08:58:00 ON 01-DEC-87



8708320.CHN

CHANNEL NUMBER

TYPE = -1 MCA # 1 SEGMENT # 2
REALTIME = 10030.24 SECONDS, LIVETIME = 10000.00 SECONDS
DATA COLLECTED AT 08:58:00 ON 01-DEC-87



MCB # 1 ACQ 11-30-87 AT 16:43:02 RI : 10030.0 LT : 10000.0
EG&G ORTEC GEM 20195, DET # 7
[redacted] SPECIAL SAMPLE FOR WDP, 11/30/87

ROI # 1-1 RANGE : 65 = 32.74 keV to 77 = 39.74 keV
AREA : Gross = 3087 Net = 551 +/- 59
CENTROID : 67.77 = 34.12 keV
SHAPE : Fwhm = 1.46 keV Fwtm = 2.75 keV

ID : CR-51 at 33.69 keV
Corrected Net = 551.000 +/- 59.0

ROI # 1-2 RANGE : 471 = 235.63 keV to 489 = 244.62 keV
AREA : Gross = 5941 Net = 917 +/- 109
CENTROID : 476.57 = 238.41 keV
SHAPE : Fwhm = 1.04 keV Fwtm = 2.23 keV

ID : No close library match

ROI # 1-3 RANGE : 584 = 292.09 keV to 596 = 298.09 keV
AREA : Gross = 2650 Net = 446 +/- 55
CENTROID : 590.06 = 295.12 keV
SHAPE : Fwhm = 1.24 keV Fwtm = 2.65 keV

ID : PB-214 at 295.21 keV
Corrected Net = 446.000 +/- 55.0

ROI # 1-4 RANGE : 670 = 335.07 keV to 682 = 341.06 keV
AREA : Gross = 1775 Net = 130 +/- 45
CENTROID : 676.20 = 339.17 keV
SHAPE : Fwhm = 1.02 keV Fwtm = 1.75 keV

ID : Y-91M at 337.00 keV
Corrected Net = 130.000 +/- 45.0

ROI # 1-5 RANGE : 697 = 348.56 keV to 709 = 354.56 keV
AREA : Gross = 2192 Net = 714 +/- 49
CENTROID : 703.45 = 351.78 keV
SHAPE : Fwhm = 1.15 keV Fwtm = 2.37 keV

ID : PB-214 at 351.92 keV
Corrected Net = 714.000 +/- 49.0

ROI # 1-6 RANGE : 1015 = 507.47 keV to 1029 = 514.47 keV
AREA : Gross = 1426 Net = 416 +/- 44
CENTROID : 1021.75 = 510.84 keV
SHAPE : Fwhm = 2.08 keV Fwtm = 3.35 keV

ID : CO-56 at 511.00 keV
Corrected Net = 416.000 +/- 44.0

ROI # 1-7 RANGE : 1159 = 579.43 keV to 1173 = 586.42 keV
AREA : Gross = 1113 Net = 379 +/- 38
CENTROID : 1166.24 = 583.05 keV
SHAPE : Fwhm = 1:48 keV Fwtm = 2.79 keV

ID : KR-89 at 585.80 keV
Corrected Net = 379.000 +/- 38.0

ROI # 1-8 RANGE : 1212 = 605.91 keV to 1226 = 612.91 keV
AREA : Gross = 1391 Net = 649 +/- 42
CENTROID : 1218.59 = 609.21 keV
SHAPE : Fwhm = 1.32 keV Fwtm = 2.48 keV

ID : BI-214 at 609.31 keV
Corrected Net = 649.000 +/- 42.0

ROI # 1-9 RANGE : 1449 = 724.34 keV to 1463 = 731.34 keV
AREA : Gross = 584 Net = 95 +/- 29
CENTROID : 1455.29 = 727.49 keV
SHAPE : Fwhm = 2.06 keV Fwtm = 2.84 keV

ID : ZR-95 at 724.20 keV
Corrected Net = 95.000 +/- 29.0

ROI # 1-10 RANGE : 1815 = 907.24 keV to 1831 = 915.24 keV
AREA : Gross = 774 Net = 347 +/- 34
CENTROID : 1822.68 = 911.08 keV
SHAPE : Fwhm = 1.77 keV Fwtm = 3.80 keV

ID : No closer library match

ROI # 1-11 RANGE : 1931 = 965.21 keV to 1947 = 972.20 keV
AREA : Gross = 598 Net = 193 +/- 31
CENTROID : 1938.58 = 968.99 keV
SHAPE : Fwhm = 1.52 keV Fwtm = 2.52 keV

ID : TB-160 at 966.16 keV
Corrected Net = 193.000 +/- 31.0

ROI # 1-12 RANGE : 2233 = 1116.12 keV to 2249 = 1124.12 keV
AREA : Gross = 537 Net = 233 +/- 28
CENTROID : 2240.93 = 1120.08 keV
SHAPE : Fwhm = 1.77 keV Fwtm = 3.41 keV

ID : BI-214 at 1120.29 keV
Corrected Net = 232.000 +/- 28.0

ROI # 1-13 RANGE : 2468 = 1233.55 keV to 2486 = 1242.55 keV
AREA : Gross = 489 Net = 89 +/- 31
CENTROID : 2476.99 = 1238.05 keV
SHAPE : Fwhm = 1.52 keV Fwtm = 3.01 keV

ID : BI-214 at 1238.11 keV
Corrected Net = 89.000 +/- 31.0

ROI # 1-14 RANGE : 2747 = 1372.97 keV to 2765 = 1381.97 keV
AREA : Gross = 232 Net = 76 +/- 20
CENTROID : 2755.61 = 1377.27 keV
SHAPE : Fwhm = 2.10 keV Fwtm = 3.13 keV

ID : BI-214 at 1377.82 keV
Corrected Net = 76.000 +/- 20.0

ROI # 1-15 RANGE : 2808 = 1403.46 keV to 2826 = 1412.45 keV
AREA : Gross = 195 Net = 25 +/- 20
CENTROID : 2816.81 = 1407.86 keV
SHAPE : Fwhm = 1.34 keV Fwtm = 1.83 keV

ID : EU-152 at 1408.01 keV
Corrected Net = 25.000 +/- 20.0

ROI # 1-16 RANGE : 2914 = 1456.43 keV to 2932 = 1465.42 keV
AREA : Gross = 2697 Net = 2585 +/- 53
CENTROID : 2922.47 = 1460.66 keV
SHAPE : Fwhm = 1.90 keV Fwtm = 3.53 keV

ID : K-40 at 1460.75 keV
Corrected Net = 2585.000 +/- 53.0

ROI # 1-17 RANGE : 3521 = 1759.75 keV to 3541 = 1769.75 keV
AREA : Gross = 294 Net = 248 +/- 19
CENTROID : 3529.69 = 1764.09 keV
SHAPE : Fwhm = 2.37 keV Fwtm = 4.45 keV

ID : BI-214 at 1764.49 keV
Corrected Net = 248.000 +/- 19.0

MCB # 1 ACQ 11-30-87 AT 16:43:02 RT : 10030.0 LT : 10000.0
EG&G ORTEC GEM 23210, DET # 8
[redacted], SPECIAL SAMPLE FOR WDP, 11/30/87

ROI # 2-1 RANGE : 66 = 33.03 keV to 76 = 38.02 keV
AREA : Gross = 2908 Net = 606 +/- 50
CENTROID : 59.07 = 29.56 keV
SHAPE : Fwhm = -6.55 keV Fwtm = 1.41 keV

ID : No close library match

ROI # 2-2 RANGE : 144 = 72.02 keV to 156 = 78.02 keV
AREA : Gross = 11208 Net = -67 +/- 114
CENTROID : 149.97 = 75.00 keV
SHAPE : Fwhm = 0.57 keV Fwtm = 1.04 keV

ID : No close library match

ROI # 2-3 RANGE : 366 = 183.00 keV to 378 = 189.99 keV
AREA : Gross = 6542 Net = 136 +/- 87
CENTROID : 371.72 = 185.86 keV
SHAPE : Fwhm = 0.50 keV Fwtm = 1.23 keV

ID : U-235 at 185.71 keV
Corrected Net = 136.000 +/- 87.0

ROI # 2-4 RANGE : 471 = 235.49 keV to 489 = 244.48 keV
AREA : Gross = 7011 Net = 966 +/- 119
CENTROID : 477.04 = 238.50 keV
SHAPE : Fwhm = 1.04 keV Fwtm = 1.77 keV

ID : No close library match

ROI # 2-5 RANGE : 584 = 291.97 keV to 596 = 297.97 keV
AREA : Gross = 2969 Net = 501 +/- 58
CENTROID : 590.24 = 295.09 keV
SHAPE : Fwhm = 1:16 keV Fwtm = 2.48 keV

ID : PB-214 at 295.21 keV
Corrected Net = 501.000 +/- 58.0

ROI # 2-6 RANGE : 670 = 334.97 keV to 682 = 340.96 keV
AREA : Gross = 2059 Net = 147 +/- 49
CENTROID : 676.54 = 338.24 keV
SHAPE : Fwhm = 1.11 keV Fwtm = 1.90 keV

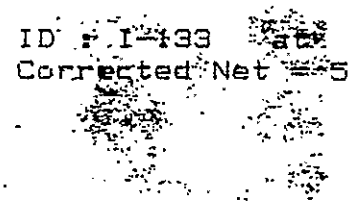
ID : Y-91M at 337.00 keV
Corrected Net = 147.000 +/- 49.0

ROI # 2-7 RANGE : 698 = 348.96 keV to 710 = 354.96 keV
AREA : Gross = 2580 Net = 914 +/- 53
CENTROID : 703.57 = 351.75 keV
SHAPE : Fwhm = 1.16 keV Fwtm = 2.41 keV

ID : PB-214 at 351.92 keV
Corrected Net = 914.000 +/- 53.0

ROI # 2-9 RANGE : 1014 = 506.93 keV to 1028 = 513.93 keV
AREA : Gross = 1554 Net = 500 +/- 46
CENTROID : 1021.04 = 510.45 keV
SHAPE : Fwhm = 1.80 keV Fwtm = 4.50 keV

ID : I-133 at 510.57 keV
Corrected Net = 500.000 +/- 46.0



ROI # 2-9 RANGE : 1159 = 579.42 keV to 1173 = 586.42 keV
AREA : Gross = 1313 Net = 440 +/- 42
CENTROID : 1165.79 = 582.81 keV
SHAPE : Fwhm = 1.40 keV Fwtm = 2.47 keV

ID : PB-214 at 580.15 keV
Corrected Net = 440.000 +/- 42.0

ROI # 2-10 RANGE : 1211 = 605.41 keV to 1225 = 612.41 keV
AREA : Gross = 1661 Net = 910 +/- 45
CENTROID : 1218.05 = 608.93 keV
SHAPE : Fwhm = 1.32 keV Fwtm = 2.55 keV

ID : BI-214 at 609.31 keV
Corrected Net = 910.000 +/- 45.0

ROI # 2-11 RANGE : 1712 = 855.86 keV to 1728 = 863.86 keV
AREA : Gross = 557 Net = 82 +/- 31
CENTROID : 1719.98 = 859.85 keV
SHAPE : Fwhm = 1.43 keV Fwtm = 2.99 keV

ID : ZR-95 at 857.00 keV
Corrected Net = 82.000 +/- 31.0

ROI # 2-12 RANGE : 1813 = 906.35 keV to 1829 = 914.35 keV
AREA : Gross = 885 Net = 367 +/- 36
CENTROID : 1821.28 = 910.49 keV
SHAPE : Fwhm = 1.74 keV Fwtm = 2.84 keV

ID : No close library match

ROI # 2-13 RANGE : 1929 = 964.34 keV to 1945 = 972.34 keV
AREA : Gross = 692 Net = 175 +/- 34
CENTROID : 1936.79 = 968.23 keV
SHAPE : Fwhm = 1.47 keV Fwtm = 2.60 keV

ID : TB-160 at 966.16 keV
Corrected Net = 175.000 +/- 34.0

ROI # 2-14 RANGE : 2230 = 1114.81 keV to 2248 = 1123.81 keV
AREA : Gross = 738 Net = 297 +/- 35
CENTROID : 2239.21 = 1119.42 keV
SHAPE : Fwhm = 1.76 keV Fwtm = 3.55 keV

ID : BI-214 at 1120.29 keV
Corrected Net = 297.000 +/- 35.0

ROI # 2-15 RANGE : 2653 = 1326.27 keV to 2671 = 1335.27 keV
AREA : Gross = 353 Net = 59 +/- 26
CENTROID : 2662.42 = 1330.98 keV
SHAPE : Fwhm = 2.22 keV Fwtm = 3.00 keV

ID : CO-60 at 1332.50 keV
Corrected Net = 59.000 +/- 26.0

ROI # 2-16 RANGE : 2743 = 1371.26 keV to 2763 = 1381.26 keV
AREA : Gross = 274 Net = 89 +/- 23
CENTROID : 2753.18 = 1376.35 keV
SHAPE : Fwhm = 1.37 keV Fwtm = 4.55 keV

ID : BI-214 at 1377.82 keV
Corrected Net = 89.000 +/- 23.0

ROI # 2-17 RANGE : 2910 = 1454.74 keV to 2930 = 1464.74 keV
AREA : Gross = 3436 Net = 3225 +/- 61
CENTROID : 2919.43 = 1459.46 keV
SHAPE : Fwhm = 2.22 keV Fwtm = 3.93 keV

ID : K-40 at 1460.75 keV
Corrected Net = 3225.000 +/- 61.0

ROI # 2-18 RANGE : 3164 = 1581.72 keV to 3184 = 1591.72 keV
AREA : Gross = 206 Net = -15 +/- 23
Could not properly fit the peak.

ROI # 2-19 RANGE : 3514 = 1756.68 keV to 3536 = 1767.68 keV
AREA : Gross = 369 Net = 270 +/- 23
CENTROID : 3525.66 = 1762.51 keV
SHAPE : Fwhm = 2.33 keV Fwtm = 4.48 keV

ID : BI-214 at 1764.49 keV
Corrected Net = 270.000 +/- 23.0

MCB # 1 ACQ 12-01-87 AT 08:58:20 RT : 10030.2 LT : 10000.0
EG&G ORTEC GEM 20185, DET # 7
[redacted] SPECIAL SAMPLE FOR WDP, 12/01/87

ROI # 1-1 RANGE : 65 = 32.74 keV to 77 = 38.74 keV
AREA : Gross = 3028 Net = 428 +/- 59
CENTROID : 69.48 = 34.98 keV
SHAPE : Fwhm = 1.21 keV Fwtm = 2.59 keV

ID : SB-125 at 35.50 keV
Corrected Net = 428.000 +/- 59.0

ROI # 1-2 RANGE : 471 = 235.63 keV to 483 = 241.62 keV
AREA : Gross = 4334 Net = 644 +/- 70
CENTROID : 476.56 = 238.40 keV
SHAPE : Fwhm = 1.14 keV Fwtm = 2.18 keV

ID : No close library match

ROI # 1-3 RANGE : 584 = 292.09 keV to 596 = 298.09 keV
AREA : Gross = 2440 Net = 452 +/- 53
CENTROID : 590.07 = 295.12 keV
SHAPE : Fwhm = 1.42 keV Fwtm = 3.19 keV

ID : PB-214 at 295.21 keV
Corrected Net = 452.000 +/- 53.0

ROI # 1-4 RANGE : 670 = 335.07 keV to 682 = 341.06 keV
AREA : Gross = 1899 Net = 123 +/- 47
CENTROID : 676.29 = 338.20 keV
SHAPE : Fwhm = 1.14 keV Fwtm = 2.25 keV

ID : Y-91M at 337.00 keV
Corrected Net = 123.000 +/- 47.0

ROI # 1-5 RANGE : 698 = 349.06 keV to 710 = 355.06 keV
AREA : Gross = 2191 Net = 667 +/- 49
CENTROID : 703.57 = 351.84 keV
SHAPE : Fwhm = 1.05 keV Fwtm = 2.34 keV

ID : PB-214 at 351.92 keV
Corrected Net = 667.000 +/- 49.0

ROI # 1-6 RANGE : 1015 = 507.47 keV to 1029 = 514.47 keV
AREA : Gross = 1415 Net = 414 +/- 44
CENTROID : 1022.02 = 510.98 keV
SHAPE : Fwhm = 1.63 keV Fwtm = 2.92 keV

ID : CO-56 at 511.00 keV
Corrected Net = 414.000 +/- 44.0

ROI # 1-7 RANGE : 1159 = 579.43 keV to 1173 = 586.42 keV
AREA : Gross = 1155 Net = 460 +/- 39
CENTROID : 1166.35 = 583.10 keV
SHAPE : Fwhm = 1:31 keV Fwtm = 2.83 keV

ID : No close library match

ROI # 1-8 RANGE : 1212 = 605.91 keV to 1226 = 612.91 keV
AREA : Gross = 1349 Net = 646 +/- 41
CENTROID : 1218.59 = 609.21 keV
SHAPE : Fwhm = 1.28 keV Fwtm = 2.45 keV

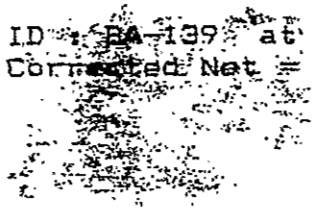
ID : BI-214 at 609.31 keV
Corrected Net = 646.000 +/- 41.0

ROI # 1-9 RANGE : 1447 = 723.35 keV to 1461 = 730.34 keV
AREA : Gross = 639 Net = 98 +/- 30
CENTROID : 1454.62 = 727.15 keV
SHAPE : Fwhm = 1.39 keV Fwtm = 2.42 keV

ID : No close library match

ROI # 1-10 RANGE : 1582 = 790.81 keV to 1598 = 798.80 keV
AREA : Gross = 586 Net = 29 +/- 32
CENTROID : 1589.97 = 794.79 keV
SHAPE : Fwhm = 1.19 keV Fwtm = 1.90 keV

ID : BA-139 at 795.50 keV
Corrected Net = 29.000 +/- 32.0



ROI # 1-11 RANGE : 1815 = 907.24 keV to 1831 = 915.24 keV
AREA : Gross = 748 Net = 293 +/- 34
CENTROID : 1822.88 = 911.18 keV
SHAPE : Fwhm = 1.76 keV Fwtm = 3.58 keV

ID : No close library match

ROI # 1-12 RANGE : 1931 = 965.21 keV to 1947 = 973.20 keV
AREA : Gross = 573 Net = 177 +/- 30
CENTROID : 1938.36 = 968.88 keV
SHAPE : Fwhm = 1.62 keV Fwtm = 2.68 keV

ID : TB-160 at 966.16 keV
Corrected Net = 177.000 +/- 30.0

ROI # 1-13 RANGE : 2233 = 1116.12 keV to 2249 = 1124.12 keV
AREA : Gross = 578 Net = 243 +/- 29
CENTROID : 2241.45 = 1120.35 keV
SHAPE : Fwhm = 2.43 keV Fwtm = 4.43 keV

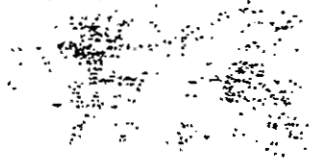
ID : BI-214 at 1120.29 keV
Corrected Net = 243.000 +/- 29.0

ROI # 1-14 RANGE : 2914 = 1456.43 keV to 2932 = 1465.42 keV
AREA : Gross = 2919 Net = 2786 +/- 55
CENTROID : 2922.44 = 1460.64 keV
SHAPE : Fwhm = 1.98 keV Fwtm = 3.64 keV

ID : K-40 at 1460.75 keV
Corrected Net = 2786.000 +/- 55.0

ROI # 1-15 RANGE : 3177 = 1587.85 keV to 3195 = 1596.84 keV
AREA : Gross = 182 Net = 36 +/- 19
CENTROID : 3185.76 = 1592.23 keV
SHAPE : Fwhm = 1.03 keV Fwtm = 2.18 keV

ID : No close library match



ROI # 1-16 RANGE : 3520 = 1759.25 keV to 3540 = 1769.25 keV
AREA : Gross = 293 Net = 249 +/- 19
CENTROID : 3529.95 = 1764.22 keV
SHAPE : Fwhm = 1.99 keV Fwtm = 3.90 keV

ID : BI-214 at 1764.49 keV
Corrected Net = 249.000 +/- 19.0

MCB # 1 ACQ 12-01-87 AT 08:58:20 RT : 10030.2 LT : 10000.0
EG&G ORTEC GEM 23210, DET # 8
[redacted], SPECIAL SAMPLE FOR WDP, 12/01/87

ROI # 2-1 RANGE : 66 = 33.03 keV to 76 = 38.02 keV
AREA : Gross = 2914 Net = 751 +/- 51
CENTROID : 64.50 = 32.27 keV
SHAPE : Fwhm = 0.17 keV Fwtm = 2.17 keV

ID : CS-137 at 32.19 keV
Corrected Net = 751.000 +/- 51.0

ROI # 2-2 RANGE : 144 = 72.02 keV to 156 = 78.02 keV
AREA : Gross = 11393 Net = 131 +/- 115
CENTROID : 150.24 = 75.14 keV
SHAPE : Fwhm = 0.82 keV Fwtm = 1.36 keV

ID : No close library match

ROI # 2-3 RANGE : 366 = 183.00 keV to 378 = 188.99 keV
AREA : Gross = 6586 Net = 265 +/- 87
CENTROID : 371.56 = 185.77 keV
SHAPE : Fwhm = 1.17 keV Fwtm = 1.79 keV

ID : U-235 at 185.71 keV
Corrected Net = 265.000 +/- 87.0

ROI # 2-4 RANGE : 471 = 235.49 keV to 490 = 244.98 keV
AREA : Gross = 7308 Net = 1204 +/- 124
CENTROID : 477.10 = 238.54 keV
SHAPE : Fwhm = 0.99 keV Fwtm = 1.91 keV

ID : No close library match

ROI # 2-5 RANGE : 584 = 291.97 keV to 596 = 297.97 keV
AREA : Gross = 3164 Net = 483 +/- 60
CENTROID : 590.12 = 295.03 keV
SHAPE : Fwhm = 0.91 keV Fwtm = 1.99 keV

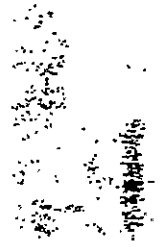
ID : PB-214 at 295.21 keV
Corrected Net = 483.000 +/- 60.0

ROI # 2-6 RANGE : 671 = 335.47 keV to 683 = 341.46 keV
AREA : Gross = 2096 Net = 186 +/- 49
CENTROID : 676.82 = 338.38 keV
SHAPE : Fwhm = 0.78 keV Fwtm = 1.65 keV

ID : CO-57 at 339.68 keV
Corrected Net = 186.000 +/- 49.0

ROI # 2-7 RANGE : 698 = 348.96 keV to 710 = 354.96 keV
AREA : Gross = 2595 Net = 940 +/- 54
CENTROID : 703.46 = 351.69 keV
SHAPE : Fwhm = 1.08 keV Fwtm = 2.22 keV

ID : PB-214 at 351.92 keV
Corrected Net = 940.000 +/- 54.0

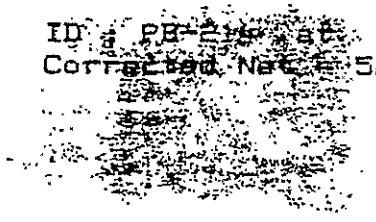


ROI # 2-8' RANGE : 1014 = 506.93 keV to 1028 = 513.93 keV
AREA : Gross = 1590 Net = 553 +/- 46
CENTROID : 1021.00 = 510.43 keV
SHAPE : Fwhm = 2.23 keV Fwtm = 4.51 keV

ID : I-133 at 510.57 keV
Corrected Net = 553.000 +/- 46.0

ROI # 2-9 RANGE : 1159 = 579.42 keV to 1173 = 586.42 keV
AREA : Gross = 1296 Net = 520 +/- 41
CENTROID : 1165.80 = 582.82 keV
SHAPE : Fwhm = 1.37 keV Fwtm = 2.62 keV

ID : PB-214 at 580.15 keV
Corrected Net = 520.000 +/- 41.0



ROI # 2-10 RANGE : 1211 = 605.41 keV to 1225 = 612.41 keV
AREA : Gross = 1774 Net = 988 +/- 47
CENTROID : 1218.14 = 608.98 keV
SHAPE : Fwhm = 1.39 keV Fwtm = 2.79 keV

ID : BI-214 at 609.31 keV
Corrected Net = 988.000 +/- 47.0

ROI # 2-11 RANGE : 1446 = 722.89 keV to 1462 = 730.89 keV
AREA : Gross = 766 Net = 97 +/- 36
CENTROID : 1453.89 = 726.83 keV
SHAPE : Fwhm = 1.44 keV Fwtm = 2.49 keV

ID : ZR-95 at 724.20 keV
Corrected Net = 97.000 +/- 36.0

ROI # 2-12 RANGE : 1528 = 763.88 keV to 1544 = 771.88 keV
AREA : Gross = 738 Net = 90 +/- 36
CENTROID : 1535.91 = 767.83 keV
SHAPE : Fwhm = 0.89 keV Fwtm = 2.11 keV

ID : BI-214 at 768.36 keV
Corrected Net = 90.000 +/- 36.0

ROI # 2-13 RANGE : 1813 = 906.35 keV to 1829 = 914.35 keV
AREA : Gross = 898 Net = 388 +/- 36
CENTROID : 1821.36 = 910.53 keV
SHAPE : Fwhm = 1.59 keV Fwtm = 2.69 keV

ID : No close library match

ROI # 2-14 RANGE : 1929 = 963.84 keV to 1944 = 971.84 keV
AREA : Gross = 819 Net = 189 +/- 37
CENTROID : 1936.82 = 968.25 keV
SHAPE : Fwhm = 1.60 keV Fwtm = 2.87 keV

ID : TB-160 at 966.16 keV
Corrected Net = 189.000 +/- 37.0

ROI # 2-15 RANGE : 2230 = 1114.81 keV to 2248 = 1123.91 keV
AREA : Gross = 747 Net = 261 +/- 36
CENTROID : 2239.03 = 1119.32 keV
SHAPE : Fwhm = 1.83 keV Fwtm = 3.84 keV

ID : BI-214 at 1120.29 keV
Corrected Net = 261.000 +/- 36.0

ROI # 2-16 RANGE : 2653 = 1326.27 keV to 2671 = 1335.27 keV
AREA : Gross = 323 Net = 96 +/- 24
CENTROID : 2662.42 = 1330.98 keV
SHAPE : Fwhm = 1.46 keV Fwtm = 4.01 keV

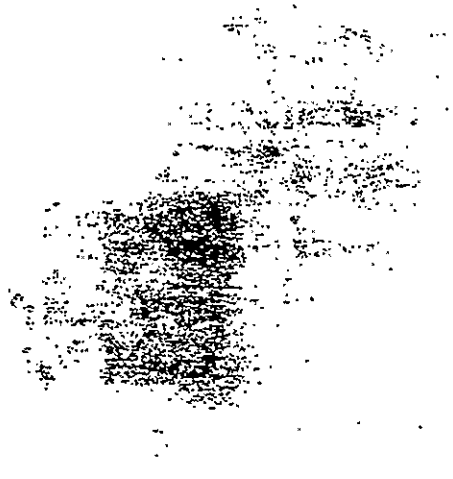
ID : CO-60 at 1332.50 keV
Corrected Net = 96.000 +/- 24.0

ROI # 2-17 RANGE : 2909 = 1454.24 keV to 2929 = 1464.24 keV
AREA : Gross = 3782 Net = 3651 +/- 63
CENTROID : 2919.39 = 1459.44 keV
SHAPE : Fwhm = 2.14 keV Fwtm = 4.03 keV

ID : K-40 at 1460.75 keV
Corrected Net = 3651.000 +/- 63.0

ROI # 2-18 RANGE : 3515 = 1757.18 keV to 3537 = 1768.18 keV
AREA : Gross = 327 Net = 275 +/- 21
CENTROID : 3525.39 = 1762.38 keV
SHAPE : Fwhm = 2.34 keV Fwtm = 4.63 keV

ID : BI-214 at 1764.49 keV
Corrected Net = 275.000 +/- 21.0



Data Source 2. Report dated September 14, 1987 from J. Margo Metzger-Keele, Ph.D., Program Manager, Surveillance and Monitoring Section, New Mexico Health and Environment Department to Robert Salter, Bureau Chief, Abandoned Mine Land Program, Energy and Minerals Department, Mining and Minerals Division.

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

ENVIRONMENTAL IMPROVEMENT DIVISION

Michael J. Burkhart
Director

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

New File
La Bajada Mine

September 14, 1987

Mr. Robert Salter, Bureau Chief
Abandoned Mine Land Program
Energy & Minerals Department
Mining & Minerals Division
525 Camino de los Marquez
Santa Fe, NM 87501

Dear Mr. Salter:

Enclosed is our report of the more detailed survey of the La Bajada Mine which we performed this summer. This supplements the first report which we sent to you in May 1987.

In this detailed survey the measurements of surface radiation were made at 30 ft. intervals over the entire area. The areas which require remediation by the addition of soil cover are designated by isoresponse lines outlined in red. We have calculated the amount of soil cover necessary to reduce the highest radiation reading to acceptable levels, which is 40 cm. From the map you can see that not all areas require that much soil cover. However, since soil must be moved around with a bulldozer, a method which limits the ability to graduate soil depth, we recommend from a practical standpoint and as a compromise that the entire area outlined in red be covered with 20-40 cm. soil cover.

If you have further questions, please contact me at 827-2957.

Sincerely,

J. Margo Metzger-Keele

J. Margo Metzger-Keele, Ph.D.
Program Manager
Surveillance and Monitoring Section

Enclosure: "Radiologic Survey of La Bajada Mine: Part II"

cc: Michael F. Brown, Chief, Radiation Protection Bureau
Peter W. Karp, District Ranger, Espanola Ranger Station
Tito Madrid, District I Manager, EID

RADIOLOGICAL SURVEY OF THE LA BAJADA MINE

NEW MEXICO RADIATION PROTECTION BUREAU
AUGUST 1987

The La Bajada Mine (a.k.a. The Lone Star Mine) is located in the Santa Fe River Canyon, approximately 2½ miles upstream of the small village of La Bajada. The workings consisted of a small pit just north of the river. This pit is now flooded; the area of the resulting pond is about one acre. Dumps and other disturbed areas stretch along the river both east and west of the pit. The total disturbed area is estimated to be 15 acres.

Limited reclamation work has been done by the Forest Service, which is the land manager. Their work has consisted largely of grading selected portions of spoil and ore piles in order to bury radioactive material emitting more than 70 microroentgens per hour (uR/h).

In December 1986, the Radiation Protection Bureau performed a preliminary gamma radiation survey of the site. In addition, soil and water samples were taken and analyzed for the uranium decay series. The finding showed that there were areas with radiation levels up to 300 uR/h (120 uR/h at spots where the Forest Service regraded the area).

Based on these results, the Bureau made four recommendations, the first of which read "Prior to any more reclamation attempts, a more detailed radiation survey should be performed". Therefore, the Radiation Protection Bureau performed a more detailed gamma radiation survey during July 1987.

METHODS

A 30 foot by 30 foot grid was laid out over the entire site, using a transit and 300 foot tape measure. A 30 second integrated gamma radiation measurement was

then taken at a height of one meter, at each grid line intersection, using an Eberline ESP-2 with an attached HP-270 G-M probe. An Eberline PRM-7 micro-R meter was used to double check some of the ESP-2 measurements. Background measurements were made approximately a quarter mile away from the site, in an area of undisturbed soil.

RESULTS

The results of the survey have been plotted on a map (Figure 1). Background values have been subtracted, so that the figures shown are due solely to the contaminated soil. It is plain to see that the readings were elevated, although not greatly. Only a few of the readings were over 100 uR/h. The highest reading was 330 uR/h, at a localized hot spot between grid lines. There were some readings in the regraded areas that were above the original target value of 70 uR/h.

Eight background gamma measurements taken to the west of the site had an average reading of 13 uR/h. This is very typical of New Mexico.

RECOMMENDATIONS

As far as we know, there are no legal radiological standards that would apply to the gamma radiation emitted at the La Bajada Mine. However, Section 4-150 of the New Mexico Radiation Protection Regulations state that licensees and registrants should not possess, use, or transfer sources of radioactivity in unrestricted areas in such a way that any individual would receive a whole-body dose exceeding 0.5 rem per year. If we assume a person standing upright for 24 hours a day, 365 days per year, and if we assume that the ground on which he is standing is the source of exposure, the exposure rate from the ground corresponding to the 0.5 rem/y dose would be approximately 57 uR/h. (This value corresponds to 44 uR/h on the map, because a background value of 13 uR/h has been subtracted. Isoresponse lines at this level have been drawn on Figure 1.)

These values, while admittedly conservative and somewhat arbitrary, could nevertheless serve as a goal below which to reduce gamma radiation on the mine site.

We therefore recommend that reclamation activity refer to the gamma levels mapped out by this survey and proceed in a manner that will assure that all areas are covered to a depth sufficient to reduce gamma radiation levels to or below 57 uR/h at a height of one meter. The highest recorded measurement of 330 uR/h will require a soil cover depth of at least 40 cm. Other areas with a lesser radiation value will require less soil cover. Measures should be taken to prevent erosion, specifically, on the 3:1 slope graded by the Forest Service located west of the pit and a large gully east of the pit.

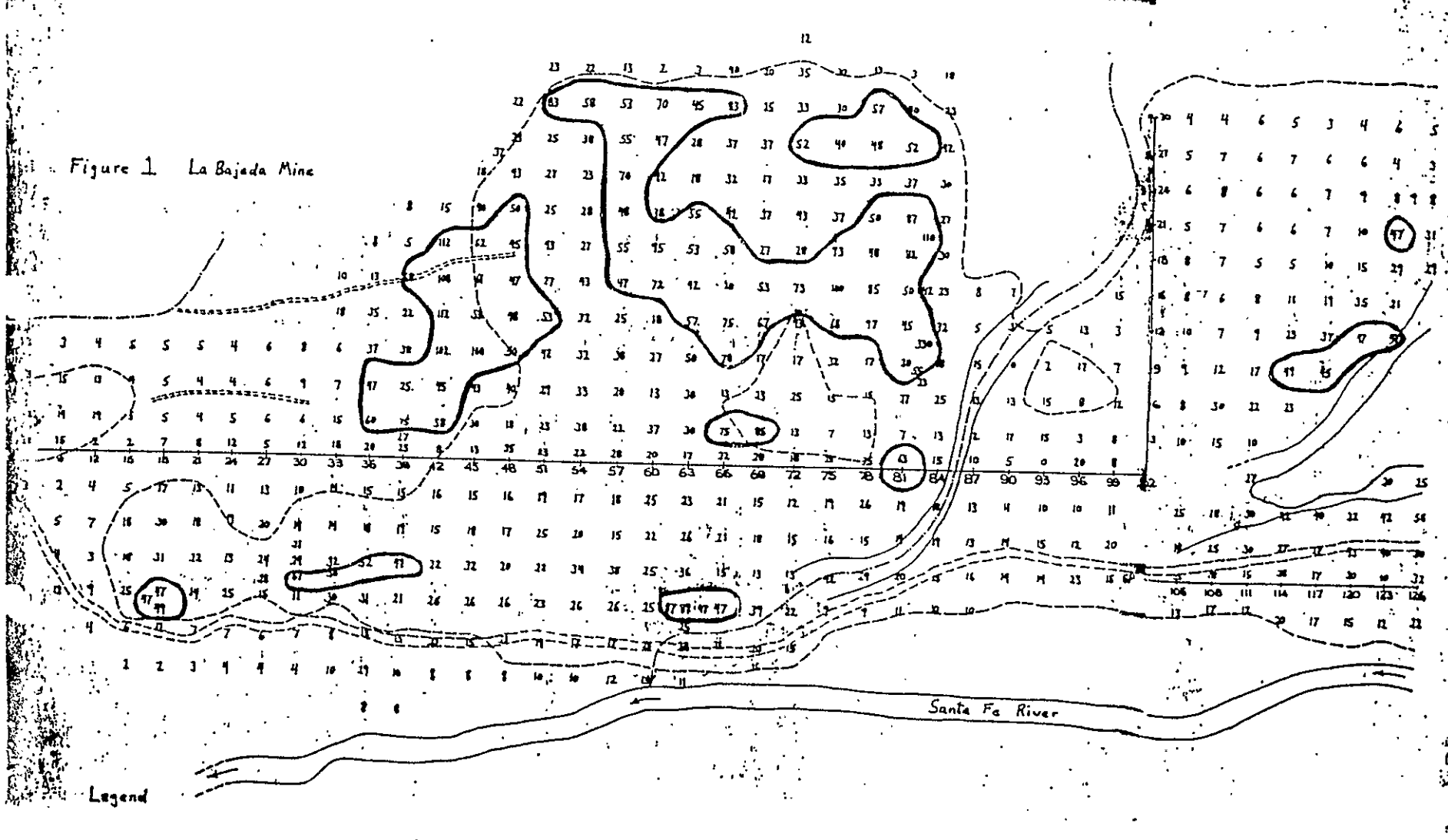
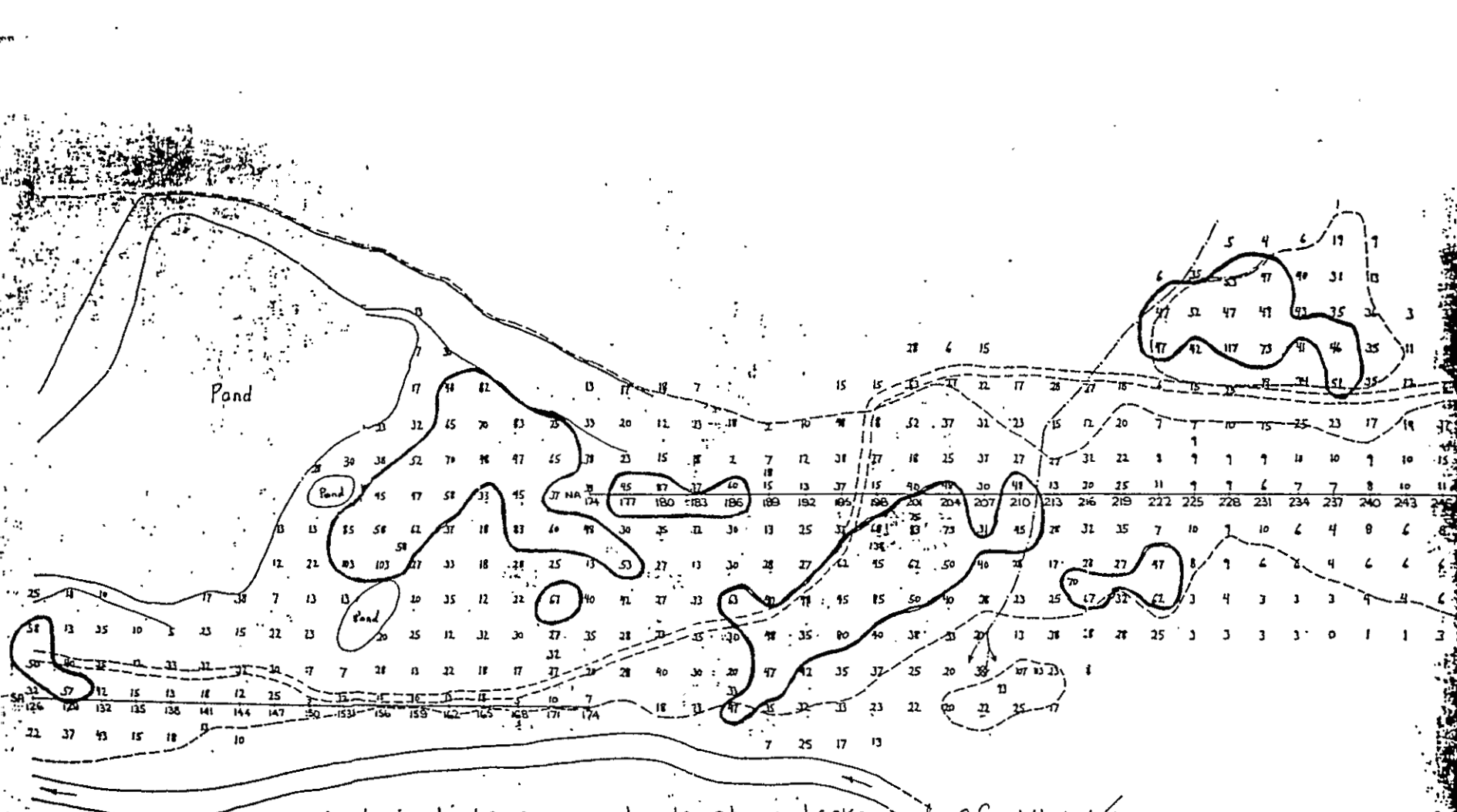


Figure 1 La Bajada Mine



Numbers indicate gamma levels above background of 14 μr/hr

* Elevated readings were recorded over a 15 acre area
Heavy lines indicate areas of highest gamma levels

Data Source 3. Report dated May 29, 1987 from J. Margo Metzger-Keele, Ph.D., Program Manager, Surveillance and Monitoring Section, New Mexico Health and Environment Department to Robert Salter, Bureau Chief, Abandoned Mine Land Program, Energy and Minerals Department, Mining and Minerals Division.

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

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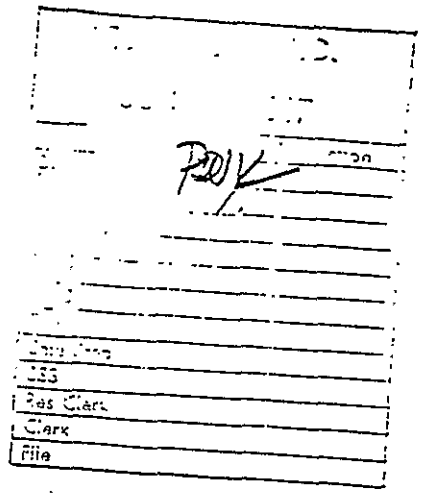
RADIATION PROTECTION BUREAU
(505) 827-2957

GARREY CARRUTHERS
Governor
LARRY GORDON
Secretary
CARLA L. MUTH
Deputy Secretary

May 29, 1987



Mr. Robert Salter, Bureau Chief
Abandoned Mine Land Program
Energy & Minerals Department
Mining and Minerals Division
525 Camino de los Marquez
Santa Fe, NM 87501

Dear Mr. Salter:

Enclosed is our report titled "Radiologic Survey of the La Bajada Mine". We have made an effort to include in this report all other analyses for radioactive constituents in either soil or water surrounding this abandoned mine. Included are reports of 1) a gamma radiation survey performed by the Radiation Protection Bureau in December 1986; 2) water analysis of the mine pit, Santa Fe river, and "spring" (infiltration gallery) sampled in 1978-79; 3) mine pit water ("pond") analysis in March 1987, performed by Groundwater Section, EID; and 4) analysis of drinking water samples collected by District I, EID. On the basis of these reports, we have made recommendations primarily for the benefit of the Espanola Ranger Station staff who plan further reclamation of the area beginning this spring or summer.

If you have further questions, please contact me at 827-2957, or Alan Hall at 827-294.

Sincerely,

J. Margo Keele

J. Margo Keele, Ph.D.
Program Manager
Surveillance and Monitoring Section

MK/mp

Enclosure 1) "Radiologic Survey of La Bajada Mine", RPB/EID
2) SLD Analytical Report: Water Samples, La Bajada Mine (GroundWater/Hazardous Waste Bureau/EID)
3) SLD Analytical Report: La Bajada/Domingo Drinking Water Samples (EID Field Office-Bernalillo)

cc: Michael F. Brown, Bureau Chief, Radiation Protection Bureau
Peter W. Karp, District Ranger, Espanola Ranger Station
Tito Madrid, District I Manager, EID

RADI OGICAL SURVEY OF THE LA BAJADA INE

69

New Mexico Radiation Protection Bureau
May 26, 1987

The La Bajada Mine (a.k.a. The Lone Star Mine) is located in the Santa Fe River Canyon, approximately 2½ miles upstream of the small village of La Bajada. The workings consisted of a small open pit just north of the river. This pit is now flooded; the area of the resulting pond is about one acre. Dumps and other disturbed areas stretch along the river both east and west of the pit. The total disturbed area is very roughly estimated to be 15 acres.

Limited reclamation work has been done by the Forest Service, which is the land manager. Their work has consisted largely of grading selected portions of spoil and ore piles in order to bury radioactive material emitting more than 70 microroentgens (uR) per hour. These graded areas are shown on the attached sketch of the mine area (Figure 1).

The Radiation Protection Bureau performed a survey of the gamma radiation of the surface soil of the La Bajada Mine area in December 1986 at the request of Robert Salter, Abandoned Mine Land Bureau. Subsequent to that time, Mr. Toby Mora, a La Bajada resident, requested testing of the drinking water supply at La Bajada Village as well as the water in the Santa Fe River, since the latter is used for irrigation of crops. He claims to have lost a real estate sale due to the proximity of his property to the mine. We also learned of the Forest Service's interest in performing additional reclamation activities on the area. Since the Forest Service was aware that people were swimming and fishing in the "pond" at the La Bajada mine, we decided to also analyze water samples from the water in the pit.

METHODS

Gamma radiation was measured at one meter above the ground surface using Eberline PRM-7 microroentgen meters. Two meters were used; they were last calibrated on 11-17-86 and 6-10-86. Readings were taken at numerous locations, some of which are shown on Figure 1. These locations were not selected in a predetermined manner, but rather were selected because they appeared representative of portions of the mine site or because they appeared likely - due to color, texture, and so forth - to be more radioactive than surrounding locations. For example, some parts of the site are dotted with small piles of dark-colored material, each clearly being a separate load of a small dump truck. Judging from their placement and the fact they were not graded or covered, we assume they are protore, low-grade ore that was set aside with the hope that it might be economical to mill it at a later date.

As such, there is reason to expect these piles to be more radioactive than ordinary spoil, and we accordingly concentrated many of the readings at these piles. Several dozen locations were checked.

Samples of soil, spoil, and protore were taken at nine locations. They were collected with a spade to a depth of three or four inches. Each sample comprised about five pounds. The sample locations are shown on Figure 1. The one sample (LB-9) classified as "soil" was taken from an undisturbed site outside of the mine. As such, it represents a "background sample". Samples classified as "spoil" were collected from materials on the mine that had obviously been disturbed. These represent a heterogenous mixture of weathered and unweathered materials.

The soil, spoil, and protore samples were analyzed for U-238, U-234, Th-230, Ra-226, and Pb-210 by the New Mexico Scientific Laboratory Division (SLD) in Albuquerque. The samples were ground and a five gram sub-sample was digested in a mixture of nitric, sulfuric, and hydrofluoric acids. Following pyrosulfate fusion, the different nuclides were separated by coprecipitation with barium sulfate, chelation with EDTA, and solvent extraction. U-238, U-234, and Th-230 were measured by alpha spectroscopy, Ra-226 by radon emanation, and Pb-210 by the beta emissions of ingrown Bi-210 daughters.

On March 4, 1987, the water in the flooded pit was sampled by the EID Groundwater Bureau. These unfiltered samples were analyzed by the SLD for gross alpha, gross beta, U-234, U-235, U-238, Th-230, Ra-226, Ra-228, and Pb-210. Gross alpha and gross beta were measured by evaporating an appropriate volume of sample in a counting pan and counting in an internal proportional counter. The concentrations of the individual nuclides were determined by evaporating one liter of sample and analyzing the residue by the same procedure used for the soil, spoil, and protore samples, except that Ra-228 was determined by coprecipitating Ra-226 and Ra-228 with $BaSO_4$ and measuring the beta emissions of ingrown Ac-228 daughters.

The waters in the pit, from the infiltration gallery into the Santa Fe River (called the "Spring"), and in the Santa Fe River upstream and downstream of the mine were also collected and analyzed by the Water Pollution Control Section of EID in 1978 and 1979. Although we do not have detailed information on the methods employed, and in fact cannot locate the sampling locations with any greater precision than the descriptions shown in Table 3, the analyses have historical interest and are included in the report for that reason

In early March 1987, District I, EID, took a drinking water sample from the Domingo Trading Post at Domingo. Although the sampling site was located 5 to 10 miles from La Bajada Village, it is on the same water supply as La Bajada Village, which is the closest community water supply to the La Bajada Mine. For this reason, these drinking analyses are also included in this report.

FINDINGS

Gamma radiation measurements on the mine dumps, pit, and graded areas ranged from 20 to 300 uR/hr. The low figure (20 uR/hr) is quite close to a 15uR/hr background measurement taken at the old gate to the mine. (Background radiation in the Santa Fe area typically ranges from 12 to 15 uR/hr.) The highest reading taken in an area regraded by the Forest Service was 120 uR/hr.

Soil, spoil, and protore analyses are shown on Table 1. Concentrations of all the radonuclides in the spoil and protore samples are well above the concentrations in the soil sample.

Analyses of the water samples collected on March 4, 1987 are shown on Table 2. Two samples (0050 and 0052) exceed the state drinking water standard for gross alpha activity. Sample 0052 also exceeds the state drinking water standard for radium.

Analyses of the water samples collected in 1978 and 1979 are shown on Table 3.

Analyses of the drinking water sample taken from the La Bajada Village water supply are shown on Table 4. None of these concentrations exceed New Mexico Drinking Water Standards.

DISCUSSION AND RECOMMENDATIONS

As far as we know, there are no legal radiological standards that would apply to the gamma radiation emitted at the La Bajada Mine. However, Section 4-150 of the NM Radiation Protection Regulations states that licensees and registrants should not possess, use, or transfer sources of radioactivity in unrestricted areas in such a way that any individual would receive a whole-body dose exceeding 0.5 rem per year. If we assume a person standing upright for 24 hours a day, 365 days per year, and if we assume that the ground on which he is standing is the source of radioactivity to which he is exposed, the exposure rate from the ground corresponding to the 0.5 rem/yr dose would be approximately 57 microroentgens per hour. This figure, while admittedly somewhat arbitrary, could nevertheless serve as a goal below which to reduce gamma radiation on the mine site.

Our specific recommendations are:

1) Prior to any more reclamation attempts, a more detailed radiation survey should be performed.

2) Reclamation activity should refer to the final radiation survey and proceed in a fashion that would result in all

problem areas being covered so that the gamma radiation levels measured at 1 meter are less than 57 uR/hr.

3) Future reclamation activities should include measures to control erosion on the site, specifically on a 3:1 slope graded by the Forest Service located west of the pit and a large gully east of the pit.

4) The water in the pond should not be utilized as a drinking water supply.

TABLE 1

SOIL, SPOIL, AND PROTORE ANALYSES

Sample No.	U-238 (pCi/g)	U-234 (pCi/g)	Th-230 (pCi/g)	Ra-226 (pCi/g)	Pb-210 (pCi/g)
LB-1 (spoil)	5.8 ± 0.4*	5.7 ± 0.4	4.7 ± 0.3	6.2 ± 0.4	5.0 ± 0.6
LB-2 (protore)	118 ± 6	120 ± 6	205 ± 6	257 ± 14	211 ± 11
LB-3 (spoil)	24.0 ± 1.2	24.2 ± 1.2	21.0 ± 1.0	8.1 ± 0.5	19.6 ± 1.3
LB-4 (spoil)	87 ± 3	85 ± 3	119 ± 4	127 ± 7	101 ± 6
LB-5 (protore)	32.0 ± 1.4	42 ± 2	382 ± 10	970 ± 50	930 ± 50
LB-6 (spoil)	10.2 ± 0.6	10.4 ± 0.6	6.4 ± 0.4	10.8 ± 0.6	11.4 ± 1.4
LB-7 (spoil)	8.4 ± 0.5	9.7 ± 0.5	7.9 ± 0.5	13.3 ± 0.8	15.5 ± 1.7
LB-8 (spoil)	10.9 ± 0.6	10.5 ± 0.6	15.0 ± 0.7	3.80 ± 0.22	10.0 ± 1.4
LB-9 (soil) (background sample)	0.67 ± 0.12	0.40 ± 0.12	0.45 ± 0.12	0.20 ± 0.20	4.1 ± 0.7

* The second figure represents one standard deviation

TABLE 2

ANALYSES OF WATER SAMPLES COLLECTED MARCH 1987
FROM THE LA BAJADA MINE PIT

	Sample No. 0049 (Composite taken near surface around perimeter)	Sample No. 0050 (South side at 10' depth)	Sample No. 0051 (NW corner at 15' depth)
Gross alpha (Rel. to U-238) (pCi/l)	45 ± 6*	111 ± 14	42 ± 6
Gross alpha (Rel. to Am-241) (pCi/l)	32 ± 3	82 ± 8	32 ± 4
Gross alpha (less U contribution) (pCi/l)	0	54.4 ± 14	0
Gross beta (pCi/l)	19 ± 3	194 ± 14	42 ± 6
U-234 (pCi/l)	23.2 ± 1.1	28.6 ± 1.4	23.4 ± 1.2
U-235 (pCi/l)	1.04 ± 0.05	1.24 ± 0.06	1.07 ± 0.06
U-238 (pCi/l)	22.4 ± 1.0	26.8 ± 1.4	23.2 ± 1.2
Th-230 (pCi/l)	0.17 ± 0.08	3.0 ± 0.3	1.1 ± 0.2
Ra-226 (pCi/l)	0.17 ± 0.02	3.93 ± 0.23	0.98 ± 0.06
Ra-228 (pCi/l)	0.4 ± 0.2	0.9 ± 0.3	1.1 ± 0.4
Pb-210 (pCi/l)	0.4 ± 0.3	7.3 ± 1.3	2.9 ± 1.0

*The second figure represents one standard deviation

TABLE 2 CONTINUED

ANALYSES OF WATER SAMPLES COLLECTED MARCH 1987
FROM THE LA BAJADA MINE PIT

	Sample No. 0052 (NW corner at 30' to 50' depth)	New Mexico Drinking Water Standard	New Mexico Groundwater Standard
Gross alpha (Rel. to U-238) (pCi/l)	131 ± 16*	---	---
Gross alpha (Rel. to Am-241) (pCi/l)	95 ± 9	---	---
Gross alpha (less U contribution) (pCi/l)	62.0 ± 16	15 pCi/l	---
Gross beta (pCi/l)	111 ± 11	---	---
U-234 (pCi/l)	34.1 ± 1.5	---	---
U-235 (pCi/l)	1.54 ± 0.07	---	5 mg/l (=3620 pCi/l)**
U-238 (pCi/l)	33.4 ± 1.4	---	
Th-230 (pCi/l)	11.3 ± 0.8	---	
Ra-226 (pCi/l)	5.5 ± 0.3	5 pCi/l	30 pCi/l
Ra-228 (pCi/l)	1.2 ± 0.3		
Pb-210 (pCi/l)	14.3 ± 1.5	---	---

*The second figure represents one standard deviation

$U_{natural}$ (pCi/l) = $U_{natural}$ (mg/l) x 724 pCi/mg*

***Specific activity of natural uranium

TABLE 3

ANALYSES OF WATER SAMPLES COLLECTED 12-27-78 AND 1-11-79 FROM THE LA BAJADA MINE PIT AND VICINITY

	pH	U (pCi/l)	Ra-226 (pCi/l)
Santa Fe River ½ mi. upstream of mine site			
12-27-78	7.8	3.8	0.08
1-11-79	8.0	5.1	0.51
Santa Fe River downstream of mine site (at USGS gaging station)			
12-27-78	7.8	2.9	0.31
1-11-79	8.0	3.5	2.9
La Bajada Mine Pit			
12-27-78	8.2	60.1	0.1
1-11-79	7.8	48.7	2.8
Spring 50 feet east of the pit			
12-27-78	7.8	14.5	0.3
1-11-79	7.4	13.5	0.31

$U_{natural}$ (pCi/l) = $U_{natural}$ (mg/l) x 724 pCi/mg*

*Specific activity of natural uranium

TABLE 4

ANALYSES OF A DRINKING WATER SAMPLE COLLECTED IN MARCH 1987 FROM DOMINGO

Gross alpha w/AM - 241 ref.	=	2.9 ± 0.6*	pCi/l
Gross alpha w/U - nat ref.	=	4.5 ± 1.1	pCi/l
Gross beta w/Cs - 137 ref.	=	7.6 ± 1.0	pCi/l
Gross beta w/Sr/Y - 90 ref.	=	7.6 ± 1.0	pCi/l

*The second figure represents one standard deviation.

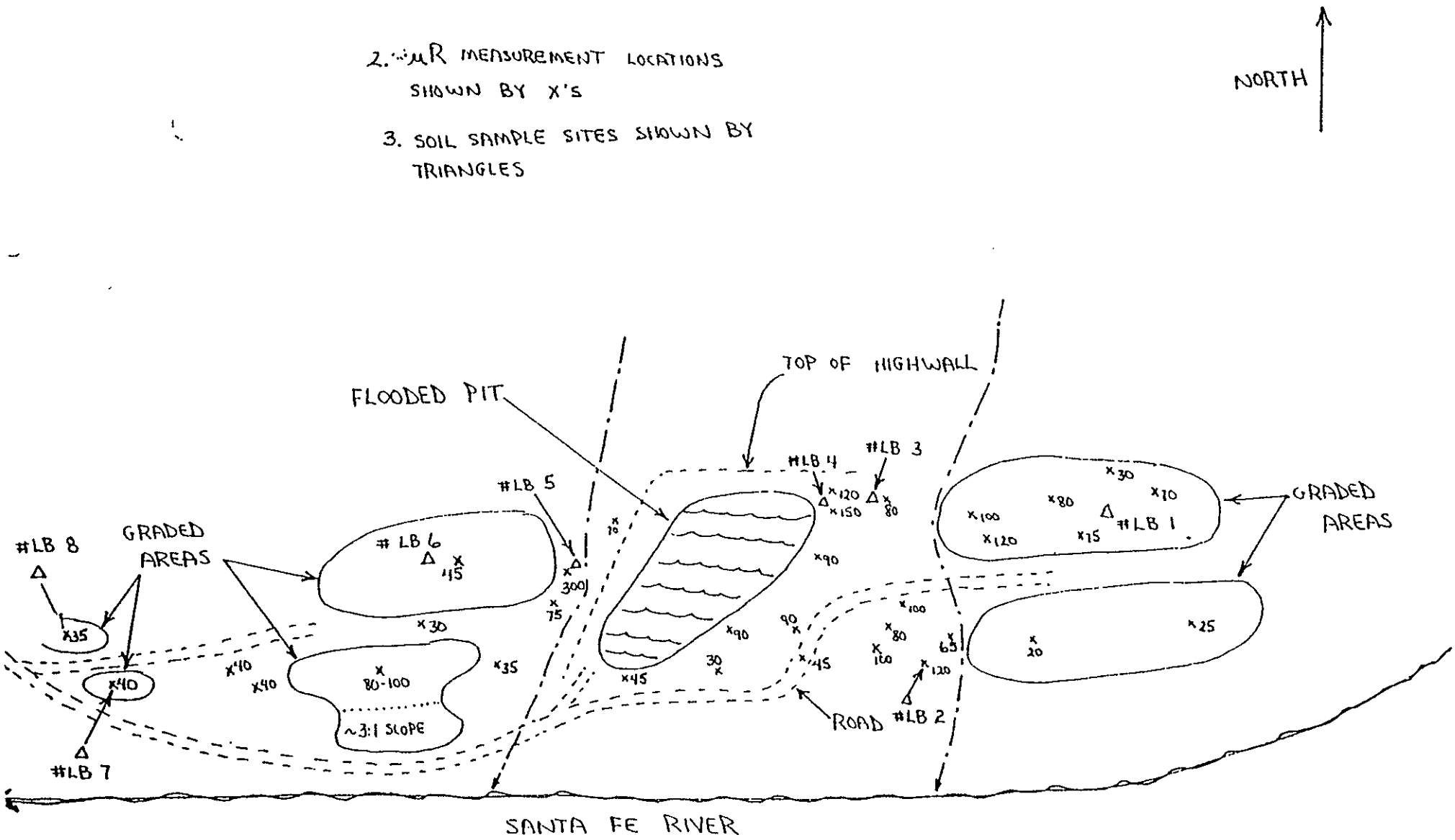
FIGURE 1

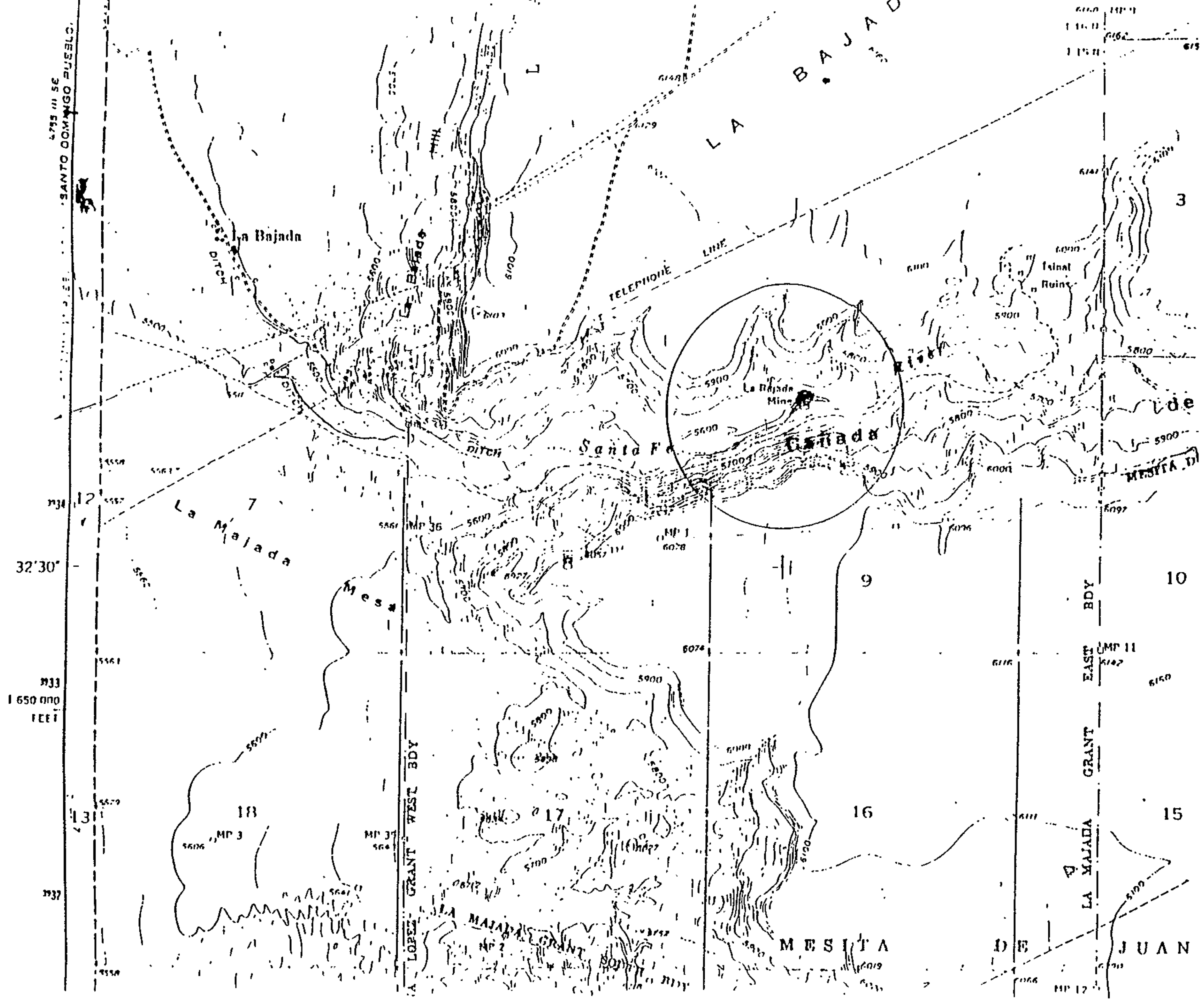
LA BAJADA MINE

NOTE: 1. VERY ROUGH SKETCH; NOT TO SCALE

2. μR MEASUREMENT LOCATIONS SHOWN BY X'S

3. SOIL SAMPLE SITES SHOWN BY TRIANGLES




SANTO DOMINGO PUEBLO
4755 III SE
La Bajada
DITCH
L A B A J A D
L
TELEPHONE LINE
Isinat Ruins
La Bajada Mine
Santa Fe
Cañada
Rio
de
MESITA D
La Majada Mesa
LOPEZ GRANT WEST BDY
LA MAJADA GRANT EAST BDY
LA MAJADA GRANT BDY
M E S I T A D E J U A N
MP 36
MP 1
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MP 37
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9
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17
18
32°30″
1 650 000 FEET
5600
5800
5900
6000
6100

ANALYTICAL REPORT - SOIL SAMPLES/LA BAJADA MINE
SCIENTIFIC LABORATORY DIVISION

Sample	U-238 (pCi/G)	U-234 (pCi/G)	Th-230* (pCi/G)	Ra-226 (pCi/G)	Pb-210 (pCi/G)
RC-87-0017 (18-1)	5.8 # 0.4	5.7 # 0.4	voided (3.3 # 0.3)	6.2 # 0.4	5.0 # 0.6
RC-87-0018 (18-2)	118. # 6.	120. # 6.	voided (117. # 4.)	257. # 14.	211. # 11.
RC-87-0019 (18-3)	24.0 # 1.2	24.2 # 1.2	voided (9.7 # 0.5)	8.1 # 0.5	19.6 # 1.3
RC-87-0020 (18-4)	87. # 3.	85. # 3.	voided (77. # 3.)	127. # 7.	101. # 6.
RC-87-0021 (18-5)	32.0 # 1.4	42. # 2.	voided (215. # 6.)	970. # 50.	930. # 50.
RC-87-0022 (18-6)	10.2 # 0.6	10.4 # 0.6	voided (7.0 # 0.4)	10.8 # 0.6	11.4 # 1.4
RC-87-0023 (18 7)	8.4 # 0.5	9.7 # 0.5	voided (8.3 # 0.4)	13.3 # 0.8	15.5 # 1.7
RC-87-0024 (18-8)	10.9 # 0.6	10.5 # 0.6	voided (6.4 # 0.3)	3.80 # 0.22	10.0 # 1.4
RC-87-0025 (18-9)	0.67 # 0.12	0.40 # 0.12	voided (0.74 # 0.12)	3.43 # 0.20	4.1 # 0.7
QC-18-Feb-Kn (Target=252)	235. #13.	231. # 12.	voided (150. # 5.)	241. # 14.	241. # 10.
QC-23-Feb-Kn (Target=252)	226. # 9.	228. # 9.	voided (184. # 6.)	264. # 15.	254. # 18.
QC-26-Feb-Kn (Target=252)	232. #10.	233. # 10.	voided (178. # 6.)	271. # 16.	265. # 20.
QC-18-Feb-Bk (Target=0.0)	0.06 # 0.06	-0.09 # 0.08	voided (-0.05 # 0.06)	-0.01 # 0.02	-0.1 # 0.3
QC-23-Feb-Bk (Target=0.0)	-0.02 # 0.06	-0.12 # 0.07	voided (-0.10 # 0.05)	0.02 # 0.02	0.0 # 0.3
QC-26-Feb-Bk (Target=0.0)	0.00 # 0.06	-0.04 # 0.08	voided (-0.05 # 0.05)	-0.02 # 0.02	0.4 # 0.6

means + or - 1 standard deviation value.
* values in brackets ( ) are the results obtained on runs voided by low known results.

Data Source 4. Analytical report for water sample from Domingo/La Bajada dated March 25, 1987 from the Radiochemistry Section of the Scientific Laboratory Division of the New Mexico Health and Environment Department to the Water Supply Section, New Mexico Health and Environment Department, Santa Fe, New Mexico.

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4

RECEIVED

APR 8 1987

LIQUID WASTE/GROUND WATER SURVEILLANCE

To:

SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud, NE
Albuquerque, NM 87106 [505]-841-2500

Radiochemistry Section

****
* ANALYTICAL REPORT *
* SLD Accession #: RC-87-0049 *
****

Ground Water / Haz. Waste Bureau
Environmental Improvement Div
P.O. Box 968
Santa Fe NM 87504-0968

Attn: McQuillan

A Water sample.

Submitted: March 5, 1987

Submitter:	User:
EID-Ground Water / Hazardous	EID RADIATION PROTECTION

DEMOGRAPHIC DATA:

Collected On:	4-Mar-87	Location Township:	(not supplied)
At:	1230 hrs.	Range:	(not supplied)
By:	McQ	Section:	(not supplied)
In/Near:	none given	Tracts:	(not supplied)

ANALYTICAL RESULTS:

Analysis	Value	Sigma	D. Lmt	Units	Analyst
U -238, non-SDWA Mth'd	22.40	1.00		pCi/L	Lush
U -234, non-SDWA Mth'd	23.20	1.10		pCi/L	Lush
Th-230, non-SDWA Mth'd	0.17	0.08		pCi/L	Lush
Ra-226, non-SDWA Mth'd	0.17	0.02		pCi/L	Cress
Pb-210, non-SDWA Mth'd	0.44	0.31		pCi/L	Bay
Ra-228, non-SDWA Mth'd	0.43	0.23		pCi/L	Bay
G-Alpha w/ Am-241 ref.	32.00	3.00	2.00	pCi/L	Bay
G-Beta w/ Cs-137 ref.	19.00	3.00	3.00	pCi/L	Bay

LABORATORY REMARKS:

Reviewed By: Loren A. Berge Date: 30-Mar-87
Loren A. Berge, PhD
Supervisor, Radiochemistry Section

Distribution: [ ] User, [*] Submitter, [ ] Report To, [ ] SLD-Section

LAB NUMBER RC-7-CCC
DATE RECEIVED 3-5-87
DATE REPORTED 30-Mar-87 AB

REPORT TO: Ground Water/Haz. Waste Bureau User # 515300
Environmental Improvement Division
P.O. Box 968-Crown Building
Santa Fe, New Mexico 87504-0968

83

Attention: McQuillan

(X) Water ( ) Soil ( ) Sediment ( ) Vegetation ( ) Air Filter ( )

15N.7E.9.1233

Sample Location La Bajada Mine Pit Sample # Composite (2 gal bottles)

Purpose Requested by Dr. Keele

Date Collected 870304 Time 12:30 Name McQuillan et al.

Remarks by Collector

Sample Preparation

( ) Filtered (X) Non Filtered (X) HNO_3 5mL/L ( ) H_2SO_4 ( )

pH Temp. 9.5

Conductivity 750 umho Conductivity at 25°C umho

ANALYSES REQUESTED

		~~Units~~	~~Counting Error~~	Date Analysed
(X)	Gross Alpha (Rel to U 238)	45±6 pCi/L		6-Mar-87
( )	Gross Alpha (Rel to Am 241)	.82±3 pCi/L		6-Mar-87
(X)	Gross Beta	19±3 pCi/L		6-Mar-87
(X)	Uranium 238 (isotopic U)	22.4±1.0 pCi/L		13-18-Mar-87
(X)	Uranium 235 (isotopic U)	1.04±0.05 pCi/L		13-18-Mar-87
(X)	Uranium 234 (isotopic U)	23.2±1.1 pCi/L		13-18-Mar-87
( )	Thorium 232	~~0.17±0.08 pCi/L~~		~~13-18-Mar-87~~
(X)	Thorium 230	0.17±0.08 pCi/L		13-18-Mar-87
( )	Thorium 228			
(X)	Radium 226	0.17±0.02 pCi/L		13-26 Mar-87
(X)	Radium 228	0.4±0.2 pCi/L		19-26 Mar-87
(X)	Lead 210	0.4±0.3 pCi/L		13-26 Mar-87
( )	Polonium 210			
( )	Radon 222			
( )	Gamma Spectroscopy			
( )	Other			

REMARKS BY ANALYST Reported Uncertainties are ± 1 std. Dev.

RECEIVED
APR 8 1987
LIQUID WASTE/GROUND WATER SURVEILLANCE

SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud, NE
Albuquerque, NM 87106 [505]-841-2500

Radiochemistry Section

****
* ANALYTICAL REPORT *
* SLD Accession #: RC-87-0050 *
****

To:

Ground Water / Haz. Waste Bureau
Environmental Improvement Div.
P.O. Box 968
Santa Fe NM 87504-0968

A Water sample.

Submitted: March 5, 1987

Submitter:	User:
EID-Ground Water / Hazardous	EID RADIATION PROTECTION

DEMOGRAPHIC DATA:

Collected On:	4-Mar-87	Location Township:	(not supplied)
At:	1215 hrs.	Range:	(not supplied)
By:	McQ	Section:	(not supplied)
In/Near:	none given	Tracts:	(not supplied)

ANALYTICAL RESULTS:

Analysis	Value	Sigma	D. Lmt	Units	Analys
U -238, non-SDWA Mth'd	26.80	1.40		pCi/L	Lush
U -234, non-SDWA Mth'd	28.60	1.40		pCi/L	Lush
Th-230, non-SDWA Mth'd	3.00	0.30		pCi/L	Lush
Ra-226, non-SDWA Mth'd	3.93	0.23		pCi/L	Cross
Pb-210, non-SDWA Mth'd	7.30	1.30		pCi/L	Bay
Ra-228, non-SDWA Mth'd	0.90	0.30		pCi/L	Bay
G-Alpha w/ Am-241 ref.	82.00	8.00	5.00	pCi/L	Bay
G-Beta w/ Cs-137 ref.	194.00	14.00	7.00	pCi/L	Bay

LABORATORY REMARKS:

Reviewed By: Loren A. Berge Date: 30-Mar-87
Loren A. Berge, PhD
Supervisor, Radiochemistry Section

Distribution: [ ] User, [*] Submitter, [ ] Report To, [ ] SLD-Section

LAB NUMBER KC-7-0033
DATE RECEIVED 3-5-87
DATE REPORTED 30-Mar-87 LABerge

REPORT TO: Ground Water/Haz. Waste Bureau User # 515300

85

Environmental Improvement Division
P.O. Box 968-Crown Building
Santa Fe, New Mexico 87504-0968

Attention: McQuillan

(X) Water ( ) Soil ( ) Sediment ( ) Vegetation ( ) Air Filter ( )

15N.7E.9.1233

Sample Location La Bajada Mine Pit Sample # Surface Water

Purpose Requested by Dr. Keele

Date Collected 870304 Time 12:15 Name McQuillan et. al.

Remarks by Collector _____

Sample Preparation

( ) Filtered (X) Non Filtered (X) HNO_3 5mL/L ( ) H_2SO_4 ( ) _____

pH _____ Temp. 9.5

Conductivity 750 umho Conductivity at 25°C _____ umho

ANALYSES REQUESTED

		~~Units~~	~~Counting Error~~	Date Analysed
(X)	Gross Alpha (Rel to U 238)	111. ±14.	pCi/L	6-Mar-87
( )	Gross Alpha (Rel to Am 241)	82. ± 8.	pCi/L	6-Mar-87
(X)	Gross Beta	194. ± 14.	pCi/L	6-Mar-87
(X)	Uranium 238	26.8±1.4	pCi/L	13-18-Mar-87
(X)	Uranium 235 (isotopic U)	1.21±0.26	pCi/L	13-18-Mar-87
(X)	Uranium 234	28.6±1.4	pCi/L	13-18-Mar-87
( )	Thorium 232			
(X)	Thorium 230	3.0±0.3	pCi/L	13-18-Mar-87
( )	Thorium 228			
(X)	Radium 226	3.93±0.23	pCi/L	13-26-Mar-87
(X)	Radium 228	0.9±0.3	pCi/L	13-26 Mar-87
(X)	Lead 210	7.3±1.3	pCi/L	13-26 Mar-87
( )	Polonium 210			
( )	Radon 222			
( )	Gamma Spectroscopy			
( )	Other			

REMARKS BY ANALYST Reported Uncertainties are ± 1 std. Dev.

RECEIVED
APR 8 1987
LIQUID WASTE/GROUND WATER SURVEILLANCE

SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud, NE
Albuquerque, NM 87106 [505]-841-2500

Radiochemistry Section

****
* ANALYTICAL REPORT *
* SLD Accession #: RC-87-0051 *
****

To:

Ground Water / Haz. Waste Bureau
Environmental Improvement Division
P.O. Box 968
Santa Fe, NM 87504-0968

A Water sample.

Submitted: March 5, 1987

Submitter:	User:
EID-Ground Water / Hazardous	EID RADIATION PROTECTION

DEMOGRAPHIC DATA:

Collected On:	4-Mar-87	Location Township:	(not supplied)
At:	1245 hrs.	Range:	(not supplied)
By:	McQ	Section:	(not supplied)
In/Near:	none given	Tracts:	(not supplied)

ANALYTICAL RESULTS:

Analysis	Value	Sigma	D. Lmt	Units	Analys
U -238, non-SDWA Mth'd	23.20	1.20		pCi/L	Lucb
U -234, non-SDWA Mth'd	23.40	1.20		pCi/L	Lucb
Th-230, non-SDWA Mth'd	1.10	0.20		pCi/L	Lucb
Ra-226, non-SDWA Mth'd	0.98	0.06		pCi/L	Cross
Pb-210, non-SDWA Mth'd	2.90	1.00		pCi/L	Bay
Ra-228, non-SDWA Mth'd	1.10	0.40		pCi/L	Bay
G-Alpha w/ Am-241 ref.	32.00	4.00	4.00	pCi/L	Bay
G-Beta w/ Cs-137 ref.	42.00	6.00	7.00	pCi/L	Bay

LABORATORY REMARKS: _____

Reviewed By: Loren A. Berge Date: 30-Mar-87
Loren A. Berge, PhD
Supervisor, Radiochemistry Section

Distribution: [ ] User, [*] Submitter, [ ] Report To, [ ] SLD-Section

LAB NUMBER RC-7-OC
DATE RECEIVED 3-5-87
DATE REPORTED 30-Mar-87 Labu
User # 515300

87

REPORT TO: Ground Water/Haz. Waste Bureau
[redacted]
Environmental Improvement Division
P.O. Box 968-Crown Building
Santa Fe, New Mexico 87504-0968

Attention: McQuillan

(X) Water ( ) Soil ( ) Sediment ( ) Vegetation ( ) Air Filter ( )

15N. 7E. 9.1233

Sample Location La Bajada Mine Pit Sample #NW side @ 25'
Purpose Requested by Dr. Keele
Date Collected 870304 Time 13:00 Name McQuillan et. al.
Remarks by Collector

Sample Preparation

( ) Filtered (X) Non Filtered (X) HNO_3 5mL/L ( ) H_2SO_4 ( )
pH
Temp. 9.5
Conductivity 750 umho
Conductivity at 25°C umho

ANALYSES REQUESTED

		Units +/- Counting Error		Date Analysed
(X)	Gross Alpha (Rel to U 238)	13/. ± 16.	pCi/L	6-Mar-87
( )	Gross Alpha (Rel to Am 241)	.95. ± 9.	pCi/L	6-Mar-87
(X)	Gross Beta	111. ± 11.	pCi/L	6-Mar-87
(X)	Uranium 238	33.4 ± 1.4	pCi/L	13-18 Mar-87
(X)	Uranium 235 (isotopic U)	1.54 ± 0.07	pCi/L	13-18 Mar-87
(X)	Uranium 234 (isotopic U)	34.1 ± 1.5	pCi/L	13-18 Mar-87
( )	Thorium 232			
(X)	Thorium 230	11.8 ± 0.8	pCi/L	13-18 Mar-87
( )	Thorium 228			
(X)	Radium 226	5.50 ± 0.3	pCi/L	13-26 Mar-87
(X)	Radium 228	1.2 ± 0.3	pCi/L	13-27 Mar-87
(X)	Lead 210	14.3 ± 1.5	pCi/L	13-26 Mar-87
( )	Polonium 210			
( )	Radon 222			
( )	Gamma Spectroscopy			
( )	Other			

REMARKS BY ANALYST Reported Uncertainties are ± 1 std. Dev.

Data Source 5. Analytical report for water sample from La Bajada Mine Pit dated April 8, 1987 from the Radiochemistry Section of the Scientific Laboratory Division of the New Mexico Health and Environment Department to the Ground Water/Hazardous Waste Bureau, Environmental Improvement Division, New Mexico Health and Environment Department, Santa Fe, New Mexico.

RECEIVED
APR 9 1987
LIQUID WASTE/GROUND WATER SURVEILLANCE

89

SCIENTIFIC LABORATOR DIVISION
700 Camino de Salud, NE
Albuquerque, NM 87106 [505]-841-2500

Radiochemistry Section

****
* ANALYTICAL REPORT *
* SLD Accession #: RC-87-0050 *
****

To:

Ground Water / Haz. Waste Bureau
Environmental Improvement div.
P.O. Box 968
Santa Fe NM 87504-0968

A Water sample.

Submitted: March 5, 1987

Submitter:	User:
EID-Ground Water / Hazardous	EID RADIATION PROTECTION

DEMOGRAPHIC DATA:

Collected On: 4-Mar-87
At: 1215 hrs.
By: McQ
In/Near: none given

Location Township: (not supplied)
Range: (not supplied)
Section: (not supplied)
Tracts: (not supplied)

ANALYTICAL RESULTS:

Analysis	Value	Sigma	D. Lmt	Units	Analyst
U -238, non-SDWA Mth'd	26.80	1.40		pCi/L	Lush
U -234, non-SDWA Mth'd	28.60	1.40		pCi/L	Lush
Th-230, non-SDWA Mth'd	3.00	0.30		pCi/L	Lush
Ra-226, non-SDWA Mth'd	3.93	0.23		pCi/L	Cress
Pb-210, non-SDWA Mth'd	7.30	1.30		pCi/L	Bay
Ra-228, non-SDWA Mth'd	0.90	0.30		pCi/L	Bay
G-Alpha w/ Am-241 ref.	82.00	8.00	5.00	pCi/L	Bay
G-Beta w/ Cs-137 ref.	194.00	14.00	7.00	pCi/L	Bay

LABORATORY REMARKS:

Reviewed By: Loren A. Berge Date: 30-Mar-87
Loren A. Berge, PhD
Supervisor, Radiochemistry Section

Distribution: [ ] User, [*] Submitter, [ ] Report To, [ ] SLD-Section

RECEIVED
APR 8 1987
LIQUID WASTE/GROUND WATER SURVEILLANCE

90

SCIENTIFIC LABORATORY ISION
700 Camino de Salud, NE
Albuquerque, NM 87106 [505]-841-2500

Radiochemistry Section

****
* ANALYTICAL REPORT *
* SLD Accession #: RC-87-0049 *
****

To:

Ground Water / Haz. Waste Bureau
Environmental Improvement Div
P.O. Box 968
Santa Fe NM 87504-0968

A Water sample.

Submitted: March 5, 1987

Attn: McQuillan

Submitter:	User:
EID-Ground Water / Hazardous	EID RADIATION PROTECTION

DEMOGRAPHIC DATA:

Collected On: 4-Mar-87
At: 1230 hrs.
By: McQ
In/Near: none given

Location Township: (not supplied)
Range: (not supplied)
Section: (not supplied)
Tracts: (not supplied)

ANALYTICAL RESULTS:

Analysis	Value	Sigma	D. Lmt	Units	Analyst
U -238, non-SDWA Mth'd	22.40	1.00		pCi/L	Lusk
U -234, non-SDWA Mth'd	23.20	1.10		pCi/L	Lusk
Th-230, non-SDWA Mth'd	0.17	0.08		pCi/L	Lusk
Ra-226, non-SDWA Mth'd	0.17	0.02		pCi/L	Cress
Pb-210, non-SDWA Mth'd	0.44	0.31		pCi/L	Bay
Ra-228, non-SDWA Mth'd	0.43	0.23		pCi/L	Bay
G-Alpha w/ Am-241 ref.	32.00	3.00	2.00	pCi/L	Bay
G-Beta w/ Cs-137 ref.	19.00	3.00	3.00	pCi/L	Bay

LABORATORY REMARKS:

Reviewed By: Loren A. Berge Date: 30-Mar-87
Loren A. Berge, PhD
Supervisor, Radiochemistry Section

Distribution: [ ] User, [*] Submitter, [ ] Report To, [ ] SLD-Section

LAB NUMBER R2-7-CC-
DATE RECEIVED 3-5-87
DATE REPORTED 30-Mar-87 AB Berge

REPORT TO: Ground Water/Haz. Waste Bureau User # 515300

Environmental Improvement Division
P.O. Box 968-Crown Building
Santa Fe, New Mexico 87504-0968

91

Attention: McQuillan

(X) Water ( ) Soil ( ) Sediment ( ) Vegetation ( ) Air Filter ( )

15N. 7E. 9. 1233

Sample Location La Bajada Mine Pit Sample # Composite (2 gal bottles)

Purpose Requested by Dr. Keele

Date Collected 870304 Time 12:30 Name McQuillan et al.

Remarks by Collector

Sample Preparation

( ) Filtered (X) Non Filtered (X) HNO_3 5mL/L ( ) H_2SO_4 ( )

pH Temp. 9.5

Conductivity 750 umho Conductivity at 25°C umho

ANALYSES REQUESTED

		~~Units~~	~~Counting Error~~	Date Analysed
(X)	Gross Alpha (Rel to U 238)	45 ± 6 pCi/L		6-Mar-87
( )	Gross Alpha (Rel to Am 241)	32 ± 3 pCi/L		6-Mar-87
(X)	Gross Beta	19 ± 3 pCi/L		6-Mar-87
(X)	Uranium 238 (Isotopic U)	22.4 ± 1.0 pCi/L		13-18-Mar-87
(X)	Uranium 235 (Isotopic U)	1.04 ± 0.05 pCi/L		13-18-Mar-87
(X)	Uranium 234 (Isotopic U)	23.2 ± 1.1 pCi/L		13-18-Mar-87
( )	Thorium 232	~~0.17 ± 0.08 pCi/L~~		~~13-26 Mar-87~~
(X)	Thorium 230	0.17 ± 0.08 pCi/L		13-18-Mar-87
( )	Thorium 228			
(X)	Radium 226	0.17 ± 0.02 pCi/L		13-26 Mar-87
(X)	Radium 228	0.4 ± 0.2 pCi/L		19-26 Mar-87
(X)	Lead 210	0.4 ± 0.3 pCi/L		13-26 Mar-87
( )	Polonium 210			
( )	Radon 222			
( )	Gamma Spectroscopy			
( )	Other			

REMARKS BY ANALYST Reported Uncertainties are ± 1 std. Dev.

LAB NUMBER KC-7-[illegible]
DATE RECEIVED 2-5-87
DATE REPORTED 30-Mar-87 LABeyl

REPORT TO: Ground Water/Haz. Waste Bureau [redacted] User # 515300

Environmental Improvement Division
P.O. Box 968-Crown Building
Santa Fe, New Mexico 87504-0968

92

Attention: McQuillan

(X) Water ( ) Soil ( ) Sediment ( ) Vegetation ( ) Air Filter ( )

15N.7E.9.1233

Sample Location La Bajada Mine Pit Sample # S-1, at 1n'

Purpose Requested by Dr. Keele

Date Collected 870304 Time 12:15 Name McQuillan et. al.

Remarks by Collector

Sample Preparation

( ) Filtered (X) Non Filtered (X) HNO_3 5mL/L ( ) H_2SO_4 ( )

pH Temp. 9.5

Conductivity 750 umho Conductivity at 25°C ____ umho

ANALYSES REQUESTED

		~~Units~~	~~Counting Error~~	Date Analysed
(X)	Gross Alpha (Rel to U 238)	111. ±14.	pCi/L	6-Mar-87
( )	Gross Alpha (Rel to Am 241)	82. ± 8.	pCi/L	6-Mar-87
(X)	Gross Beta	194. ± 14.	pCi/L	6-Mar-87
(X)	Uranium 238	26.8±1.4	pCi/L	13-18-Mar-87
(X)	Uranium 235 (Isotopic U)	1.24±0.26	pCi/L	13-18-Mar-87
(X)	Uranium 234 (Isotopic U)	28.6 ±1.4	pCi/L	13-18-Mar-87
( )	Thorium 232			
(X)	Thorium 230	3.0±0.3	pCi/L	13-18-Mar-87
( )	Thorium 228			
(X)	Radium 226	3.93±0.23	pCi/L	13-26-Mar-87
(X)	Radium 228	0.9±0.3	pCi/L	13-26 Mar-87
(X)	Lead 210	7.3±1.3	pCi/L	13-26 Mar-87
( )	Polonium 210			
( )	Radon 222			
( )	Gamma Spectroscopy			
( )	Other			

REMARKS BY ANALYST Reported Uncertainties are ± 1 std. Dev.

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APR 8 1987
LIQUID WASTE/GROUND WATER SURVEILLANCE

SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud, NE
Albuquerque, NM 87106 [505]-841-2500

Radiochemistry Section

ANALYTICAL REPORT
SLD Accession #: RC-87-0051

To:

Ground Water / Haz. Waste Bureau
Environmental Improvement Division
P.O. Box 968
Santa Fe, NM 87504-0968

A Water sample.

Submitted: March 5, 1987

Submitter:	User:
EID-Ground Water / Hazardous	EID RADIATION PROTECTION

DEMOGRAPHIC DATA:

Collected On:	4-Mar-87	Location Township:	(not supplied)
At:	1245 hrs.	Range:	(not supplied)
By:	McQ	Section:	(not supplied)
In/Near:	none given	Tracts:	(not supplied)

ANALYTICAL RESULTS:

Analysis	Value	Sigma	D. Lmt	Units	Analys
U -238, non-SDWA Mth'd	23.20	1.20		pCi/L	Lush
U -234, non-SDWA Mth'd	23.40	1.20		pCi/L	Lush
Th-230, non-SDWA Mth'd	1.10	0.20		pCi/L	Lush
Ra-226, non-SDWA Mth'd	0.98	0.06		pCi/L	Cross
Pb-210, non-SDWA Mth'd	2.90	1.00		pCi/L	Bay
Ra-228, non-SDWA Mth'd	1.10	0.40		pCi/L	Bay
G-Alpha w/ Am-241 ref.	32.00	4.00	4.00	pCi/L	Bay
G-Beta w/ Cs-137 ref.	42.00	6.00	7.00	pCi/L	Bay

LABORATORY REMARKS:

Reviewed By: Loren A. Berge Date: 30-Mar-87
Loren A. Berge, PhD
Supervisor, Radiochemistry Section

Distribution: [ ] User, [*] Submitter, [ ] Report To, [ ] SLD-Section

LAB NUMBER LC-7-005
DATE RECEIVED 3-6-87
DATE REPORTED 30-Mar-87 [illegible]

REPORT TO: Ground Water/Haz. Waste Bureau User # 515300

[redacted]
Environmental Improvement Division
P.O. Box 968-Crown Building
Santa Fe, New Mexico 87504-0968

94

Attention: McQuillan

(X) Water ( ) Soil ( ) Sediment ( ) Vegetation ( ) Air Filter ( )

15N.7E.9.1233

Sample Location La Bajada Mine Pit Sample # NW side @15'

Purpose Requested by Dr. Keele

Date Collected 870304 Time 12:45 Name McQuillan et. al.

Remarks by Collector _____

Sample Preparation

( ) Filtered (X) Non Filtered (X) HNO_3 5mL/L ( ) H_2SO_4 ( ) _____

pH _____ Temp. 9.5

Conductivity 750 umho Conductivity at 25°C _____ umho

ANALYSES REQUESTED

		~~Units~~ ± ~~Counting Error~~	Date Analysed
(X)	Gross Alpha (Rel to U 238)	42. ± 6. pCi/L	6-Mar-87
( )	Gross Alpha (Rel to Am 241)	32. ± 4. pCi/L	6-Mar-87
(X)	Gross Beta	42. ± 6. pCi/L	6-Mar-87
(X)	Uranium 238 (Isotopic U)	23.2 ± 1.2 pCi/L	13-18-Mar-87
(X)	Uranium 235 (Isotopic U)	1.07 ± 0.06 pCi/L	13-18 Mar-87
(X)	Uranium 234 (Isotopic U)	23.4 ± 1.2 pCi/L	13-18 Mar-87
( )	Thorium 232		
(X)	Thorium 230	1.1 ± 0.2 pCi/L	13-18 Mar-87
( )	Thorium 228		
(X)	Radium 226	0.98 ± 0.06 pCi/L	13-26 Mar-87
(X)	Radium 228	1.1 ± 0.4 pCi/L	13-26 Mar-87
(X)	Lead 210	2.9 ± 1.0 pCi/L	13-26 Mar-87
( )	Polonium 210		
( )	Radon 222		
( )	Gamma Spectroscopy		
( )	Other		

REMARKS BY ANALYST Reported Uncertainties are ± 1 std. Dev.

SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud, NE
Albuquerque, NM 87106 [505]-841-2500

Radiochemistry Section

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APR 3 1987
LIQUID WASTE/GROUND WATER SURVEILLANCE

RECEIVED
APR 07 1987
GROUND WATER/HAZARDOUS WASTE BUREAU

95

****
* ANALYTICAL REPORT *
* SLD Accession #: RC-87-0052 *
****

To: Ground Water / Haz Waste Bureau
Environmental Improvement Div.
P.O. Box 968
Santa Fe NM 87504-0968

A Water sample.

Submitted: March 5, 1987

Submitter:	User:
EID-Ground Water / Hazardous	EID RADIATION PROTECTION

DEMOGRAPHIC DATA:

Collected On:	4-Mar-87	Location Township:	(not supplied)
At:	1300 hrs.	Range:	(not supplied)
By:	McQ	Section:	(not supplied)
In/Near:	none given	Tracts:	(not supplied)

ANALYTICAL RESULTS:

Analysis	Value	Sigma	D. Lmt	Units	Analys
U -238, non-SDWA Mth'd	33.40	1.40		pCi/L	Lush
U -234, non-SDWA Mth'd	34.10	1.50		pCi/L	Lush
Th-230, non-SDWA Mth'd	11.30	0.80		pCi/L	Lush
Ra-226, non-SDWA Mth'd	5.50	0.30		pCi/L	Cress
Pb-210, non-SDWA Mth'd	14.30	1.50		pCi/L	Bay
Ra-228, non-SDWA Mth'd	1.20	0.30		pCi/L	Bay
G-Alpha w/ Am-241 ref.	95.00	9.00	5.00	pCi/L	Bay
G-Beta w/ Cs-137 ref.	111.00	11.00	7.00	pCi/L	Bay

LABORATORY REMARKS:

Reviewed By: Loren A. Berge Date: 30-Mar-87
Loren A. Berge, PhD
Supervisor, Radiochemistry Section

Distribution: [ ] User, [*] Submitter, [ ] Report To, [ ] SLD-Section

LAB NUMBER RC-7-CC
DATE RECEIVED 3-5-87
DATE REPORTED 30-Mar-87

REPORT TO: Ground Water/Haz. Waste Bureau [redacted] User # 515300

Environmental Improvement Division
P.O. Box 968-Crown Building
Santa Fe, New Mexico 87504-0968

96

Attention: McQuillan

(X) Water ( ) Soil ( ) Sediment ( ) Vegetation ( ) Air Filter ( )

15N.7E.9.1233

Sample Location La Bajada Mine Pit Sample #NW side @ 25'

Purpose Requested by Dr. Keele

Date Collected 870304 Time 13:00 Name McQuillan et al.

Remarks by Collector _____

Sample Preparation

( ) Filtered (X) Non Filtered (X) HNO_3 5mL/L ( ) H_2SO_4 ( ) _____

pH _____ Temp. 9.5°

Conductivity 750 umho Conductivity at 25°C _____ umho

ANALYSES REQUESTED

		~~Units~~ ± ~~Counting Error~~		Date Analysed
(X)	Gross Alpha (Rel to U 238)	131. ± 16.	pCi/L	6-Mar-87
( )	Gross Alpha (Rel to Am 241)	95. ± 9.	pCi/L	6-Mar-87
(X)	Gross Beta	111. ± 11.	pCi/L	6-Mar-87
(X)	Uranium 238	33.4 ± 1.4	pCi/L	13-18 Mar-87
(X)	Uranium 235 (isotopic U)	1.54 ± 0.07	pCi/L	13-18 Mar-87
(X)	Uranium 234 (isotopic U)	34.1 ± 1.5	pCi/L	13-18 Mar-87
( )	Thorium 232			
(X)	Thorium 230	11.8 ± 0.8	pCi/L	13-18 Mar-87
( )	Thorium 228			
(X)	Radium 226	5.50 ± 0.3	pCi/L	13-26 Mar-87
(X)	Radium 228	1.2 ± 0.3	pCi/L	13-27 Mar-87
(X)	Lead 210	14.3 ± 1.5	pCi/L	13-26 Mar-87
( )	Polonium 210			
( )	Radon 222			
( )	Gamma Spectroscopy			
( )	Other			

REMARKS BY ANALYST Reported Uncertainties are ± 1 std. Dev.

SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud, NE
Albuquerque, NM 87106 [505]-841-2500

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Radiochemistry Section

****
* ANALYTICAL REPORT *
* SLD Accession #: RC-87-0048 * Domingo / LaBajad
****

To:

EID Field Office - Bernalillo
P.O. Box 700
Bernalillo NM
87004

A Water sample.

Submitted: March 3, 1987

Submitter:	User:
EID Field Office, Bernalillo	EID WATER SUPPLY

DEMOGRAPHIC DATA:

Collected On: 24-Feb-87
At: 1225 hrs.
By: Mor
In/Near: Santa Fe County

Location Township: (not supplied)
Range: (not supplied)
Section: (not supplied)
Tracts: (not supplied)

ANALYTICAL RESULTS:

Analysis	Value	Sigma	D. Lmt	Units	Analyst
G-Alpha w/ Am-241 ref.	2.90	0.60	1.00	pCi/L	Cress
G-Alpha w/ U -nat ref.	4.50	1.10	1.60	pCi/L	Cress
G-Beta w/ Cs-137 ref.	7.60	1.00	1.60	pCi/L	Cress
G-Beta w/ Sr/Y90 ref.	7.60	1.00	1.60	pCi/L	Cress

LABORATORY REMARKS:

Reviewed By: Loren A. Berge Date: 20-Mar-87
Loren A. Berge, PhD
Supervisor, Radiochemistry Section

Distribution: [ ] User, [*] Submitter, [ ] Report To, [ ] SLD-Section

Data Source 6. Analytical report for water sample from La Bajada Mine Pit dated April 24, 1987 from the Radiochemistry Section of the Scientific Laboratory Division of the New Mexico Health and Environment Department to the Ground Water/Hazardous Waste Bureau, Environmental Improvement Division, New Mexico Health and Environment Department, Santa Fe, New Mexico.

Ground Water & Hazardous Waste Bureau
Environmental Improvement Division
Health & Environment Department
P.O. Box 968 - Crown Building
Santa Fe, NM 87504-0968

-99

DATE RECEIVED 3.5.87

DATE REPORTED 4/24/87 Initials

SLD USER CODE NUMBER 5153

Well Location Address La Bajada Mine Pit

Point of Collection 15N.7E.9.1233

Owner/User U.S. Forest Service

Number of People Drinking Water from Well N/A

Collected 870304 Date 12:30 Time By McQuillan et. al. Name Agency

Well Depth _____ pH _____

Water Level _____ Conductivity (Uncorrected) _____ umhc

Taste? Odor? Color? Collectors Remarks Temperature _____

_____ Conductivity at 25°C _____ umho/

_____

PROJECT: La Bajada Mine

From _____, A-H_2SO_4 Sample:

- ☐ Nitrate-N^+ Nitrite-N _____ mg/l _____
- ☐ Ammonia-N _____ mg/l _____
- ☐ Chemical oxygen demand _____ mg/l _____
- ☐ _____ _____ _____

From NF, A-HNO_3 Sample:

- ☒ ICAP Scan
- ☒ Metals by AA (Specify) As, Se, Cd, Cr, Pb, V

From _____, NA Sample:

		Date Analyzed
☐ Calcium	_____ mg/l	_____
☐ Potassium	_____ mg/l	_____
☐ Magnesium	_____ mg/l	_____
☐ Sodium	_____ mg/l	_____
☐ Bicarbonate	_____ mg/l	_____
☐ Chloride	_____ mg/l	_____
☐ Sulfate	_____ mg/l	_____
☐ Total Solids	_____ mg/l	_____
☐ _____		_____

This form accompanies one sample(s) marked as follows to indicate field treatment

- (NF): Whole sample (no filtration)
- F: Filtered in field with 0.45u membrane filter
- A-H_2SO_4: Acidified with 2 ml conc H_2SO_4/l
- (A-HNO_3): Acidified with 5ml conc HNO_3/l
- NA: No acid added

RECEIVED
MAY 1 - 1987
LIQUID WASTE/GROUND WATER SURVEILLANCE

ICAP SCAN

SLD Lab No. ICP81 Reviewed by: Jim Ashby

Analyst JK Date Reported: 4/24/84

Date Analyzed 3-23-81

ELEMENT	ICAP VALUE(mg/l)	AA VALUE(mg/l)
Aluminum	<0.1	
Barium	<0.1	
Beryllium	<0.1	
Boron	0.3	
Cadmium	<0.1	<0.001
Calcium	55.	
Chromium	<0.1	<0.005
Cobalt	<0.05	
Copper	<0.1	
Iron	<0.1	
Lead	<0.1	<0.01
Magnesium	40.	
Manganese	<0.05	
Molybdenum	<0.1	
Nickel	<0.1	
Silicon	2.7	
Silver	<0.1	
Strontium	0.5	
Tin	<0.1	
Vanadium	<0.1	<0.01
Zinc	<0.1	
Arsenic		0.009
Selenium		<0.005
Mercury		

Ground Water & Hazardous Waste Bureau
Environmental Improvement Division
Health & Environment Department
P.O. Box 968 - Crown Building
Santa Fe, NM 87504-0968

PAGE 101

DATE RECEIVED 3-5-87
DATE REPORTED 04/2/87
Initials
SLD USER CODE NUMBER 515300

RECEIVED
APR 13 1987
GROUND WATER HAZARDOUS WASTE BUREAU

Well Location Address La Bajada Mine Pit
Point of Collection 15N.7E.9.1233
Owner/User U.S. Forest Service
Number of People Drinking Water from Well N/A

Collected 870304 (Date) 12:30 (Time)
By McQuillan et al. (Name) (Agency)

Well Depth _____
Water Level _____

Taste? Odor? Color? Collectors Remarks

_____

_____

pH _____
Conductivity (Uncorrected) _____ umho/cm
Temperature _____ °C
Conductivity at 25°C _____ umho/cm

PROJECT: La Bajada Mine

From ____, A-H_2SO_4 Sample:

- ☐ Nitrate-N^+ Nitrite-N _____ mg/l _____
- ☐ Ammonia-N _____ mg/l _____
- ☐ Chemical oxygen demand _____ mg/l _____
- ☐ _____ _____ _____

From ____, A-HNO_3 Sample:

- ☐ ICAP Scan
- ☐ Metals by AA (Specify)

From NF, NA Sample:

			Date Analyzed
☒	Calcium	56.0 mg/l	3-10
☒	Potassium	10.92 mg/l	4/2
☒	Magnesium	36.6 mg/l	3-10
☒	Sodium	124 mg/l	4/2
☒	Bicarbonate	320 mg/l	3/10
☒	Chloride	57 mg/l	3/16
☒	Sulfate	215 mg/l	3/18
☒	Total Solids	704 mg/l	3/16
☐	_____	_____	_____

This form accompanies one sample(s) marked as follows to indicate field treatment:

- (NF): Whole sample (no filtration)
- F: Filtered in field with 0.45u membrene filter
- A-H_2SO_4: Acidified with 2 ml conc H_2SO_4/l
- A-HNO_3: Acidified with 5ml conc HNO_3/l
- (NA): No acid added

RECEIVED
APR 13 1987
LIQUID WASTE SURFACE WATER

101

Ground Water & Hazardous Waste Bureau
Environmental Improvement Division
Health & Environment Department
P.O. Box 968 - Crown Building
Santa Fe, NM 87504-0968

Page 102

DATE RECEIVED 3-5-87
DATE REPORTED 3/24/87
Initials
SLD USER CODE NUMBER 515300

RECEIVED
APR 13 1987
GROUND WATER HAZARDOUS WASTE BUREAU

Well Location Address La Bajada Mine Pit
Point of Collection 15N.7E.9.1233
Owner/User U.S. Forest Service
Number of People Drinking Water from Well N/A

Collected 870304 (Date) 12:30 (Time) By McQuillan et. al. (Name) (Agency)

Well Depth _____ pH _____

Water Level _____ Conductivity (Uncorrected) _____ umho/cm

Taste? Odor? Color? Collectors Remarks

Temperature _____ °C

Conductivity at 25°C _____ umho/cm

PROJECT: La Bajada Mine

From NF, A-H_2SO_4 Sample:

			Date Analyzed
☒ Nitrate-N+ Nitrite-N	<0.04	mg/l	3/12
☐ Ammonia-N	<0.1	mg/l	3-23
☐ Chemical oxygen demand		mg/l	
☐			

From NA Sample:

			Date Analyzed
☐ Calcium		mg/l	
☐ Potassium		mg/l	
☐ Magnesium		mg/l	
☐ Sodium		mg/l	
☐ Bicarbonate		mg/l	
☐ Chloride		mg/l	
☐ Sulfate		mg/l	
☐ Total Solids		mg/l	
☐			

From _____, A-HNO_3 Sample:
☐ ICAP Scan
☐ Metals by AA (Specify)

This form accompanies one sample(s) marked as follows to indicate field treatment:

(NF:) Whole sample (no filtration)
F: Filtered in field with 0.45u membrene filter
(A-H_2SO_4:) Acidified with 2 ml conc H_2SO_4/l
A-HNO_3: Acidified with 5ml conc HNO_3/l
NA: No acid added

RECEIVED
APR 13 1987
LIQUID WASTE SURVEILLANCE

Data Source 7. Two printouts of STORET data and a computer disk of (water analyses) from the Santa Fe River Through June 8, 1994.

STORET RETRIEVAL DATE 94/06/08 PGM=ALLPARM

URG110.002025 URG110002025
35 33 24.0 106 14 47.0 4
SANTA FE RIVER AT TETILLA PEAK ACCESS ROAD BRIDG
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
/TYPA/AMBNT/STREAM UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0006.280 ON
0000 FEET DEPTH

INITIAL DATE			01/01/01	84/08/07	84/08/07	84/08/08	84/08/08	84/09/05	84/09/05	84/09/06	84/10/30
INITIAL TIME				1115	1600	0945	1520	1235	1710	0855	1545
MEDIUM			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010 WATER	TEMP	CENT		23.5	26.0	19.0	26.0	22.2	25.0	14.0	
00011 WATER	TEMP	FAHN		74.3$	78.8$	66.2$	78.8$	72.0$	77.0$	57.2$	
00042 ALTITUDE	FEET	AB MSL	5450								
00061 STREAM	FLOW,	INST-CFS		6			3	4			
00095 CNDUCTVY	AT 25C	MICROMHO		397	426	403	470	560	570	475	
00116 INTNSVE	SURVEY	IDENT		843505	843505	843505	843505	843505	843505	843505	
00300 DO		MG/L		3.8	4.4	5.6	4.3	5.7	2.9	6.2	
00301 DO	SATUR	PERCENT		53.4$	65.5$	72.8$	63.3$	79.1$	42.2$	72.8$	
00400 PH		SU					7.80	7.80	7.40	7.60	
00430 CO3 ALK	CACO3	MG/L					0				
00440 HCO3 ION	HCO3	MG/L					183				
00530 RESIDUE	TOT NFLT	MG/L		11350	7087	2934	772	69	61	393	52
00600 TOTAL N	N	MG/L		50.85C	27.27C	16.13C	12.35C	19.72C	19.63C	16.28C	17.10C
00605 ORG N	N	MG/L		42.820C	19.180C	10.750C	5.290C	2.980C	4.280C	2.130C	6.900C
00610 NH3+NH4-	N TOTAL	MG/L		4.780	5.020	3.850	4.110	8.520	5.050	5.550	7.900
00612 UN-IONZD	NH3-N	MG/L					.152$	.243$	.071$	.055$	
00619 UN-IONZD	NH3-NH3	MG/L					.185$	.295$	.086$	.067$	
00625 TOT KJEL	N	MG/L		47.600	24.200	14.600	9.400	11.500	9.330	7.680	14.800
00630 NO2&NO3	N-TOTAL	MG/L		3.25	3.07	1.53	2.95	8.22	10.30	8.60	2.30
00640 T INORG.	NITROGEN	MG/L N		8.03C	8.09C	5.38C	7.06C	16.74C	15.35C	14.15C	10.20C
00665 PHOS-TOT		MG/L P		2.410	3.080	3.010	2.560	4.150	3.510	3.850	2.690
00916 CALCIUM	CA-TOT	MG/L								42.4	
00927 MGNSIUM	MG,TOT	MG/L								3.4	
00929 SODIUM	NA,TOT	MG/L								59.80	
00937 PTSSIUM	K,TOT	MG/L								8.97	
00940 CHLORIDE	TOTAL	MG/L								39	
00945 SULFATE	SO4-TOT	MG/L					40			44	
01002 ARSENIC	AS,TOT	UG/L					6			5K	
01007 BARIUM	BA,TOT	UG/L					230			100	
01027 CADMIUM	CD,TOT	UG/L					1K			3	
01034 CHROMIUM	CR,TOT	UG/L					71			6	
01051 LEAD	PB,TOT	UG/L					42			5K	
01077 SILVER	AG,TOT	UG/L					2.0			1.0K	
01147 SELENIUM	SE,TOT	UG/L					5K			5K	
31616 FEC COLI	MFM-FCBR	/100ML					24000J			1900J	

(SAMPLE CONTINUED ON NEXT PAGE)

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002025 URG110002025
35 33 24.0 106 14 47.0 4
SANTA FE RIVER AT TETILLA PEAK ACCESS ROAD BRIDG
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
/TYPA/AMBNT/STREAM UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0006.280 ON
0000 FEET DEPTH

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

INITIAL DATE			01/01/01	84/08/07	84/08/07	84/08/08	84/08/08	84/09/05	84/09/05	84/09/06	84/10/30
INITIAL TIME				1115	1600	0945	1520	1235	1710	0855	1545
MEDIUM			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
46570 CAL HARD	CA MG	MG/L								120$	
70300 RESIDUE	DISS-180 C	MG/L					353				
71900 MERCURY	HG,TOTAL	UG/L					.5K			.5K	

INITIAL DATE			84/12/05	85/02/25	85/03/14	85/05/21	85/05/27	85/05/28	85/05/28	85/05/29	85/05/29
INITIAL TIME			1545	1130	1540	1150	1420	1200	1600	1110	1710
MEDIUM			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010 WATER	TEMP	CENT		6.6		13.5	21.2	17.0	23.0	17.2	22.9
00011 WATER	TEMP	FAHN		43.9$		56.3$	70.2$	62.6$	73.4$	63.0$	73.2$
00061 STREAM	FLOW,	INST-CFS	5	9	52	27	37				50
00095 CNDUCTVY	AT 25C	MICROMHO		766		283	207	226	218	206	228
00300 DO		MG/L		9.4		8.1	6.8	5.7	5.9	7.0	6.1
00301 DO	SATUR	PERCENT		94.1$		93.3$	92.0$	71.8$	82.8$	88.2$	85.6$
00400 PH		SU		8.10		8.00	7.80	7.90	7.90	7.90	7.80
00440 HCO3 ION	HCO3	MG/L			149						
00530 RESIDUE	TOT NFLT	MG/L	52	80	223	449	279	343	511	344	509
00600 TOTAL N	N	MG/L	7.56C	7.08C		3.73C	1.58C	2.49C	2.67C	2.71C	2.73C
00605 ORG N	N	MG/L	.000C	1.050C		1.060C	.260C	.040C	.550C	.530C	.200C
00608 NH3+NH4-	N DISS	MG/L				2.400					
00610 NH3+NH4-	N TOTAL	MG/L	5.800	4.610		2.200	.600	1.840	1.300	1.600	1.700
00612 UN-IONZD	NH3-N	MG/L		.081$		.047$	.016$	.045$	.049$	.040$	.051$
00619 UN-IONZD	NH3-NH3	MG/L		.098$		.057$	.019$	.055$	.059$	.049$	.062$
00625 TOT KJEL	N	MG/L	5.100	5.660		3.260	.860	1.880	1.850	2.130	1.900
00630 NO2&NO3	N-TOTAL	MG/L	2.46	1.42		.47	.72	.61	.82	.58	.83
00631 NO2&NO3	N-DISS	MG/L				.6					
00640 T INORG.	NITROGEN	MG/L N	8.26C	6.03C		2.67C	1.32C	2.45C	2.12C	2.18C	2.53C
00665 PHOS-TOT		MG/L P	2.800	2.380		1.190	.640	1.100	1.130	1.070	1.100
00666 PHOS-DIS		MG/L P				.950					
00671 PHOS-DIS	ORTHO	MG/L P				.910					
00916 CALCIUM	CA-TOT	MG/L			36.4						
00927 MGNSIUM	MG,TOT	MG/L			5.2						
00929 SODIUM	NA,TOT	MG/L			18.40						
00937 PTSSIUM	K,TOT	MG/L			3.12						
00940 CHLORIDE	TOTAL	MG/L			12						
00945 SULFATE	SO4-TOT	MG/L			23						
01002 ARSENIC	AS,TOT	UG/L						5K			
01007 BARIUM	BA,TOT	UG/L						160			
01027 CADMIUM	CD,TOT	UG/L						2K			

(SAMPLE CONTINUED ON NEXT PAGE)

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URG110.002025 URG110002025
35 33 24.0 106 14 47.0 4
SANTA FE RIVER AT TETILLA PEAK ACCESS ROAD BRIDG
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
/TYPA/AMBNT/STREAM UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0006.280 ON
0000 FEET DEPTH

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

INITIAL DATE			84/12/05	85/02/25	85/03/14	85/05/21	85/05/27	85/05/28	85/05/28	85/05/29	85/05/29
INITIAL TIME			1545	1130	1540	1150	1420	1200	1600	1110	1710
MEDIUM			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
01034 CHROMIUM	CR,TOT	UG/L						5K			
01045 IRON	FE,TOT	UG/L						6200			
01051 LEAD	PB,TOT	UG/L						10K			
01077 SILVER	AG,TOT	UG/L						2.0K			
01147 SELENIUM	SE,TOT	UG/L						5K			
31616 FEC COLI	MFM-FCBR	/100ML		30			290				
46570 CAL HARD	CA MG	MG/L			112$						
50060 CHLORINE	TOT RESD	MG/L					.09				
71900 MERCURY	HG,TOTAL	UG/L						.5K			

INITIAL DATE			86/08/05	86/08/05	86/08/06	86/08/07	86/08/07	88/02/25
INITIAL TIME			1040	1545	1240	0905	1400	1350
MEDIUM			WATER	WATER	WATER	WATER	WATER	WATER
00010 WATER	TEMP	CENT	22.5	30.5	26.0	20.0	30.0	14.8
00011 WATER	TEMP	FAHN	72.5$	86.9$	78.8$	68.0$	86.0$	58.6$
00070 TURB	JKSN	JTU						24.0
00095 CNDUCTVY	AT 25C	MICROMHO	462	534	510	385	518	759
00116 INTNSVE	SURVEY	IDENT	863508	863508	863508	863508	863508	
00300 DO		MG/L	7.4	6.2	7.3	6.7	7.3	8.4
00301 DO	SATUR	PERCENT	102.7$	99.7$	108.8$	89.0$	117.3$	100.6$
00400 PH		SU	8.40	8.80	8.40	8.20	8.50	8.52
00410 T ALK	CACO3	MG/L			170			139
00440 HCO3 ION	HCO3	MG/L			208			170
00530 RESIDUE	TOT NFLT	MG/L	25	9	21	332	59	22
00600 TOTAL N	N	MG/L	8.50C	8.14C	8.87C	7.89C	7.99C	8.74C
00605 ORG N	N	MG/L	1.420C	1.560C	.800C	2.380C	1.353C	1.850C
00610 NH3+NH4-	N TOTAL	MG/L	.780	.180	1.530	.440	.357	6.010
00612 UN-IONZD	NH3-N	MG/L	.083$	.062$	.203$	.026$	.072$	.491$
00619 UN-IONZD	NH3-NH3	MG/L	.101$	.075$	.247$	.032$	.088$	.598$
00625 TOT KJEL	N	MG/L	2.200	1.740	2.330	2.820	1.710	7.860
00630 NO2&NO3	N-TOTAL	MG/L	6.30	6.40	6.54	5.07	6.28	.88
00640 T INORG.	NITROGEN	MG/L N	7.08C	6.58C	8.07C	5.51C	6.64C	6.89C
00665 PHOS-TOT		MG/L P	2.640	2.390	3.100	2.910	.170	2.700
00900 TOT HARD	CACO3	MG/L						60
00915 CALCIUM	CA,DISS	MG/L			44.0			170.0
00925 MGNSIUM	MG,DISS	MG/L			6.3			4.9
00930 SODIUM	NA,DISS	MG/L			64.40			69.00
00935 PTSSIUM	K,DISS	MG/L			6.63			10.00

(SAMPLE CONTINUED ON NEXT PAGE)

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002025 URG110002025
35 33 24.0 106 14 47.0 4
SANTA FE RIVER AT TETILLA PEAK ACCESS ROAD BRIDG
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
/TYPA/AMBNT/STREAM UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0006.280 ON
0000 FEET DEPTH

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

	INITIAL DATE			86/08/05	86/08/05	86/08/06	86/08/07	86/08/07	88/02/25
	INITIAL TIME			1040	1545	1240	0905	1400	1350
	MEDIUM			WATER	WATER	WATER	WATER	WATER	WATER
00940	CHLORIDE	TOTAL	MG/L			41			35
00945	SULFATE	SO4-TOT	MG/L			39			
00946	SULFATE	SO4-DISS	MG/L						40.2
01002	ARSENIC	AS,TOT	UG/L			5			5K
01007	BARIUM	BA,TOT	UG/L			140			100
01027	CADMIUM	CD,TOT	UG/L			1K			1K
01034	CHROMIUM	CR,TOT	UG/L			5K			5K
01051	LEAD	PB,TOT	UG/L			10K			10K
01077	SILVER	AG,TOT	UG/L			1.0K			2.0
01105	ALUMINUM	AL,TOT	UG/L						1300
01147	SELENIUM	SE,TOT	UG/L			5K			5K
31616	FEC COLI	MFM-FCBR	/100ML			200K			21K
46570	CAL HARD	CA MG	MG/L			136$			445$
50060	CHLORINE	TOT RESD	MG/L			.10			
70300	RESIDUE	DISS-180 C	MG/L	394	398	373	333	380	392
71900	MERCURY	HG,TOTAL	UG/L			.5K			.5K
74041	WQF	SAMPLE	UPDATED	861003	861003	861003	861003	861003	880509

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

/TYPA/AMBNT/STREAM

URG110.002035 URG110002035
35 33 27.0 106 09 07.0 4
ALAMO CR NEAR MOUTH ON SANTA FE RIVER (DIVERTED)
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0012.890 OFF
0000 FEET DEPTH

INITIAL DATE				01/01/01	84/08/07	84/08/07	84/08/07	84/08/08	84/08/08	84/08/08	84/09/05	84/09/05
INITIAL TIME					1010	1520	2040	0920	1155	1200	1125	1540
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT		23.8	23.8	17.6	17.0	25.5		18.8	20.0
00011	WATER	TEMP	FAHN		74.8$	74.8$	63.7$	62.6$	77.9$		65.8$	68.0$
00042	ALTITUDE	FEET	AB MSL	5820								
00061	STREAM	FLOW,	INST-CFS		.01				.01		.004	
00095	CNDUCTVY	AT 25C	MICROMHO		819	819	155	951	832		809	825
00116	INTNSVE	SURVEY	IDENT		843505	843505	843505	843505	843505	843505	843505	843505
00300	DO		MG/L		8.0	7.5	6.1	8.7	8.6		8.4	7.6
00301	DO	SATUR	PERCENT		116.6$	109.3$	79.5$	111.1$	126.8$		110.7$	102.3$
00400	PH		SU		8.20	8.20	8.20	8.20	8.20		8.30	7.90
00430	CO3 ALK	CACO3	MG/L						0			
00440	HCO3 ION	HCO3	MG/L						378			
00530	RESIDUE	TOT NFLT	MG/L		1	93	12	11	3		4	3
00610	NH3+NH4-	N TOTAL	MG/L		.030	.400	.130	.170	.050		.010	.050
00612	UN-IONZD	NH3-N	MG/L		.002$	.031$	.006$	.008$	.004$		.0007$	.002$
00619	UN-IONZD	NH3-NH3	MG/L		.003$	.037$	.008$	.010$	.005$		.0008$	.002$
00625	TOT KJEL	N	MG/L		.830	.980	.630	.800	.650		.210	.300
00630	NO2&NO3	N-TOTAL	MG/L		.12	.11	.09	.05	.04		.10	.08
00665	PHOS-TOT		MG/L P		.170	.180	.180	.180	.140		.230	.270
00945	SULFATE	SO4-TOT	MG/L						115			
01002	ARSENIC	AS,TOT	UG/L						5K			
01007	BARIUM	BA,TOT	UG/L						100K			
01027	CADMIUM	CD,TOT	UG/L						1K			
01034	CHROMIUM	CR,TOT	UG/L						16			
01051	LEAD	PB,TOT	UG/L						5K			
01077	SILVER	AG,TOT	UG/L						1.0K			
01147	SELENIUM	SE,TOT	UG/L						5K			
31616	FEC COLI	MFM-FCBR	/100ML							440		
70300	RESIDUE	DISS-180 C	MG/L						513			
71900	MERCURY	HG,TOTAL	UG/L						.5K			

INITIAL DATE			84/09/06	
INITIAL TIME			0740	
MEDIUM			WATER	
00010	WATER	TEMP	CENT	11.5
00011	WATER	TEMP	FAHN	52.7$

(SAMPLE CONTINUED ON NEXT PAGE)

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002035 URG110002035
35 33 27.0 106 09 07.0 4
ALAMO CR NEAR MOUTH ON SANTA FE RIVER (DIVERTED)
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
/TYPA/AMBNT/STREAM UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0012.890 OFF
0000 FEET DEPTH

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

	INITIAL DATE			84/09/06
	INITIAL TIME			0740
	MEDIUM			WATER
00095	CNDUCTVY	AT 25C	MICROMHO	789
00116	INTNSVE	SURVEY	IDENT	843505
00300	DO		MG/L	8.6
00301	DO	SATUR	PERCENT	96.0$
00400	PH		SU	8.00
00440	HCO3 ION	HCO3	MG/L	436
00530	RESIDUE	TOT NFLT	MG/L	600
00610	NH3+NH4-	N TOTAL	MG/L	.020
00612	UN-IONZD	NH3-N	MG/L	.0004$
00619	UN-IONZD	NH3-NH3	MG/L	.0005$
00625	TOT KJEL	N	MG/L	.330
00630	NO2&NO3	N-TOTAL	MG/L	.02
00665	PHOS-TOT		MG/L P	.250
00916	CALCIUM	CA-TOT	MG/L	85.6
00927	MGNSIUM	MG,TOT	MG/L	25.2
00929	SODIUM	NA,TOT	MG/L	66.70
00937	PTSSIUM	K,TOT	MG/L	6.63
00940	CHLORIDE	TOTAL	MG/L	27
00945	SULFATE	SO4-TOT	MG/L	93
01002	ARSENIC	AS,TOT	UG/L	5K
01007	BARIUM	BA,TOT	UG/L	160
01027	CADMIUM	CD,TOT	UG/L	4
01034	CHROMIUM	CR,TOT	UG/L	5K
01051	LEAD	PB,TOT	UG/L	5K
01077	SILVER	AG,TOT	UG/L	1.0K
01147	SELENIUM	SE,TOT	UG/L	5K
31616	FEC COLI	MFM-FCBR	/100ML	570
46570	CAL HARD	CA MG	MG/L	318$
71900	MERCURY	HG,TOTAL	UG/L	.5K

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002040 URG110002040
35 33 28.0 106 09 01.0 4
CIENEGA CREEK NE 90 FT ABV MOUTH ON SF RIV
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
/TYPA/AMBNT/STREAM UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0028.800 OFF
0000 FEET DEPTH

	INITIAL DATE			01/01/01	84/08/07	84/08/07	84/08/07	84/08/08	84/08/08	84/08/08	84/09/05	84/09/06
	INITIAL TIME				0950	1530	2115	0940	1155	1220	1155	0800
	MEDIUM			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT		20.0	24.8	18.5	18.0		23.8	24.0	11.0
00011	WATER	TEMP	FAHN		68.0$	76.6$	65.3$	64.4$		74.8$	75.2$	51.8$
00042	ALTITUDE	FEET	AB MSL	5825								
00061	STREAM	FLOW,	INST-CFS		.5					.3	.04	
00095	CNDUCTVY	AT 25C	MICROMHO		737	723	292	798		737	765	768
00116	INTNSVE	SURVEY	IDENT		843505	843505	843505	843505	843505	843505	843505	843505
00300	DO		MG/L		7.0	7.4	6.9	7.6		7.5	10.5	9.0
00301	DO	SATUR	PERCENT		94.3$	109.1$	90.0$	99.1$		109.3$	153.0$	100.5$
00400	PH		SU		8.10	8.20	8.20	8.20		8.20	8.40	8.20
00430	CO3 ALK	CACO3	MG/L							37		
00440	HCO3 ION	HCO3	MG/L							297		435
00530	RESIDUE	TOT NFLT	MG/L		30	35	49	19		17	21	550
00610	NH3+NH4-	N TOTAL	MG/L		.070	.180	.170	.050		.100	.120	.060
00612	UN-IONZD	NH3-N	MG/L		.003$	.015$	.009$	.003$		.008$	.014$	.002$
00619	UN-IONZD	NH3-NH3	MG/L		.004$	.018$	.011$	.003$		.009$	.017$	.002$
00625	TOT KJEL	N	MG/L		.730	.840	1.280	.440		.560	.830	.750
00630	NO2&NO3	N-TOTAL	MG/L		.39	.32	.43	.24		.24	.02	.13
00665	PHOS-TOT		MG/L P		.170	.170	.190	.150		.130	.310	.370
00916	CALCIUM	CA-TOT	MG/L									82.4
00927	MGNSIUM	MG,TOT	MG/L									22.9
00929	SODIUM	NA,TOT	MG/L									78.20
00937	PTSSIUM	K,TOT	MG/L									5.46
00940	CHLORIDE	TOTAL	MG/L									25
00945	SULFATE	SO4-TOT	MG/L							80		79
01002	ARSENIC	AS,TOT	UG/L							6		5K
01007	BARIUM	BA,TOT	UG/L							130		120
01027	CADMIUM	CD,TOT	UG/L							1		1K
01034	CHROMIUM	CR,TOT	UG/L							5K		6
01051	LEAD	PB,TOT	UG/L							5K		5K
01077	SILVER	AG,TOT	UG/L							1.0K		1.0K
01147	SELENIUM	SE,TOT	UG/L							5K		5K
31616	FEC COLI	MFM-FCBR	/100ML						600			1481J
46570	CAL HARD	CA MG	MG/L									300$
70300	RESIDUE	DISS-180	C MG/L							443		
71900	MERCURY	HG,TOTAL	UG/L							.5K		.5K

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002040 URG110002040
35 33 28.0 106 09 01.0 4
CIENEGA CREEK NE 90 FT ABV MOUTH ON SF RIV
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
/TYPA/AMBNT/STREAM UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0028.800 OFF
0000 FEET DEPTH

INITIAL DATE				85/05/27	85/05/28	85/05/28	85/05/29	85/05/29	86/08/05	86/08/05	86/08/06	86/08/07
INITIAL TIME				1220	1120	1520	1030	1520	0955	1440	1005	0805
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT		17.5		12.0	24.9	17.5	29.0	19.2	15.0
00011	WATER	TEMP	FAHN		63.5$		53.6$	76.8$	63.5$	84.2$	66.6$	59.0$
00095	CNDUCTVY	AT 25C	MICROMHO		863		995	932	690	635	681	600
00116	INTNSVE	SURVEY	IDENT						863508	863508	863508	863508
00300	DO		MG/L		6.0			6.0	5.8	6.8	7.8	7.0
00301	DO	SATUR	PERCENT		76.6$			88.5$	74.1$	108.0$	102.8$	85.0$
00400	PH		SU		8.20		8.10	8.20	8.40	8.40	8.20	8.10
00410	T ALK	CACO3	MG/L								310	
00440	HCO3 ION	HCO3	MG/L								379	
00530	RESIDUE	TOT NFLT	MG/L	23	38	45	37	59	32	63	20	54
00600	TOTAL N	N	MG/L	.39C	1.97C	.50C	.46C	.48C	1.32C	3.77C	1.17C	1.97C
00605	ORG N	N	MG/L	.060C	1.590C	.030C	.040C	.050C	1.920C	2.680C	.810C	1.670C
00610	NH3+NH4-	N TOTAL	MG/L	.230	.160	.280	.170	.290	.100K	.670	.210	.140
00612	UN-IONZD	NH3-N	MG/L		.008$		.005$	.024$	.008$	.106$	.012$	.005$
00619	UN-IONZD	NH3-NH3	MG/L		.010$		.005$	.029$	.009$	.129$	.014$	.006$
00625	TOT KJEL	N	MG/L	.290	1.750	.310	.210	.340	1.020	3.350	1.020	1.810
00630	NO2&NO3	N-TOTAL	MG/L	.10	.22	.19	.25	.14	.30	.42	.15	.16
00640	T INORG.	NITROGEN	MG/L N	.33C	.38C	.47C	.42C	.43C	.40K	1.09C	.36C	.30C
00665	PHOS-TOT		MG/L P	.110	.100	.140	.090	.120	.120	.400	.140	.190
00915	CALCIUM	CA,DISS	MG/L								85.6	
00925	MGNSIUM	MG,DISS	MG/L								16.1	
00930	SODIUM	NA,DISS	MG/L								78.20	
00935	PTSSIUM	K,DISS	MG/L								3.90	
00940	CHLORIDE	TOTAL	MG/L								18	
00945	SULFATE	SO4-TOT	MG/L								95	
01002	ARSENIC	AS,TOT	UG/L								6	
01007	BARIUM	BA,TOT	UG/L								200	
01027	CADMIUM	CD,TOT	UG/L								1K	
01034	CHROMIUM	CR,TOT	UG/L								5K	
01051	LEAD	PB,TOT	UG/L								10K	
01077	SILVER	AG,TOT	UG/L								1.0K	
01147	SELENIUM	SE,TOT	UG/L								5K	
31616	FEC COLI	MFM-FCBR	/100ML								6000L	
46570	CAL HARD	CA MG	MG/L								280$	
50060	CHLORINE	TOT RESD	MG/L								.04	

(SAMPLE CONTINUED ON NEXT PAGE)

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002040 URG110002040
35 33 28.0 106 09 01.0 4
CIENEGA CREEK NE 90 FT ABV MOUTH ON SF RIV
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0028.800 OFF
0000 FEET DEPTH

/TYPA/AMBNT/STREAM

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

INITIAL DATE			85/05/27	85/05/28	85/05/28	85/05/29	85/05/29	86/08/05	86/08/05	86/08/06	86/08/07
INITIAL TIME			1220	1120	1520	1030	1520	0955	1440	1005	0805
MEDIUM			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
70300 RESIDUE	DISS-180	C MG/L						518	492	530	485
71900 MERCURY	HG,TOTAL	UG/L								.5K	
74041 WQF	SAMPLE	UPDATED						861003	861003	861003	861008

INITIAL DATE			86/08/07
INITIAL TIME			1310
MEDIUM			WATER
00010 WATER	TEMP	CENT	25.0
00011 WATER	TEMP	FAHN	77.0$
00095 CNDUCTVY	AT 25C	MICROMHO	700
00116 INTNSVE	SURVEY	IDENT	863508
00300 DO		MG/L	6.0
00301 DO	SATUR	PERCENT	88.5$
00400 PH		SU	8.40
00530 RESIDUE	TOT NFLT	MG/L	170
00600 TOTAL N	N	MG/L	4.24C
00605 ORG N	N	MG/L	3.800C
00610 NH3+NH4-	N TOTAL	MG/L	.371
00612 UN-IONZD	NH3-N	MG/L	.046$
00619 UN-IONZD	NH3-NH3	MG/L	.056$
00625 TOT KJEL	N	MG/L	4.170
00630 NO2&NO3	N-TOTAL	MG/L	.07
00640 T INORG.	NITROGEN	MG/L N	.44C
00665 PHOS-TOT		MG/L P	.380
70300 RESIDUE	DISS-180	C MG/L	495
74041 WQF	SAMPLE	UPDATED	861003

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002030 URG110002030
35 33 28.0 106 09 12.0 4
SANTA FE RIVER 530 FT BELOW CIENEGA CREEK
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
/TYPA/AMBNT/STREAM UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0012.790 ON
0000 FEET DEPTH

INITIAL DATE				01/01/01	84/08/07	84/08/07	84/08/07	84/08/08	84/08/08	84/08/08	84/09/05	84/09/05
INITIAL TIME					1015	1510	2100	0910	1145	1150	1115	1745
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT		21.0	25.5	21.1	16.0	23.0		18.8	25.8
00011	WATER	TEMP	FAHN		69.8$	77.9$	70.0$	60.8$	73.4$		65.8$	78.4$
00042	ALTITUDE	FEET	AB MSL	5819								
00061	STREAM	FLOW,	INST-CFS		5				3		4	
00095	CNDUCTVY	AT 25C	MICROMHO		459	544	1326	708	530		596	571
00116	INTNSVE	SURVEY	IDENT		843505	843505	843505	843505	843505	843505	843505	843505
00300	DO		MG/L		5.1	3.9	3.7	5.7	5.3		6.4	5.0
00301	DO	SATUR	PERCENT		70.2$	57.5$	50.9$	70.6$	75.5$		84.3$	75.5$
00400	PH		SU					8.20	8.00		7.80	7.80
00430	CO3 ALK	CACO3	MG/L						0			
00440	HCO3 ION	HCO3	MG/L						191			
00530	RESIDUE	TOT NFLT	MG/L		4486	2015	15099	671	339		39	62
00610	NH3+NH4-	N TOTAL	MG/L		6.690	11.700	5.290	7.520	6.770		13.490	12.330
00612	UN-IONZD	NH3-N	MG/L					.335$	.318$		.302$	.450$
00619	UN-IONZD	NH3-NH3	MG/L					.408$	.386$		.367$	.547$
00625	TOT KJEL	N	MG/L		21.700	23.100	47.600	13.500	10.400		15.100	15.200
00630	NO2&NO3	N-TOTAL	MG/L		.99	.86	.34	.56	.81		3.38	4.52
00665	PHOS-TOT		MG/L P		3.220	3.470	2.670	2.830	2.560		4.580	4.250
00945	SULFATE	SO4-TOT	MG/L						41			
01002	ARSENIC	AS,TOT	UG/L						23			
01007	BARIUM	BA,TOT	UG/L						100			
01027	CADMIUM	CD,TOT	UG/L						1K			
01034	CHROMIUM	CR,TOT	UG/L						28			
01051	LEAD	PB,TOT	UG/L						17			
01077	SILVER	AG,TOT	UG/L						1.0			
01147	SELENIUM	SE,TOT	UG/L						5K			
31616	FEC COLI	MFM-FCBR	/100ML							15000J		
70300	RESIDUE	DISS-180	C MG/L						360			
71900	MERCURY	HG,TOTAL	UG/L						.5K			

INITIAL DATE				84/09/06	85/05/27	85/05/28	85/05/28	85/05/29	85/05/29	85/07/10	86/08/05	86/08/05
INITIAL TIME				0745	1150	1045	1455	1000	1540	1340	1000	1450
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT	12.5	19.8	15.0	23.5	15.2	23.6	28.3	18.0	29.5
00011	WATER	TEMP	FAHN	54.5$	67.6$	59.0$	74.3$	59.4$	74.5$	82.9$	64.4$	85.1$

(SAMPLE CONTINUED ON NEXT PAGE)

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

/TYPA/AMBNT/STREAM

URG110.002030 URG110002030
35 33 28.0 106 09 12.0 4
SANTA FE RIVER 530 FT BELOW CIENEGA CREEK
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0012.790 ON
0000 FEET DEPTH

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

	INITIAL DATE			84/09/06	85/05/27	85/05/28	85/05/28	85/05/29	85/05/29	85/07/10	86/08/05	86/08/05
	INITIAL TIME			0745	1150	1045	1455	1000	1540	1340	1000	1450
	MEDIUM			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00061	STREAM	FLOW,	INST-CFS		41				61			
00095	CNDUCTVY	AT 25C	MICROMHO	550	194	204	242	194	232	458	513	537
00116	INTNSVE	SURVEY	IDENT	843505							863508	863508
00300	DO		MG/L	6.5	7.0	8.3	5.7	7.8	6.4	5.5	5.8	5.8
00301	DO	SATUR	PERCENT	74.6$	94.6$	100.8$	81.1$	94.7$	93.3$	86.3$	75.6$	92.1$
00400	PH		SU	7.70	7.90	8.00	7.90	8.00	7.90	8.10	8.30	8.30
00430	CO3 ALK	CACO3	MG/L							145		
00440	HCO3 ION	HCO3	MG/L	110						177		
00530	RESIDUE	TOT NFLT	MG/L	363	170	274	463	299	481		37	16
00600	TOTAL N	N	MG/L		.60C	1.73C	2.82C	2.46C	3.18C		8.21C	10.06C
00605	ORG N	N	MG/L		.270C	.000C	.100C	.720C	.000C		.170C	2.110C
00610	NH3+NH4-	N TOTAL	MG/L	14.200	.140	1.450	2.400	1.500	2.870		4.290	2.460
00612	UN-IONZD	NH3-N	MG/L	.159$	.004$	.039$	.093$	.040$	.113$		.274$	.330$
00619	UN-IONZD	NH3-NH3	MG/L	.193$	.005$	.047$	.114$	.049$	.137$		.333$	.401$
00625	TOT KJEL	N	MG/L	17.000	.410	1.400	2.500	2.220	2.600		4.460	4.570
00630	NO2&NO3	N-TOTAL	MG/L	3.00	.19	.28	.32	.24	.31		3.75	5.49
00640	T INORG.	NITROGEN	MG/L N		.33C	1.73C	2.72C	1.74C	3.18C		8.04C	7.95C
00665	PHOS-TOT		MG/L P	4.400	.220	.920	1.150	.900	1.060		3.260	2.540
00916	CALCIUM	CA-TOT	MG/L	36.0						60.0		
00927	MGNSIUM	MG,TOT	MG/L	5.4						8.3		
00929	SODIUM	NA,TOT	MG/L	57.50						57.50		
00937	PTSSIUM	K,TOT	MG/L	8.19						7.41		
00940	CHLORIDE	TOTAL	MG/L	35						37		
00945	SULFATE	SO4-TOT	MG/L	40						43		
01002	ARSENIC	AS,TOT	UG/L	5K		5K				5		
01007	BARIUM	BA,TOT	UG/L	120		160				100		
01027	CADMIUM	CD,TOT	UG/L	1K		2K				1K		
01034	CHROMIUM	CR,TOT	UG/L	9		7				10K		
01045	IRON	FE,TOT	UG/L			6900						
01051	LEAD	PB,TOT	UG/L	6		10K				10K		
01077	SILVER	AG,TOT	UG/L	1.0		2.0K				1.0K		
01147	SELENIUM	SE,TOT	UG/L	5K		5K				5K		
31616	FEC COLI	MFM-FCBR	/100ML	30000J	110					830J		
46570	CAL HARD	CA MG	MG/L	112$						184$		
50060	CHLORINE	TOT RESD	MG/L		.05							
70300	RESIDUE	DISS-180	C MG/L							363	394	390
71900	MERCURY	HG,TOTAL	UG/L	.5K		.5K				.5		
74041	WQF	SAMPLE	UPDATED							861218	861003	861003

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002030 URG110002030
35 33 28.0 106 09 12.0 4
SANTA FE RIVER 530 FT BELOW CIENEGA CREEK
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
/TYPA/AMBNT/STREAM UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0012.790 ON
0000 FEET DEPTH

	INITIAL DATE			86/08/06	86/08/07	86/08/07	88/02/25
	INITIAL TIME			1015	0815	1320	1310
	MEDIUM			WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT	19.1	16.0	27.0	13.4
00011	WATER	TEMP	FAHN	66.4$	60.8$	80.6$	56.1$
00070	TURB	JKSN	JTU				9.3
00095	CNDUCTVY	AT 25C	MICROMHO	531	525	528	653
00116	INTNSVE	SURVEY	IDENT	863508	863508	863508	
00300	DO		MG/L	6.8	6.4	6.1	8.5
00301	DO	SATUR	PERCENT	89.6$	79.3$	93.3$	99.3$
00400	PH		SU	8.20	8.00	8.40	8.48
00410	T ALK	CACO3	MG/L	178			184
00440	HCO3 ION	HCO3	MG/L	217			224
00530	RESIDUE	TOT NFLT	MG/L	20	58	49	6
00600	TOTAL N	N	MG/L	9.27C	8.67C	9.99C	5.52C
00605	ORG N	N	MG/L	.680C	.500C	1.970C	.690C
00610	NH3+NH4-	N TOTAL	MG/L	4.720	4.710	3.660	4.110
00612	UN-IONZD	NH3-N	MG/L	.262$	.135$	.516$	.280$
00619	UN-IONZD	NH3-NH3	MG/L	.319$	.164$	.627$	.340$
00625	TOT KJEL	N	MG/L	5.400	5.210	5.630	4.800
00630	NO2&NO3	N-TOTAL	MG/L	3.87	3.46	4.36	.72
00640	T INORG.	NITROGEN	MG/L N	8.59C	8.17C	8.02C	4.83C
00665	PHOS-TOT		MG/L P	3.690	3.620	3.480	3.870
00900	TOT HARD	CACO3	MG/L				200
00915	CALCIUM	CA,DISS	MG/L	52.0			76.0
00925	MGNSIUM	MG,DISS	MG/L	2.4			2.4
00930	SODIUM	NA,DISS	MG/L	73.60			60.00
00935	PTSSIUM	K,DISS	MG/L	7.02			8.00
00940	CHLORIDE	TOTAL	MG/L	39			26
00945	SULFATE	SO4-TOT	MG/L	40			
00946	SULFATE	SO4-DISS	MG/L				39.8
01002	ARSENIC	AS,TOT	UG/L	5K			5K
01007	BARIUM	BA,TOT	UG/L	100			100
01027	CADMIUM	CD,TOT	UG/L	1K			2
01034	CHROMIUM	CR,TOT	UG/L	10			5K
01051	LEAD	PB,TOT	UG/L	10K			10K
01077	SILVER	AG,TOT	UG/L	1.0K			1.0K
01105	ALUMINUM	AL,TOT	UG/L				480

(SAMPLE CONTINUED ON NEXT PAGE)

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002030 URG110002030
35 33 28.0 106 09 12.0 4
SANTA FE RIVER 530 FT BELOW CIENEGA CREEK
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0012.790 ON
0000 FEET DEPTH

/TYPA/AMBNT/STREAM

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

	INITIAL DATE			86/08/06	86/08/07	86/08/07	88/02/25
	INITIAL TIME			1015	0815	1320	1310
	MEDIUM			WATER	WATER	WATER	WATER
01147	SELENIUM	SE,TOT	UG/L	5K			5K
31616	FEC COLI	MFM-FCBR	/100ML	600L			200K
46570	CAL HARD	CA MG	MG/L	140$			200$
50060	CHLORINE	TOT RESD	MG/L	.10			.04
70300	RESIDUE	DISS-180 C	MG/L	383	380	383	37
71900	MERCURY	HG,TOTAL	UG/L	.5K			.5K
74041	WQF	SAMPLE	UPDATED	861003	861003	861003	880705

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

/TYPA/AMBNT/STREAM

URG110.002045 URG110002045
35 33 31.0 106 09 03.0 4
SANTA FE RIVER 90 FT ABOVE CIENEGA CREEK
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0012.890 ON
0000 FEET DEPTH

INITIAL DATE				01/01/01	84/08/07	84/08/07	84/08/07	84/08/08	84/08/08	84/08/08	84/09/05	84/09/05
INITIAL TIME					1000	1550	2120	0930	1210	1220	1145	1755
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT		20.2	24.9	20.0	17.0	23.6		19.0	24.0
00011	WATER	TEMP	FAHN		68.4$	76.8$	68.0$	62.6$	74.5$		66.2$	75.2$
00042	ALTITUDE	FEET	AB MSL	5828								
00061	STREAM	FLOW,	INST-CFS		4				3		3	
00095	CNDUCTVY	AT 25C	MICROMHO		408	451	1232	493	401		470	592
00116	INTNSVE	SURVEY	IDENT		843505	843505	843505	843505	843505	843505	843505	843505
00300	DO		MG/L		4.8	3.5	4.4	5.6			5.6	4.9
00301	DO	SATUR	PERCENT		64.6$	51.6$	59.3$	71.5$			73.8$	71.4$
00400	PH		SU					8.00	7.80		8.00	7.70
00430	CO3 ALK	CACO3	MG/L						0			
00440	HCO3 ION	HCO3	MG/L						148			
00530	RESIDUE	TOT NFLT	MG/L		4823	2247	9326	637	378		38	58
00610	NH3+NH4-	N TOTAL	MG/L		8.250	14.140	4.540	8.740	7.990		13.280	12.550
00612	UN-IONZD	NH3-N	MG/L					.269$	.251$		.471$	.324$
00619	UN-IONZD	NH3-NH3	MG/L					.327$	.305$		.573$	.394$
00625	TOT KJEL	N	MG/L		40.000	25.500	39.200	16.200	12.800		14.500	14.500
00630	NO2&NO3	N-TOTAL	MG/L		1.07	.79	.45	.68	1.03		3.63	4.32
00665	PHOS-TOT		MG/L P		3.810	3.400	2.710	3.060	2.760		4.280	4.850
00945	SULFATE	SO4-TOT	MG/L						36			
01002	ARSENIC	AS,TOT	UG/L						28			
01007	BARIUM	BA,TOT	UG/L						130			
01027	CADMIUM	CD,TOT	UG/L						1K			
01034	CHROMIUM	CR,TOT	UG/L						34			
01051	LEAD	PB,TOT	UG/L						21			
01077	SILVER	AG,TOT	UG/L						2.0			
01147	SELENIUM	SE,TOT	UG/L						5K			
31616	FEC COLI	MFM-FCBR	/100ML							12000J		
70300	RESIDUE	DISS-180	C MG/L						398			
71900	MERCURY	HG,TOTAL	UG/L						.5K			

INITIAL DATE				84/09/06	85/05/27	85/05/28	85/05/28	85/05/29	85/05/29	85/07/10	85/08/28	86/08/05
INITIAL TIME				0805	1230	1100	1510	1015	1510	1400	1210	0940
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT	13.0	18.2	15.0	23.0	15.0	23.5	29.0	23.1	18.0
00011	WATER	TEMP	FAHN	55.4$	64.8$	59.0$	73.4$	59.0$	74.3$	84.2$	73.6$	64.4$

(SAMPLE CONTINUED ON NEXT PAGE)

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002045 URG110002045
35 33 31.0 106 09 03.0 4
SANTA FE RIVER 90 FT ABOVE CIENEGA CREEK
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
/TYPA/AMBNT/STREAM UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0012.890 ON
0000 FEET DEPTH

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

	INITIAL DATE			84/09/06	85/05/27	85/05/28	85/05/28	85/05/29	85/05/29	85/07/10	85/08/28	86/08/05
	INITIAL TIME			0805	1230	1100	1510	1015	1510	1400	1210	0940
	MEDIUM			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00061	STREAM	FLOW,	INST-CFS		39				56			
00095	CNDUCTVY	AT 25C	MICROMHO	508	145	156	218	154	210	570	519	484
00116	INTNSVE	SURVEY	IDENT	843505								863508
00300	DO		MG/L	6.4	7.1	7.4	5.6	7.5	6.2	5.8	6.4	7.0
00301	DO	SATUR	PERCENT	74.8$	92.3$	89.9$	79.7$	91.1$	88.3$	91.4$	91.1$	91.3$
00400	PH		SU	7.90	7.90	7.80	8.00	7.80	8.00	8.10	8.00	8.20
00430	CO3 ALK	CACO3	MG/L							139		
00440	HCO3 ION	HCO3	MG/L	101						169		
00530	RESIDUE	TOT NFLT	MG/L	360	345	269	523	265	528			28
00600	TOTAL N	N	MG/L		1.45C	2.00C	3.26C	2.31C	3.43C			11.43C
00605	ORG N	N	MG/L		.490C	.000C	.360C	.760C	.510C			2.290C
00610	NH3+NH4-	N TOTAL	MG/L	14.740	.730	1.760	2.600	1.300	2.600			5.110
00612	UN-IONZD	NH3-N	MG/L	.269$	.020$	.030$	.122$	.022$	.126$			.263$
00619	UN-IONZD	NH3-NH3	MG/L	.328$	.024$	.036$	.148$	.027$	.153$			.319$
00625	TOT KJEL	N	MG/L	15.700	1.220	1.600	2.960	2.060	3.110			7.400
00630	NO2&NO3	N-TOTAL	MG/L	2.99	.23	.24	.30	.25	.32			4.03
00640	T INORG.	NITROGEN	MG/L N		.96C	2.00C	2.90C	1.55C	2.92C			9.14C
00665	PHOS-TOT		MG/L P	4.250	.640	.910	1.030	.920	1.500			3.360
00916	CALCIUM	CA-TOT	MG/L	36.0						58.4		
00927	MGNSIUM	MG,TOT	MG/L	3.9						.5		
00929	SODIUM	NA,TOT	MG/L	55.20						59.80		
00937	PTSSIUM	K,TOT	MG/L	8.97						7.80		
00940	CHLORIDE	TOTAL	MG/L	39						38		
00945	SULFATE	SO4-TOT	MG/L	37						37		
01002	ARSENIC	AS,TOT	UG/L	5K		5K				5K		
01007	BARIUM	BA,TOT	UG/L	100		170				100		
01027	CADMIUM	CD,TOT	UG/L	1		2K				1		
01034	CHROMIUM	CR,TOT	UG/L	6		5K				10K		
01045	IRON	FE,TOT	UG/L			6900						
01051	LEAD	PB,TOT	UG/L	5K		10K				10K		
01077	SILVER	AG,TOT	UG/L	2.0		2.0K				1.0K		
01147	SELENIUM	SE,TOT	UG/L	5K		5K				5K		
31616	FEC COLI	MFM-FCBR	/100ML	25000J	92					560	120J	
46570	CAL HARD	CA MG	MG/L	106$						148$		
50060	CHLORINE	TOT RESD	MG/L		.09							
70300	RESIDUE	DISS-180	C MG/L							350		388
71900	MERCURY	HG,TOTAL	UG/L	.5K		.5K				.5K		
74041	WQF	SAMPLE	UPDATED							861218		861003

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002045 URG110002045
35 33 31.0 106 09 03.0 4
SANTA FE RIVER 90 FT ABOVE CIENEGA CREEK
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
/TYPA/AMBNT/STREAM UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0012.890 ON
0000 FEET DEPTH

	INITIAL DATE			86/08/05	86/08/06	86/08/07	86/08/07	88/02/25
	INITIAL TIME			1435	0950	0755	1300	1250
	MEDIUM			WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT	29.0	17.9	16.0	25.0	14.5
00011	WATER	TEMP	FAHN	84.2$	64.2$	60.8$	77.0$	58.1$
00070	TURB	JKSN	JTU					7.5
00095	CNDUCTVY	AT 25C	MICROMHO	543	514	513	480	666
00116	INTNSVE	SURVEY	IDENT	863508	863508	863508	863508	
00300	DO		MG/L	5.1	7.0	5.9	5.9	9.2
00301	DO	SATUR	PERCENT	81.0$	91.3$	73.1$	87.0$	109.6$
00400	PH		SU	8.30	8.20	8.00	8.30	8.53
00410	T ALK	CACO3	MG/L		172			113
00440	HCO3 ION	HCO3	MG/L		210			138
00530	RESIDUE	TOT NFLT	MG/L	34	11	69	11	16
00600	TOTAL N	N	MG/L	11.30C	21.20C	10.43C	9.64C	19.12C
00605	ORG N	N	MG/L	2.640C	11.770C	1.150C	.640C	10.030C
00610	NH3+NH4-	N TOTAL	MG/L	3.000	5.330	5.550	4.360	7.970
00612	UN-IONZD	NH3-N	MG/L	.391$	.272$	.159$	.443$	.652$
00619	UN-IONZD	NH3-NH3	MG/L	.475$	.331$	.193$	.539$	.793$
00625	TOT KJEL	N	MG/L	5.640	17.100	6.700	5.000	18.000
00630	NO2&NO3	N-TOTAL	MG/L	5.66	4.10	3.73	4.64	1.12
00640	T INORG.	NITROGEN	MG/L N	8.66C	9.43C	9.28C	9.00C	9.09C
00665	PHOS-TOT		MG/L P	2.750	3.690	4.150	4.850	7.170
00900	TOT HARD	CACO3	MG/L					100
00915	CALCIUM	CA,DISS	MG/L		32.8			36.0
00925	MGNSIUM	MG,DISS	MG/L		4.4			2.4
00930	SODIUM	NA,DISS	MG/L		78.20			74.00
00935	PTSSIUM	K,DISS	MG/L		7.02			12.00
00940	CHLORIDE	TOTAL	MG/L		42			39
00945	SULFATE	SO4-TOT	MG/L		33			
00946	SULFATE	SO4-DISS	MG/L					34.0
01002	ARSENIC	AS,TOT	UG/L		5K			5K
01007	BARIUM	BA,TOT	UG/L		120			100
01027	CADMIUM	CD,TOT	UG/L		1K			1K
01034	CHROMIUM	CR,TOT	UG/L		5K			5K
01051	LEAD	PB,TOT	UG/L		10K			10K
01077	SILVER	AG,TOT	UG/L		1.0K			2.0
01105	ALUMINUM	AL,TOT	UG/L					510

(SAMPLE CONTINUED ON NEXT PAGE)

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002045 URG110002045
35 33 31.0 106 09 03.0 4
SANTA FE RIVER 90 FT ABOVE CIENEGA CREEK
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
/TYPA/AMBNT/STREAM UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0012.890 ON
0000 FEET DEPTH

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

	INITIAL DATE			86/08/05	86/08/06	86/08/07	86/08/07	88/02/25
	INITIAL TIME			1435	0950	0755	1300	1250
	MEDIUM			WATER	WATER	WATER	WATER	WATER
01147	SELENIUM	SE,TOT	UG/L		5K			5K
31616	FEC COLI	MFM-FCBR	/100ML		260			57
46570	CAL HARD	CA MG	MG/L		100$			100$
50060	CHLORINE	TOT RESD	MG/L		.07			.04
70300	RESIDUE	DISS-180 C	MG/L	386	392	368	370	370
71900	MERCURY	HG,TOTAL	UG/L		.5K			.5K
74041	WQF	SAMPLE	UPDATED	861003	861003	861003	861003	880509

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

HRG87
35 33 37.0 106 14 09.0 4
SANTA FE RIVER AT LA BAJADA
35049 NEW MEXICO SANTA FE
120991

/TYPA/AMBNT/STREAM

21NMEX 13020201011 0006.770 ON
0003 FEET DEPTH

	INITIAL DATE			75/05/12	75/07/15	75/08/04	75/09/08	75/10/20	76/01/05	76/05/02	76/08/13
	INITIAL TIME			1515	1515	1230	0945	1530	1030	1130	1230
	MEDIUM			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT	25.0	31.1	28.9	17.2	17.8	.6	14.4	25.6
00011	WATER	TEMP	FAHN	77.0$	88.0$	84.0$	63.0$	64.0$	33.1$	58.0$	78.0$
00060	STREAM	FLOW	CFS	3	3	2	16	6	8	10	4
00070	TURB	JKSN	JTU	24.0	25.0	100.0	47.0	13.0	13.0	21.0	25.0
00095	CNDUCTVY	AT 25C	MICROMHO	560	540	630	660	630	730	590	680
00610	NH3+NH4-	N TOTAL	MG/L	2.073	2.330	3.480	5.652	1.770	8.790	8.567	6.387
00620	NO3-N	TOTAL	MG/L	2.460	3.520	2.590	1.030	4.382	.419	.770	.933
00665	PHOS-TOT		MG/L P	1.114	.108	.864	2.500	3.500	4.780	5.250	3.930

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002020 URG110002020
35 34 47.0 106 16 34.0 4
SANTA FE RIVER 3/16 MI ABOVE MARSH
35043 NEW MEXICO SANDOVAL
WESTERN GULF 120900
/TYPA/AMBNT/STREAM UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0003.880 ON
0000 FEET DEPTH

	INITIAL DATE			01/01/01	84/08/07	84/08/07	84/08/08	84/08/08	84/08/08	84/09/05	84/09/05	84/09/06
	INITIAL TIME				1200	1530	0920	1305	1500	1310	1645	0920
	MEDIUM			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT		25.0	26.0	19.3		25.0	17.5	25.0	15.0
00011	WATER	TEMP	FAHN		77.0$	78.8$	66.7$		77.0$	63.5$	77.0$	59.0$
00042	ALTITUDE	FEET	AB MSL	5370								
00061	STREAM	FLOW,	INST-CFS		6				3	3		
00095	CNDUCTVY	AT 25C	MICROMHO		423	382	357		322	546	560	506
00116	INTNSVE	SURVEY	IDENT		843505	843505	843505	843505	843505	843505	843505	843505
00300	DO		MG/L		3.1	3.4	5.0		3.8	4.9	4.0	6.2
00301	DO	SATUR	PERCENT		44.9$	50.5$	64.8$		55.1$	61.5$	58.0$	74.1$
00400	PH		SU						7.70	7.60	7.50	7.50
00430	CO3 ALK	CACO3	MG/L						0			
00440	HCO3 ION	HCO3	MG/L						185			130
00530	RESIDUE	TOT NFLT	MG/L		15553	9241	3754		1461	157	163	393
00610	NH3+NH4-	N TOTAL	MG/L		11.700	5.620	2.750		2.930	7.380	5.910	3.130
00612	UN-IONZD	NH3-N	MG/L						.081$	.096$	.104$	.027$
00619	UN-IONZD	NH3-NH3	MG/L						.099$	.116$	.127$	.033$
00625	TOT KJEL	N	MG/L		81.700	33.700	14.200		9.000	10.800	8.490	3.650
00630	NO2&NO3	N-TOTAL	MG/L		2.73	3.37	1.96		3.03	8.10	11.20	10.60
00665	PHOS-TOT		MG/L P		3.870	3.350	2.980		2.760	4.730	.470	4.560
00916	CALCIUM	CA-TOT	MG/L									40.8
00927	MGNSIUM	MG,TOT	MG/L									4.4
00929	SODIUM	NA,TOT	MG/L									59.80
00937	PTSSIUM	K,TOT	MG/L									8.97
00940	CHLORIDE	TOTAL	MG/L									40
00945	SULFATE	SO4-TOT	MG/L						36			44
01002	ARSENIC	AS,TOT	UG/L						43			5K
01007	BARIUM	BA,TOT	UG/L						640			140
01027	CADMIUM	CD,TOT	UG/L						3			1
01034	CHROMIUM	CR,TOT	UG/L						100			11
01051	LEAD	PB,TOT	UG/L						77			5K
01077	SILVER	AG,TOT	UG/L						3.0			1.0
01147	SELENIUM	SE,TOT	UG/L						5K			5K
31616	FEC COLI	MFM-FCBR	/100ML					40000J				627J
46570	CAL HARD	CA MG	MG/L									120$
70300	RESIDUE	DISS-180 C	MG/L						353			
71900	MERCURY	HG,TOTAL	UG/L						.5K			.5K

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002005 URG110002005
35 35 08.0 106 17 55.0 4
SANTA FE RIVER AT COCHITI SPRINGS (BELOW DAM)
35043 NEW MEXICO SANDOVAL
WESTERN GULF 120900
/TYPA/AMBNT/STREAM UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0002.500 ON
0000 FEET DEPTH

INITIAL DATE			01/01/01	84/08/07	84/08/08	84/08/08	85/05/28	85/05/29	86/08/05	86/08/06	86/08/07
INITIAL TIME				1330	1405	1410	1640	1200	1130	1215	0950
MEDIUM			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010 WATER	TEMP	CENT		17.2	16.0		17.0	17.2	20.0	16.8	18.0
00011 WATER	TEMP	FAHN		63.0$	60.8$		62.6$	63.0$	68.0$	62.2$	64.4$
00042 ALTITUDE	FEET	AB MSL	5320								
00061 STREAM	FLOW,	INST-CFS		.7	.7						
00095 CNDUCTVY	AT 25C	MICROMHO		694	738		754	902	935	477	479
00116 INTNSVE	SURVEY	IDENT		843505	843505	843505			863508	863508	863508
00300 DO		MG/L		2.3	2.3		3.0	3.5	5.5	6.1	5.8
00301 DO	SATUR	PERCENT		28.8$	28.0$		37.6$	43.9$	72.7$	76.5$	74.2$
00400 PH		SU		7.40	7.30		7.40	7.40	8.00	8.10	8.00
00410 T ALK	CACO3	MG/L								149	
00430 CO3 ALK	CACO3	MG/L			0						
00440 HCO3 ION	HCO3	MG/L			277					181	
00530 RESIDUE	TOT NFLT	MG/L		1K	1K		30	19	11	3K	3K
00600 TOTAL N	N	MG/L					2.20C	2.29C	.85C	1.47C	.84C
00605 ORG N	N	MG/L					.000C	.060C	.250K	.870C	.200C
00610 NH3+NH4-	N TOTAL	MG/L		.010	.030		.200	.230	.100K	.100K	.120
00612 UN-IONZD	NH3-N	MG/L		.00008$	.0002$		.002$	.002$	.004$	.004$	.004$
00619 UN-IONZD	NH3-NH3	MG/L		.00010$	.0002$		.002$	.002$	.005$	.005$	.005$
00625 TOT KJEL	N	MG/L		.380	.660		.150	.290	.350	.970	.320
00630 NO2&NO3	N-TOTAL	MG/L		2.18	1.38		2.00	2.00	.50	.50	.52
00640 T INORG.	NITROGEN	MG/L N					2.20C	2.23C	.60C	.60C	.64C
00665 PHOS-TOT		MG/L P		.070	.070		.110	.100	.010K	.010K	.010K
00915 CALCIUM	CA,DISS	MG/L								53.6	
00925 MGNSIUM	MG,DISS	MG/L								7.8	
00930 SODIUM	NA,DISS	MG/L								64.90	
00935 PTSSIUM	K,DISS	MG/L								3.90	
00940 CHLORIDE	TOTAL	MG/L								26	
00945 SULFATE	SO4-TOT	MG/L			75					114	
01002 ARSENIC	AS,TOT	UG/L			5K					5K	
01007 BARIUM	BA,TOT	UG/L			100K					100	
01027 CADMIUM	CD,TOT	UG/L			1K					1K	
01034 CHROMIUM	CR,TOT	UG/L			16					5K	
01051 LEAD	PB,TOT	UG/L			5K					10K	
01077 SILVER	AG,TOT	UG/L			1.0K					1.0K	
01147 SELENIUM	SE,TOT	UG/L			5K					5K	

(SAMPLE CONTINUED ON NEXT PAGE)

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002005 URG110002005
35 35 08.0 106 17 55.0 4
SANTA FE RIVER AT COCHITI SPRINGS (BELOW DAM)
35043 NEW MEXICO SANDOVAL
WESTERN GULF 120900
/TYPA/AMBNT/STREAM UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0002.500 ON
0000 FEET DEPTH

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

				01/01/01	84/08/07	84/08/08	84/08/08	85/05/28	85/05/29	86/08/05	86/08/06	86/08/07
INITIAL DATE					1330	1405	1410	1640	1200	1130	1215	0950
INITIAL TIME												
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
31616	FEC COLI	MFM-FCBR	/100ML				10K				200K	
46570	CAL HARD	CA MG	MG/L								166$	
50060	CHLORINE	TOT RESD	MG/L								.09	
70300	RESIDUE	DISS-180 C	MG/L			490				405	388	390
71900	MERCURY	HG,TOTAL	UG/L			.5K					.5K	
74041	WQF	SAMPLE	UPDATED							861003	861003	861003

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002050 URG110002050
35 37 16.0 106 06 22.0 4
SANTA FE R 1.0 MI BELOW 1ST BRIDGE BELOW WWTF
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
/TYPA/AMBNT/STREAM UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0018.740 ON
0000 FEET DEPTH

INITIAL DATE				01/01/01	84/08/07	84/08/07	84/08/07	84/08/08	84/09/05	84/09/05	84/09/06	85/05/27
INITIAL TIME					0917	1615	2000	0845	1035	1820	0635	1110
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT						22.3	24.1	16.0	18.5
00011	WATER	TEMP	FAHN						72.1$	75.4$	60.8$	65.3$
00042	ALTITUDE	FEET	AB MSL	6205								
00095	CNDUCTVY	AT 25C	MICROMHO									181
00116	INTNSVE	SURVEY	IDENT		843505	843505	843505	843505	843505	843505	843505	
00300	DO		MG/L		6.9	1.4	4.8	3.8		5.4	3.9	6.8
00301	DO	SATUR	PERCENT							79.8$	49.0$	89.9$

INITIAL DATE				85/05/28	85/05/28	85/05/29	85/05/29	85/07/10	85/08/28	86/08/05	86/08/05	86/08/06
INITIAL TIME				1000	1420	0920	1500	1255	1055	0910	1355	0915
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT	15.0	22.5	14.5	22.5	29.0	26.2	22.0	29.5	23.2
00011	WATER	TEMP	FAHN	59.0$	72.5$	58.1$	72.5$	84.2$	79.2$	71.6$	85.1$	73.8$
00095	CNDUCTVY	AT 25C	MICROMHO	174	202	157	194	644	576	625	592	570
00116	INTNSVE	SURVEY	IDENT							863508	863508	863508
00300	DO		MG/L	5.1	6.3	7.0	6.3	5.5	7.4	5.8	6.8	6.0
00301	DO	SATUR	PERCENT	62.8$	90.0$	84.6$	90.0$	88.6$	113.4$	82.8$	109.6$	86.7$
00400	PH		SU							8.00	8.10	8.10
31616	FEC COLI	MFM-FCBR	/100ML					1800J	60L			200K
50060	CHLORINE	TOT RESD	MG/L									.11
74041	WQF	SAMPLE	UPDATED							861003	861003	861003

INITIAL DATE				86/08/07	86/08/07	88/02/25
INITIAL TIME				0720	1235	1200
MEDIUM				WATER	WATER	WATER
00010	WATER	TEMP	CENT	20.0	26.0	18.8
00011	WATER	TEMP	FAHN	68.0$	78.8$	65.8$
00070	TURB	JKSN	JTU			9.7
00095	CNDUCTVY	AT 25C	MICROMHO	440	588	809
00116	INTNSVE	SURVEY	IDENT	863505	863508	
00300	DO		MG/L	5.9	5.6	7.6
00301	DO	SATUR	PERCENT	80.6$	85.8$	101.6$
00400	PH		SU	8.00	7.90	7.93
00410	T ALK	CACO3	MG/L			140
00440	HCO3 ION	HCO3	MG/L			170

(SAMPLE CONTINUED ON NEXT PAGE)

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002050 URG110002050
35 37 16.0 106 06 22.0 4
SANTA FE R 1.0 MI BELOW 1ST BRIDGE BELOW WWTF
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0018.740 ON
0000 FEET DEPTH

/TYPA/AMBNT/STREAM

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

	INITIAL DATE			86/08/07	86/08/07	88/02/25
	INITIAL TIME			0720	1235	1200
	MEDIUM			WATER	WATER	WATER
00530	RESIDUE	TOT NFLT	MG/L			14
00600	TOTAL N	N	MG/L			16.15C
00605	ORG N	N	MG/L			6.400C
00610	NH3+NH4-	N TOTAL	MG/L			9.400
00612	UN-IONZD	NH3-N	MG/L			.281$
00619	UN-IONZD	NH3-NH3	MG/L			.342$
00625	TOT KJEL	N	MG/L			15.800
00630	NO2&NO3	N-TOTAL	MG/L			.35
00640	T INORG.	NITROGEN	MG/L N			9.75C
00665	PHOS-TOT		MG/L P			3.000
00900	TOT HARD	CACO3	MG/L			140
00915	CALCIUM	CA,DISS	MG/L			44.0
00925	MGNSIUM	MG,DISS	MG/L			7.3
00930	SODIUM	NA,DISS	MG/L			87.00
00935	PTSSIUM	K,DISS	MG/L			11.00
00940	CHLORIDE	TOTAL	MG/L			46
00946	SULFATE	SO4-DISS	MG/L			37.0
01002	ARSENIC	AS,TOT	UG/L			5K
01007	BARIUM	BA,TOT	UG/L			100
01027	CADMIUM	CD,TOT	UG/L			1K
01034	CHROMIUM	CR,TOT	UG/L			5K
01051	LEAD	PB,TOT	UG/L			10K
01077	SILVER	AG,TOT	UG/L			2.0
01105	ALUMINUM	AL,TOT	UG/L			180
01147	SELENIUM	SE,TOT	UG/L			5K
31616	FEC COLI	MFM-FCBR	/100ML			29
46570	CAL HARD	CA MG	MG/L			140$
50060	CHLORINE	TOT RESD	MG/L			.08
70300	RESIDUE	DISS-180 C	MG/L			402
71900	MERCURY	HG,TOTAL	UG/L			.5K
74041	WQF	SAMPLE	UPDATED	861003	861003	880518

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002055 URG110002055
35 37 33.0 106 05 54.0 4
SANTA FE R. .5 MI BELOW FIRST BRIDGE BELOW WWTF
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
/TYPA/AMBNT/STREAM UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0019.280 ON
0000 FEET DEPTH

INITIAL DATE				01/01/01	84/08/07	84/08/07	84/08/07	84/08/08	84/09/05	84/09/05	84/09/06	85/05/27
INITIAL TIME					0910	1625	1955	0840	1025	1825	0630	1100
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT						23.1	22.9	16.5	18.0
00011	WATER	TEMP	FAHN						73.6$	73.2$	61.7$	64.4$
00042	ALTITUDE	FEET	AB MSL	6230								
00095	CNDUCTVY	AT 25C	MICROMHO									188
00116	INTNSVE	SURVEY	IDENT		843505	843505	843505	843505	843505	843505	843505	
00300	DO		MG/L		6.7	.4	4.5	3.9	5.6	4.6	4.3	6.6
00301	DO	SATUR	PERCENT						81.0$	66.5$	54.1$	87.1$

INITIAL DATE				85/05/28	85/05/28	85/05/29	85/05/29	85/07/10	85/08/28	86/08/05	86/08/05	86/08/06
INITIAL TIME				0950	1415	0920	1450	1250	1045	0900	1345	0905
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT	14.0	23.0	14.5	22.5	27.8	27.1	22.1	28.0	23.9
00011	WATER	TEMP	FAHN	57.2$	73.4$	58.1$	72.5$	82.0$	80.8$	71.8$	82.4$	75.0$
00095	CNDUCTVY	AT 25C	MICROMHO	183	201	157	173	576	575	624	573	593
00116	INTNSVE	SURVEY	IDENT							863508	863508	863508
00300	DO		MG/L	7.5	6.3	7.3	6.1	5.7	6.4	6.1	5.8	5.8
00301	DO	SATUR	PERCENT	90.7$	91.1$	88.3$	87.2$	90.8$	98.6$	87.2$	92.3$	85.8$
00400	PH		SU							8.00	8.00	8.00
31616	FEC COLI	MFM-FCBR	/100ML					380	69J			200K
50060	CHLORINE	TOT RESD	MG/L									.12
74041	WQF	SAMPLE	UPDATED							861003	861003	861003

INITIAL DATE				86/08/07	86/08/07
INITIAL TIME				0705	1220
MEDIUM				WATER	WATER
00010	WATER	TEMP	CENT	21.0	17.0
00011	WATER	TEMP	FAHN	69.8$	62.6$
00095	CNDUCTVY	AT 25C	MICROMHO	648	696
00116	INTNSVE	SURVEY	IDENT	863508	863508
00300	DO		MG/L	5.5	5.9
00301	DO	SATUR	PERCENT	76.9$	76.5$
00400	PH		SU	7.80	7.80
74041	WQF	SAMPLE	UPDATED	861003	861003

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002060 URG110002060
35 37 46.0 106 05 27.0 4
SANTA FE R. AT 1ST AIRPORT RD BRIDGE BELOW WWTF
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
/TYPA/AMBNT/STREAM UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0019.670 ON
0000 FEET DEPTH

INITIAL DATE				01/01/01	84/08/07	84/08/07	84/08/07	84/08/08	84/08/08	84/08/08	84/09/05	84/09/05
INITIAL TIME					0900	1655	1950	0830	1100	1130	1010	1835
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT		23.0	22.0	21.0	22.5	24.2		24.0	23.0
00011	WATER	TEMP	FAHN		73.4$	71.6$	69.8$	72.5$	75.6$		75.2$	73.4$
00042	ALTITUDE	FEET	AB MSL	6257								
00061	STREAM	FLOW,	INST-CFS		5				9		8	
00095	CNDUCTVY	AT 25C	MICROMHO		624	243	383	1281	630		632	624
00116	INTNSVE	SURVEY	IDENT		843505	843505	843505	843505	843505	843505	843505	843505
00300	DO		MG/L		3.0	3.8	3.9	2.5	3.0		4.8	3.8
00301	DO	SATUR	PERCENT		43.4$	54.4$	54.6$	35.8$	44.4$		71.1$	55.0$
00400	PH		SU		7.20			7.20	7.20		7.20	7.20
00430	CO3 ALK	CACO3	MG/L						0			
00440	HCO3 ION	HCO3	MG/L						137			
00530	RESIDUE	TOT NFLT	MG/L		453	25139	7852	99	112		63	52
00610	NH3+NH4-	N TOTAL	MG/L		21.480	2.060	8.550	21.340	21.340		22.510	24.270
00612	UN-IONZD	NH3-N	MG/L		.166$			.159$	.180$		.187$	.188$
00619	UN-IONZD	NH3-NH3	MG/L		.202$			.194$	.219$		.227$	.228$
00625	TOT KJEL	N	MG/L		34.900	40.400	31.100	30.900	31.500		24.100	30.000
00630	NO2&NO3	N-TOTAL	MG/L		.10	.46	.17	.06	.06		.01K	.01K
00665	PHOS-TOT		MG/L P		4.340	.510	3.340	8.780	8.780		4.760	4.530
00945	SULFATE	SO4-TOT	MG/L						44			
01002	ARSENIC	AS,TOT	UG/L						5K			
01007	BARIUM	BA,TOT	UG/L						100			
01027	CADMIUM	CD,TOT	UG/L						1K			
01034	CHROMIUM	CR,TOT	UG/L						9			
01051	LEAD	PB,TOT	UG/L						14			
01077	SILVER	AG,TOT	UG/L						6.5			
01147	SELENIUM	SE,TOT	UG/L						5K			
31616	FEC COLI	MFM-FCBR	/100ML							7600		
70300	RESIDUE	DISS-180 C	MG/L						318			
71900	MERCURY	HG,TOTAL	UG/L						.5K			

INITIAL DATE				84/09/06	84/09/06	84/09/07	84/09/07	85/05/21	85/05/27	85/05/28	85/05/28	85/05/29
INITIAL TIME				0620	0700	0620	1400	1025	1015	0930	1400	0900
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT	18.7				18.0	14.8	14.0	21.0	14.8
00011	WATER	TEMP	FAHN	65.7$				64.4$	58.6$	57.2$	69.8$	58.6$

(SAMPLE CONTINUED ON NEXT PAGE)

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002060 URG110002060
35 37 46.0 106 05 27.0 4
SANTA FE R. AT 1ST AIRPORT RD BRIDGE BELOW WWTF
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
/TYPA/AMBNT/STREAM UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0019.670 ON
0000 FEET DEPTH

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

INITIAL DATE				84/09/06	84/09/06	84/09/07	84/09/07	85/05/21	85/05/27	85/05/28	85/05/28	85/05/29
INITIAL TIME				0620	0700	0620	1400	1025	1015	0930	1400	0900
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00061	STREAM	FLOW,	INST-CFS					38	39			
00095	CNDUCTVY	AT 25C	MICROMHO	653				399	175	171	200	111
00116	INTNSVE	SURVEY	IDENT	843505	843505							
00300	DO		MG/L	2.0				7.0	7.2	8.0	6.5	7.9
00301	DO	SATUR	PERCENT	26.8$				92.8$	89.1$	96.9$	90.9$	97.5$
00400	PH		SU	7.30				7.30	7.50	7.40	7.50	7.70
00440	HCO3 ION	HCO3	MG/L			92						
00530	RESIDUE	TOT NFLT	MG/L			358		224	191	326	322	229
00600	TOTAL N	N	MG/L					8.74C	4.43C	2.60C	3.57C	2.16C
00605	ORG N	N	MG/L					.700C	1.790C	.000C	.130C	.320C
00608	NH3+NH4-	N DISS	MG/L					8.300				
00610	NH3+NH4-	N TOTAL	MG/L	27.210				8.000	2.600	2.560	3.400	1.800
00612	UN-IONZD	NH3-N	MG/L	.194$				.046$	.022$	.016$	.045$	.024$
00619	UN-IONZD	NH3-NH3	MG/L	.236$				.056$	.027$	.020$	.055$	.029$
00625	TOT KJEL	N	MG/L	27.300				8.700	4.390	2.300	3.530	2.120
00630	NO2&NO3	N-TOTAL	MG/L	.01K				.04K	.04K	.04K	.04K	.04K
00631	NO2&NO3	N-DISS	MG/L					.03				
00640	T INORG.	NITROGEN	MG/L N					8.04C	2.64C	2.60C	3.44C	1.84C
00665	PHOS-TOT		MG/L P	4.950				2.660	.650	1.040	.970	.850
00666	PHOS-DIS		MG/L P					1.240				
00671	PHOS-DIS	ORTHO	MG/L P					1.600				
00916	CALCIUM	CA-TOT	MG/L			30.4						
00927	MGNSIUM	MG,TOT	MG/L			5.4						
00929	SODIUM	NA,TOT	MG/L			64.40						
00937	PTSSIUM	K,TOT	MG/L			80.70						
00940	CHLORIDE	TOTAL	MG/L			40						
00945	SULFATE	SO4-TOT	MG/L			43						
01002	ARSENIC	AS,TOT	UG/L				5K			5K		
01007	BARIUM	BA,TOT	UG/L				140			140		
01027	CADMIUM	CD,TOT	UG/L				1K			2K		
01034	CHROMIUM	CR,TOT	UG/L				5K			5K		
01045	IRON	FE,TOT	UG/L							6300		
01051	LEAD	PB,TOT	UG/L				7			10K		
01077	SILVER	AG,TOT	UG/L				1.0K			2.0K		
01147	SELENIUM	SE,TOT	UG/L				5K			5K		
31616	FEC COLI	MFM-FCBR	/100ML		33000J				170J			
46570	CAL HARD	CA MG	MG/L			98$						
50060	CHLORINE	TOT RESD	MG/L						.14			

(SAMPLE CONTINUED ON NEXT PAGE)

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002060 URG110002060
35 37 46.0 106 05 27.0 4
SANTA FE R. AT 1ST AIRPORT RD BRIDGE BELOW WWTF
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0019.670 ON
0000 FEET DEPTH

/TYPA/AMBNT/STREAM

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

INITIAL DATE				84/09/06	84/09/06	84/09/07	84/09/07	85/05/21	85/05/27	85/05/28	85/05/28	85/05/29
INITIAL TIME				0620	0700	0620	1400	1025	1015	0930	1400	0900
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
71900 MERCURY	HG,TOTAL	UG/L					.5K			.5K		

INITIAL DATE				85/05/29	85/07/10	85/08/28	86/08/05	86/08/05	86/08/06	86/08/07	86/08/07	88/02/05
INITIAL TIME				1420	1215	1010	0850	1330	0845	0645	1205	1030
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010 WATER	TEMP	CENT		22.2	25.5	25.0	23.0	26.5	21.0	22.0	19.0	13.6
00011 WATER	TEMP	FAHN		72.0$	77.9$	77.0$	73.4$	79.7$	69.8$	71.6$	66.2$	56.5$
00061 STREAM	FLOW,	INST-CFS		53								
00070 TURB	JKSN	JTU										125.0
00095 CNDUCTVY	AT 25C	MICROMHO		120	673	600	624	582	637	636	672	502
00116 INTNSVE	SURVEY	IDENT					863508	863508	863508	863508	863508	
00300 DO		MG/L		6.8	5.2	5.7	5.5	6.3	5.5	4.7	5.9	7.0
00301 DO	SATUR	PERCENT		97.3$	78.0$	85.4$	79.6$	96.7$	77.0$	67.2$	79.0$	84.7$
00400 PH		SU		7.60	7.20	7.30	7.30	7.60	7.50	7.30	7.40	7.20
00410 T ALK	CACO3	MG/L							210			
00430 CO3 ALK	CACO3	MG/L			82							
00440 HCO3 ION	HCO3	MG/L			100				257			
00530 RESIDUE	TOT NFLT	MG/L		267			13	10	5	13	9	
00600 TOTAL N	N	MG/L		2.95C			19.94C	13.02C	18.41C	12.76C	23.02C	9.23C
00605 ORG N	N	MG/L		.010C			7.200C	.300C	5.700C	.000C	12.000C	5.220C
00610 NH3+NH4-	N TOTAL	MG/L		2.900			12.500	12.500	12.500	12.600	10.800	2.800
00612 UN-IONZD	NH3-N	MG/L		.053$			.122$	.306$	.166$	.114$	.099$	.011$
00619 UN-IONZD	NH3-NH3	MG/L		.064$			.148$	.372$	.202$	.139$	.120$	.013$
00625 TOT KJEL	N	MG/L		2.910			19.700	12.800	18.200	12.200	22.800	8.020
00630 NO2&NO3	N-TOTAL	MG/L		.04K			.24	.22	.21	.16	.22	1.21
00640 T INORG.	NITROGEN	MG/L N		2.94C			12.74C	12.72C	12.71C	12.76C	11.02C	4.01C
00665 PHOS-TOT		MG/L P		.920			2.340	2.340	.100	3.530	2.740	
00915 CALCIUM	CA,DISS	MG/L							32.0			
00916 CALCIUM	CA-TOT	MG/L			40.0							
00925 MGNSIUM	MG,DISS	MG/L							1.0			
00927 MGNSIUM	MG,TOT	MG/L			3.4							
00929 SODIUM	NA,TOT	MG/L			73.60							
00930 SODIUM	NA,DISS	MG/L							78.20			
00935 PTSSIUM	K,DISS	MG/L							7.02			
00937 PTSSIUM	K,TOT	MG/L			8.97							
00940 CHLORIDE	TOTAL	MG/L			46				45			
00945 SULFATE	SO4-TOT	MG/L			40				37			
01002 ARSENIC	AS,TOT	UG/L			5K				5K			

(SAMPLE CONTINUED ON NEXT PAGE)

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002060 URG110002060
35 37 46.0 106 05 27.0 4
SANTA FE R. AT 1ST AIRPORT RD BRIDGE BELOW WWTF
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
/TYPA/AMBNT/STREAM UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0019.670 ON
0000 FEET DEPTH

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

INITIAL DATE				85/05/29	85/07/10	85/08/28	86/08/05	86/08/05	86/08/06	86/08/07	86/08/07	88/02/05
INITIAL TIME				1420	1215	1010	0850	1330	0845	0645	1205	1030
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
01007	BARIUM	BA,TOT	UG/L		100				100K			
01027	CADMIUM	CD,TOT	UG/L		1K				1K			
01034	CHROMIUM	CR,TOT	UG/L		10K				5K			
01051	LEAD	PB,TOT	UG/L		10K				10K			
01077	SILVER	AG,TOT	UG/L		3.0				1.0			
01147	SELENIUM	SE,TOT	UG/L		5K				5K			
31616	FEC COLI	MFM-FCBR	/100ML		300	38			200K			74
46570	CAL HARD	CA MG	MG/L		114$				84$			
50060	CHLORINE	TOT RESD	MG/L						.17			.50
70300	RESIDUE	DISS-180 C	MG/L		368		406	400	402	375	378	
71900	MERCURY	HG,TOTAL	UG/L		.5K				.5K			
74041	WQF	SAMPLE	UPDATED		861218		861008	861003	861003	861003	861003	880418

INITIAL DATE				88/02/25	89/09/25
INITIAL TIME				1130	1309
MEDIUM				WATER	WATER
00010	WATER	TEMP	CENT	16.6	25.5
00011	WATER	TEMP	FAHN	61.9$	77.9$
00070	TURB	JKSN	JTU	6.2	
00095	CNDUCTVY	AT 25C	MICROMHO	806	762
00300	DO		MG/L	7.1	3.4
00301	DO	SATUR	PERCENT	92.2$	51.0$
00400	PH		SU	7.23	7.30
00410	T ALK	CACO3	MG/L	140	283
00440	HCO3 ION	HCO3	MG/L	170	346
00530	RESIDUE	TOT NFLT	MG/L	7	37
00600	TOTAL N	N	MG/L	17.55C	.25C
00605	ORG N	N	MG/L	7.600C	.200C
00610	NH3+NH4-	N TOTAL	MG/L	9.800	.670
00612	UN-IONZD	NH3-N	MG/L	.051$	.008$
00619	UN-IONZD	NH3-NH3	MG/L	.062$	.009$
00625	TOT KJEL	N	MG/L	17.400	.870
00630	NO2&NO3	N-TOTAL	MG/L	.15	.04K
00640	T INORG.	NITROGEN	MG/L N	9.95C	.05C
00665	PHOS-TOT		MG/L P	2.450	.010K
00680	T ORG C	C	MG/L		11.9
00900	TOT HARD	CACO3	MG/L	150	140
00915	CALCIUM	CA,DISS	MG/L	60.0	56.0

(SAMPLE CONTINUED ON NEXT PAGE)

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002060 URG110002060
35 37 46.0 106 05 27.0 4
SANTA FE R. AT 1ST AIRPORT RD BRIDGE BELOW WWTF
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0019.670 ON
0000 FEET DEPTH

/TYPA/AMBNT/STREAM

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

	INITIAL DATE			88/02/25	89/09/25
	INITIAL TIME			1130	1309
	MEDIUM			WATER	WATER
00925	MGNSIUM	MG,DISS	MG/L	.3K	.0
00930	SODIUM	NA,DISS	MG/L	84.00	121.00
00935	PTSSIUM	K,DISS	MG/L	11.00	12.00
00940	CHLORIDE	TOTAL	MG/L	47	45
00946	SULFATE	SO4-DISS	MG/L	39.5	48.1
01002	ARSENIC	AS,TOT	UG/L	5K	5K
01007	BARIUM	BA,TOT	UG/L	100	210
01027	CADMIUM	CD,TOT	UG/L	1K	1K
01034	CHROMIUM	CR,TOT	UG/L	9	17
01042	COPPER	CU,TOT	UG/L		50K
01045	IRON	FE,TOT	UG/L		720
01051	LEAD	PB,TOT	UG/L	10K	5K
01055	MANGNESE	MN	UG/L		50.0K
01077	SILVER	AG,TOT	UG/L	2.0	1.0K
01105	ALUMINUM	AL,TOT	UG/L	60	
01147	SELENIUM	SE,TOT	UG/L	5K	5K
31616	FEC COLI	MFM-FCBR	/100ML	20K	1400
46570	CAL HARD	CA MG	MG/L	151$	140$
50060	CHLORINE	TOT RESD	MG/L	.48	.20
70300	RESIDUE	DISS-180 C	MG/L	402	530
71900	MERCURY	HG,TOTAL	UG/L	.5K	.5K
74041	WQF	SAMPLE	UPDATED	880509	900124
82079	TURBIDTY	LAB	NTU		45.0

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002065 URG110002065
35 37 49.0 106 05 20.0 4
EFFLUENT CHANNEL OF AIRPORT ROAD WWTF
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
/TYPA/MUN/TREATD/OUTFL/NONAMB/PIPE UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0019.810 ON
0000 FEET DEPTH

INITIAL DATE				01/01/01	84/08/07	84/08/07	84/08/08	84/09/06	85/05/27	85/05/28	85/05/28	85/05/29
INITIAL TIME					1645	1945	0818	0710	0930	0905	1345	0845
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT						19.2	19.0	21.0	19.5
00011	WATER	TEMP	FAHN						66.6$	66.2$	69.8$	67.1$
00042	ALTITUDE	FEET	AB MSL	6265								
00061	STREAM	FLOW,	INST-CFS						3C			
00095	CNDUCTVY	AT 25C	MICROMHO						759	672	648	688
00116	INTNSVE	SURVEY	IDENT		843505	843505	843505	843505				
00300	DO		MG/L						5.4	5.5	5.2	5.6
00301	DO	SATUR	PERCENT						72.4$	73.7$	72.8$	75.0$
00400	PH		SU						7.20	7.20	7.10	7.20
00530	RESIDUE	TOT NFLT	MG/L						31	36	23	19
00600	TOTAL N	N	MG/L						20.80C	19.04C	23.14C	18.34C
00605	ORG N	N	MG/L						1.900C	1.800C	4.800C	.900C
00610	NH3+NH4-	N TOTAL	MG/L		25.510	18.850	21.610		18.900	17.200	18.300	17.400
00612	UN-IONZD	NH3-N	MG/L						.111$	.100$	.098$	.105$
00619	UN-IONZD	NH3-NH3	MG/L						.135$	.121$	.119$	.127$
00625	TOT KJEL	N	MG/L		37.700	40.900	28.500		20.800	19.000	23.100	18.300
00630	NO2&NO3	N-TOTAL	MG/L		.16	.04	.05		.04K	.04K	.04K	.04K
00640	T INORG.	NITROGEN	MG/L N						18.94C	17.24C	18.34C	17.44C
00665	PHOS-TOT		MG/L P		10.630	10.880	9.110		2.610	2.620	2.110	3.640
01002	ARSENIC	AS,TOT	UG/L							5K		
01007	BARIUM	BA,TOT	UG/L							100K		
01027	CADMIUM	CD,TOT	UG/L							2K		
01034	CHROMIUM	CR,TOT	UG/L							5K		
01045	IRON	FE,TOT	UG/L							50K		
01051	LEAD	PB,TOT	UG/L							10		
01077	SILVER	AG,TOT	UG/L							2.0K		
01147	SELENIUM	SE,TOT	UG/L							5K		
31616	FEC COLI	MFM-FCBR	/100ML					30000J	150J			
50060	CHLORINE	TOT RESD	MG/L						.48			
71900	MERCURY	HG,TOTAL	UG/L							.5K		

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002065 URG110002065
35 37 49.0 106 05 20.0 4
EFFLUENT CHANNEL OF AIRPORT ROAD WWTF
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
/TYPA/MUN/TREATD/OUTFL/NONAMB/PIPE
UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0019.810 ON
0000 FEET DEPTH

	INITIAL DATE			85/05/29	85/07/10	85/08/28	86/08/05	86/08/05	86/08/06	86/08/07	86/08/07
	INITIAL TIME			1400	1135	0945	0840	1320	0830	0630	1150
	MEDIUM			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT	22.0	24.8	24.9	24.8	26.5	24.5	23.5	22.5
00011	WATER	TEMP	FAHN	71.6$	76.6$	76.8$	76.6$	79.7$	76.1$	74.3$	72.5$
00061	STREAM	FLOW,	INST-CFS	11C							
00095	CNDUCTVY	AT 25C	MICROMHO	721	653	591	602	582	606	618	630
00116	INTNSVE	SURVEY	IDENT				863508	863508	863508	863508	863508
00300	DO		MG/L	5.3	4.7	5.1	5.3	4.6	5.5	5.5	5.0
00301	DO	SATUR	PERCENT	75.9$	69.8$	76.5$	79.5$	70.7$	81.5$	79.6$	71.6$
00400	PH		SU	7.20	7.10	7.00	7.30	7.30	7.30	7.20	7.20
00410	T ALK	CACO3	MG/L						219		
00430	CO3 ALK	CACO3	MG/L		83						
00440	HCO3 ION	HCO3	MG/L		101				267		
00530	RESIDUE	TOT NFLT	MG/L	12			8	8	8	7	5
00600	TOTAL N	N	MG/L	19.64C			15.07C	13.85C	52.04C	17.26C	17.71C
00605	ORG N	N	MG/L	.000C			2.200C	1.000C	39.200C	3.100C	5.600C
00610	NH3+NH4-	N TOTAL	MG/L	19.600			12.800	12.800	12.800	14.100	12.000
00612	UN-IONZD	NH3-N	MG/L	.141$			.141$	.159$	.138$	.113$	.090$
00619	UN-IONZD	NH3-NH3	MG/L	.172$			.172$	.193$	.168$	.137$	.109$
00625	TOT KJEL	N	MG/L	18.600			15.000	13.800	52.000	17.200	17.600
00630	NO2&NO3	N-TOTAL	MG/L	.04			.07	.05	.04	.06	.11
00640	T INORG.	NITROGEN	MG/L N	19.64C			12.87C	12.85C	12.84C	14.16C	12.11C
00665	PHOS-TOT		MG/L P	1.560			2.290	2.390	2.490	3.720	2.130
00915	CALCIUM	CA,DISS	MG/L						29.6		
00916	CALCIUM	CA-TOT	MG/L		44.4						
00925	MGNSIUM	MG,DISS	MG/L						1.5		
00927	MGNSIUM	MG,TOT	MG/L		3.2						
00929	SODIUM	NA,TOT	MG/L		71.30						
00930	SODIUM	NA,DISS	MG/L						87.40		
00935	PTSSIUM	K,DISS	MG/L						7.80		
00937	PTSSIUM	K,TOT	MG/L		8.58						
00940	CHLORIDE	TOTAL	MG/L		46				43		
00945	SULFATE	SO4-TOT	MG/L		40				40		
01002	ARSENIC	AS,TOT	UG/L		5K				5K		
01007	BARIUM	BA,TOT	UG/L		100K				100K		
01027	CADMIUM	CD,TOT	UG/L		1K				1K		
01034	CHROMIUM	CR,TOT	UG/L		10K				5K		

(SAMPLE CONTINUED ON NEXT PAGE)

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002065 URG110002065
35 37 49.0 106 05 20.0 4
EFFLUENT CHANNEL OF AIRPORT ROAD WWTF
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
/TYPA/MUN/TREATD/OUTFL/NONAMB/PIPE UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0019.810 ON
0000 FEET DEPTH

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

	INITIAL DATE			85/05/29	85/07/10	85/08/28	86/08/05	86/08/05	86/08/06	86/08/07	86/08/07
	INITIAL TIME			1400	1135	0945	0840	1320	0830	0630	1150
	MEDIUM			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
01051	LEAD	PB,TOT	UG/L		10K				10K		
01077	SILVER	AG,TOT	UG/L		2.0				1.0		
01147	SELENIUM	SE,TOT	UG/L		5K				5K		
31616	FEC COLI	MFM-FCBR	/100ML		550	58			320		
46570	CAL HARD	CA MG	MG/L		124$				80$		
50060	CHLORINE	TOT RESD	MG/L		.08				.20		
70300	RESIDUE	DISS-180 C	MG/L		368		406	398	398	385	383
71900	MERCURY	HG,TOTAL	UG/L		.5K				.5K		
74041	WQF	SAMPLE	UPDATED		861218		861003	861003	861003	861003	861003

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002070 URG110002070
35 37 55.0 106 05 18.0 4
SANTA FE R. 8 YD ABOVE AIRPORT ROAD WWTF OUTFALL
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
/TYPA/AMBNT/STREAM UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0019.960 ON
0000 FEET DEPTH

INITIAL DATE				01/01/01	84/08/07	84/08/07	84/08/07	85/05/21	85/05/27	85/05/28	85/05/28	85/05/28
INITIAL TIME					0845	1640	1940	0905	0900	0845	1120	1330
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT		19.5	23.0	20.2	13.0	14.9	12.5		21.0
00011	WATER	TEMP	FAHN		67.1$	73.4$	68.4$	55.4$	58.8$	54.5$		69.8$
00042	ALTITUDE	FEET	AB MSL	6270								
00061	STREAM	FLOW,	INST-CFS		.2			29	36			
00095	CNDUCTVY	AT 25C	MICROMHO		196	224	184	112	100	100		108
00116	INTNSVE	SURVEY	IDENT		843505	843505	843505					
00300	DO		MG/L		3.4	3.9	5.6	8.4	7.6	8.0		6.7
00301	DO	SATUR	PERCENT		45.6$	56.5$	76.7$	99.8$	93.9$	93.3$		93.8$
00400	PH		SU					8.00	7.90	8.00		8.00
00530	RESIDUE	TOT NFLT	MG/L		5514	28026	12644	405	242	256		344
00600	TOTAL N	N	MG/L					.68C	.35C	1.14C		.59C
00605	ORG N	N	MG/L					.350C	.000C	.780C		.150C
00608	NH3+NH4-	N DISS	MG/L					.320				
00610	NH3+NH4-	N TOTAL	MG/L		1.090	.600	1.120	.290	.310	.320		.400
00612	UN-IONZD	NH3-N	MG/L					.006$	.007$	.007$		.016$
00619	UN-IONZD	NH3-NH3	MG/L					.007$	.008$	.009$		.020$
00625	TOT KJEL	N	MG/L		10.700	47.000	23.000	.640	.300	1.100		.550
00630	NO2&NO3	N-TOTAL	MG/L		.57	.40	.26	.04K	.04K	.04K		.04K
00631	NO2&NO3	N-DISS	MG/L					.05				
00640	T INORG.	NITROGEN	MG/L N					.33C	.35C	.36C		.44C
00665	PHOS-TOT		MG/L P		2.070	.720	2.390	.390	.240	.280		.420
00666	PHOS-DIS		MG/L P					.090				
00671	PHOS-DIS	ORTHO	MG/L P					.120				
01002	ARSENIC	AS,TOT	UG/L								5K	
01007	BARIUM	BA,TOT	UG/L								200	
01027	CADMIUM	CD,TOT	UG/L								2K	
01034	CHROMIUM	CR,TOT	UG/L								5K	
01045	IRON	FE,TOT	UG/L								840	
01051	LEAD	PB,TOT	UG/L								10K	
01077	SILVER	AG,TOT	UG/L								2.0K	
01147	SELENIUM	SE,TOT	UG/L								5K	
31616	FEC COLI	MFM-FCBR	/100ML						200			
50060	CHLORINE	TOT RESD	MG/L						.14			
71900	MERCURY	HG,TOTAL	UG/L								.5K	

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002070 URG110002070
35 37 55.0 106 05 18.0 4
SANTA FE R. 8 YD ABOVE AIRPORT ROAD WWTF OUTFALL
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
/TYPA/AMBNT/STREAM UPPER RIO GRANDE-ABOVE PECOS RIVER
21NMEX 840907 13020201011 0019.960 ON
0000 FEET DEPTH

	INITIAL DATE			85/05/29	85/05/29
	INITIAL TIME			0830	1350
	MEDIUM			WATER	WATER
00010	WATER	TEMP	CENT	13.8	22.2
00011	WATER	TEMP	FAHN	56.8$	72.0$
00061	STREAM	FLOW,	INST-CFS		42
00095	CNDUCTVY	AT 25C	MICROMHO	215	108
00300	DO		MG/L	7.9	6.5
00301	DO	SATUR	PERCENT	95.7$	93.0$
00400	PH		SU	7.90	8.40
00530	RESIDUE	TOT NFLT	MG/L	281	200
00600	TOTAL N	N	MG/L	2.53C	.95C
00605	ORG N	N	MG/L	2.170C	.630C
00610	NH3+NH4-	N TOTAL	MG/L	.320	.280
00612	UN-IONZD	NH3-N	MG/L	.006$	.029$
00619	UN-IONZD	NH3-NH3	MG/L	.008$	.036$
00625	TOT KJEL	N	MG/L	2.490	.910
00630	NO2&NO3	N-TOTAL	MG/L	.04K	.04K
00640	T INORG.	NITROGEN	MG/L N	.36C	.32C
00665	PHOS-TOT		MG/L P	.280	.250

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

HRG86
35 41 19.0 105 49 20.0 4
SANTA FE RIVER ABOVE MCCLURE RES
35049 NEW MEXICO SANTA FE
120992

/TYPA/AMBNT/STREAM

21NMEX 13020201011 0037.770 ON
0003 FEET DEPTH

	INITIAL DATE			76/03/05	76/07/20	76/08/09	76/08/30	87/03/31	
	INITIAL TIME			0915	0715	1000	0730	1425	
	MEDIUM			WATER	WATER	WATER	WATER	WATER	
	DEPTH-FT(SMK)							0	
00010	WATER	TEMP	CENT	.6	10.6	11.1	8.3		
00011	WATER	TEMP	FAHN	33.1$	51.0$	52.0$	47.0$		
00060	STREAM	FLOW	CFS	3	6	8	8		
00070	TURB	JKSN	JTU	1.9	1.0	1.0	.8	7.5	
00080	COLOR	PT-CO	UNITS					40	
00095	CNDUCTVY	AT 25C	MICROMHO	54	48	42	47	52	
00403	PH	LAB	SU					7.5	
00410	T ALK	CACO3	MG/L					16	
00440	HCO3 ION	HCO3	MG/L					19	
00445	CO3 ION	CO3	MG/L					0	
00530	RESIDUE	TOT NFLT	MG/L					9	
00600	TOTAL N	N	MG/L					.18K	
00605	ORG N	N	MG/L					.000C	
00610	NH3+NH4-	N TOTAL	MG/L	.011	.025K	.025K	.025K	.100K	
00615	NO2-N	TOTAL	MG/L					.040K	
00620	NO3-N	TOTAL	MG/L	.072	.010K	.050K	.025	.040K	
00625	TOT KJEL	N	MG/L					.100K	
00640	T INORG.	NITROGEN	MG/L N					.18K	
00665	PHOS-TOT		MG/L P	.018	.020K	.010	.010	.010K	
00900	TOT HARD	CACO3	MG/L					18	
00915	CALCIUM	CA,DISS	MG/L					6.0	
00925	MGNSIUM	MG,DISS	MG/L					1.0	
00930	SODIUM	NA,DISS	MG/L					2.30	
00935	PTSSIUM	K,DISS	MG/L					.78	
00940	CHLORIDE	TOTAL	MG/L					5K	
00945	SULFATE	SO4-TOT	MG/L					26	
01002	ARSENIC	AS,TOT	UG/L					5K	
01007	BARIUM	BA,TOT	UG/L					100K	
01027	CADMIUM	CD,TOT	UG/L					1K	
01034	CHROMIUM	CR,TOT	UG/L					5K	
01042	COPPER	CU,TOT	UG/L					50K	
01045	IRON	FE,TOT	UG/L					610	
01051	LEAD	PB,TOT	UG/L					10K	
01055	MANGNESE	MN	UG/L					50.0K	

(SAMPLE CONTINUED ON NEXT PAGE)

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

HRG86
35 41 19.0 105 49 20.0 4
SANTA FE RIVER ABOVE MCCLURE RES
35049 NEW MEXICO SANTA FE
120992

/TYPA/AMBNT/STREAM

21NMEX 13020201011 0037.770 ON
0003 FEET DEPTH

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

	INITIAL DATE			76/03/05	76/07/20	76/08/09	76/08/30	87/03/31
	INITIAL TIME			0915	0715	1000	0730	1425
	MEDIUM			WATER	WATER	WATER	WATER	WATER
	DEPTH-FT(SMK)							0
01062	MOLY	MO,TOT	UG/L					10K
01067	NICKEL	NI,TOTAL	UG/L					50K
01077	SILVER	AG,TOT	UG/L					1.0K
01092	ZINC	ZN,TOT	UG/L					50K
01147	SELENIUM	SE,TOT	UG/L					5K
46570	CAL HARD	CA MG	MG/L					19$
70300	RESIDUE	DISS-180 C	MG/L					76
71900	MERCURY	HG,TOTAL	UG/L					.5K
74041	WQF	SAMPLE	UPDATED					870718

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

08317200
35 32 49.0 106 13 41.0 2
SANTA FE RIVER ABOVE COCHITI LAKE N. MEX.
35049 NEW MEXICO SANTA FE
120991

/TYPA/AMBNT/STREAM

112WRD 13020201
SURFACE SAMPLES

	INITIAL DATE			74/06/28	75/02/04	79/06/28	79/07/05	79/07/12	81/01/12	81/03/10	81/04/06	81/05/04
	INITIAL TIME			1015	0915	0800	1325	0730	1048	1045	1400	0842
	MEDIUM-USGS REMARK			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT	17.0	1.5	15.0	26.0	12.0	2.0	6.0	17.0	11.0
00011	WATER	TEMP	FAHN	62.6$	34.7$	59.0$	78.8$	53.6$	35.6$	42.8$	62.6$	51.8$
00020	AIR	TEMP	CENT		4.5	24.5						
00028	ANALYZE	AGENCY	CODE			80020		80020		80020		
00061	STREAM	FLOW,	INST-CFS	3	9	20	11	5	8	8	4	6
00095	CNDUCTVY	AT 25C	MICROMHO	655	700	305	376	560		755	716	748
00300	DO		MG/L	7.9	11.4	8.3						
00301	DO	SATUR	PERCENT	81.5$	80.3$	81.4$						
00400	PH		SU	8.20	8.20	7.90	6.90	8.00		7.40	7.40	7.30
00403	PH	LAB	SU						7.0	7.0		6.9
00405	CO2		MG/L	3.0	3.5							
00410	T ALK	CACO3	MG/L	244	281	93						
00440	HCO3 ION	HCO3	MG/L	298	343							
00600	TOTAL N	N	MG/L			4.90						
00605	ORG N	N	MG/L			.400						
00610	NH3+NH4-	N TOTAL	MG/L			3.300						
00612	UN-IONZD	NH3-N	MG/L			.070$						
00619	UN-IONZD	NH3-NH3	MG/L			.085$						
00625	TOT KJEL	N	MG/L			3.700						
00630	NO2&NO3	N-TOTAL	MG/L			1.20						
00631	NO2&NO3	N-DISS	MG/L	1.2	2.7							
00650	T PO4	PO4	MG/L			2.20						
00660	ORTHOPO4	PO4	MG/L	10.00	14.00			13.00				
00665	PHOS-TOT		MG/L P			.730						
00671	PHOS-DIS	ORTHO	MG/L P	3.400	4.500			4.100				
00680	T ORG C	C	MG/L	16.0	29.0	15.0		21.0				
00685	T. INORG	C	MG/L					46.0				
00690	T-CARBON	C	MG/L					67.0				
00900	TOT HARD	CACO3	MG/L	200	190	79				140		
00902	NC HARD	CACO3	MG/L	0	0	0						
00915	CALCIUM	CA,DISS	MG/L	62.0	60.0	25.0				44.0		
00925	MGNSIUM	MG,DISS	MG/L	11.0	9.4	3.9				8.1		
00930	SODIUM	NA,DISS	MG/L	67.00	68.00	23.00				92.00		
00931	SODIUM	ADSBTION	RATIO	2.1	2.2	1.1				3.3		
00932	PERCENT	SODIUM	%	41	43	38				57		

(SAMPLE CONTINUED ON NEXT PAGE)

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

08317200
35 32 49.0 106 13 41.0 2
SANTA FE RIVER ABOVE COCHITI LAKE N. MEX.
35049 NEW MEXICO SANTA FE
120991

/TYPA/AMBNT/STREAM

112WRD 13020201
SURFACE SAMPLES

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

INITIAL DATE				74/06/28	75/02/04	79/06/28	79/07/05	79/07/12	81/01/12	81/03/10	81/04/06	81/05/04
INITIAL TIME				1015	0915	0800	1325	0730	1048	1045	1400	0842
MEDIUM-USGS REMARK				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00933	NA+K		MG/L			27.00						
00935	PTSSIUM	K,DISS	MG/L	6.80	8.20	3.60				8.20		
00940	CHLORIDE	TOTAL	MG/L	29	27	11				30		
00945	SULFATE	SO4-TOT	MG/L	45	39	24				47		
00950	FLUORIDE	F,DISS	MG/L	.90	.60	.40				.70		
00955	SILICA	DISOLVED	MG/L	24.0	28.0	16.0				26.0		
01000	ARSENIC	AS,DISS	UG/L	7	10							
01005	BARIUM	BA,DISS	UG/L	100K	100K							
01020	BORON	B,DISS	UG/L	240	190	60				260		
01025	CADMIUM	CD,DISS	UG/L	0U	0U							
01032	CHROMIUM	HEX-VAL	UG/L	0	0							
01040	COPPER	CU,DISS	UG/L	20K	15							
01046	IRON	FE,DISS	UG/L	30	60	40				20		
01049	LEAD	PB,DISS	UG/L		2K							
01050	LEAD	PB,SUSP	UG/L		99K							
01051	LEAD	PB,TOT	UG/L	200K	200K							
01056	MANGNESE	MN,DISS	UG/L	150.0	160.0							
01075	SILVER	AG,DISS	UG/L	.0U	.0U							
01090	ZINC	ZN,DISS	UG/L	20	30							
01145	SELENIUM	SE,DISS	UG/L	1K	1K							
01300	OIL-GRSE		SEVERITY	0								
01305	DET SUDS		SEVERITY	2								
01325	FLOATING	ALG MAT	SEVERITY	3								
01330	ODOR	ATMOSPH	SEVERITY	3								
01340	DEAD	FISH	SEVERITY	0								
01345	FLOATING	DEBRIS	SEVERITY	1								
01350	TURBID		SEVERITY	2								
01355	ICE	COVER	SEVERITY	0								
01515	ALPHA-D	AS U-NAT	PC/L			1.9K						
01516	ALPHA-S	AS U-NAT	PC/L			6.8						
03515	BETA-D	AS CS137	PC/L			4.3						
03516	BETA-S	AS CS137	PC/L			7.4						
09510	RA-226-D	PLCHT CT	PC/L					.1K				
09511	RA-226-D	RADON MT	PC/L			.16						
31616	FEC COLI	MFM-FCBR	/100ML	70000L	599999							
31625	FEC COLI	M-FCAGAD	/100 ML			240000						
31673	FECSTREP	MFKFAGAR	/100ML			5400						
31679	FECSTREP	MF M-ENT	/100ML	6000	122000							

(SAMPLE CONTINUED ON NEXT PAGE)

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35 32 49.0 106 13 41.0 2
SANTA FE RIVER ABOVE COCHITI LAKE N. MEX.
35049 NEW MEXICO SANTA FE
120991

/TYPA/AMBNT/STREAM

112WRD 13020201
SURFACE SAMPLES

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

INITIAL DATE				74/06/28	75/02/04	79/06/28	79/07/05	79/07/12	81/01/12	81/03/10	81/04/06	81/05/04
INITIAL TIME				1015	0915	0800	1325	0730	1048	1045	1400	0842
MEDIUM-USGS REMARK				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
46570	CAL HARD	CA MG	MG/L	200$	189$	78$				143$		
70300	RESIDUE	DISS-180	C MG/L	415	392							
70301	DISS SOL	SUM	MG/L	408	436	163				419		
70302	DISS SOL	TONS/DAY		3.70	9.95	8.80				9.05		
70303	DISS SOL	TONS PER	ACRE-FT	.56	.53	.22				.57		
70331	SUSP SED	PARTSIZE	%<.062MM	.							84	
71845	AMMONIA	TOT-NH4	MG/L			4.0						
71886	TOTAL P	AS PO4	MG/L			2.20						
71887	TOTAL N	AS NO3	MG/L			22.0						
71900	MERCURY	HG,TOTAL	UG/L	.5K	.5K							
80020	U-DISS.	EXT.FLR.	UG/L			.800						
80030	ALPHA-D	AS U-NAT	UG/L			2.800K						
80040	ALPHA-S	AS U-NAT	UG/L			10.000						
80050	BETA-D	AS SR-Y-	90, PC/L			4.000						
80060	BETA-S	AS SR-Y-	90, PC/L			7.100						
80154	SUSP SED	CONC	MG/L								26	
80155	SUSP SED	DISCHARG	TONS/DAY								.31	
82028	RATIO	FEC COL	FEC STRP	12$	5$	44$						
82068	POTAS-40	K-40,DIS	PC/LITER							6.10		

INITIAL DATE				81/05/21	81/06/08	81/07/15	81/08/13	81/09/08	81/10/05	81/11/03	81/12/10	81/12/10
INITIAL TIME				1130	1123	1038	1200	1100	1515	1100	1050	1130
MEDIUM-USGS REMARK				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT	18.0	24.5	21.5	23.5	16.5	19.5	8.0	2.0	2.0
00011	WATER	TEMP	FAHN	64.4$	76.1$	70.7$	74.3$	61.7$	67.1$	46.4$	35.6$	35.6$
00020	AIR	TEMP	CENT	19.0	33.5	26.0	22.5	20.0	26.5	13.5		12.0
00027	COLLECT	AGENCY	CODE						1028	80020	1028	1028
00028	ANALYZE	AGENCY	CODE	80020			80020		1028	80020	1028	1028
00061	STREAM	FLOW,	INST-CFS	4	4	20	6	6	4	6		8
00095	CNDUCTVY	AT 25C	MICROMHO	768	740	336	590	650	668	754	712	580
00340	COD	HI LEVEL	MG/L	67						80		
00400	PH		SU	8.50	8.60	7.20	8.30	8.20	8.20	8.40	8.00	8.00
00403	PH	LAB	SU	7.4			7.2			7.4	6.9	
00600	TOTAL N	N	MG/L	17.00						15.00		
00605	ORG N	N	MG/L	3.000								
00610	NH3+NH4-	N TOTAL	MG/L	12.000						.070K		
00612	UN-IONZD	NH3-N	MG/L	1.171$						.003$		
00619	UN-IONZD	NH3-NH3	MG/L	1.423$						.003$		

(SAMPLE CONTINUED ON NEXT PAGE)

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08317200
35 32 49.0 106 13 41.0 2
SANTA FE RIVER ABOVE COCHITI LAKE N. MEX.
35049 NEW MEXICO SANTA FE
120991

/TYPA/AMBNT/STREAM

112WRD 13020201
SURFACE SAMPLES

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

INITIAL DATE			81/05/21	81/06/08	81/07/15	81/08/13	81/09/08	81/10/05	81/11/03	81/12/10	81/12/10
INITIAL TIME			1130	1123	1038	1200	1100	1515	1100	1050	1130
MEDIUM-USGS REMARK			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00625 TOT KJEL	N	MG/L	15.000						13.000		
00630 NO2&NO3	N-TOTAL	MG/L	2.00						1.60		
00631 NO2&NO3	N-DISS	MG/L	1.9						1.6		
00660 ORTHOPO4	PO4	MG/L	21.00						2.60		
00665 PHOS-TOT		MG/L P	8.000						6.200		
00671 PHOS-DIS	ORTHO	MG/L P	7.000						.840		
00680 T ORG C	C	MG/L	28.0						18.0		
00900 TOT HARD	CACO3	MG/L	150			180			160		
00915 CALCIUM	CA,DISS	MG/L	47.0			59.0			52.0		
00925 MGNSIUM	MG,DISS	MG/L	7.7			7.5			8.0		
00930 SODIUM	NA,DISS	MG/L	99.00			65.00			110.00		
00931 SODIUM	ADSBTION	RATIO	3.5			2.2			3.9		
00932 PERCENT	SODIUM	%	57			43			58		
00935 PTSSIUM	K,DISS	MG/L	9.80			7.30			9.20		
00940 CHLORIDE	TOTAL	MG/L	38			28			42		
00945 SULFATE	SO4-TOT	MG/L	50			57			50		
00950 FLUORIDE	F,DISS	MG/L	.70			.60			.80		
00955 SILICA	DISOLVED	MG/L	25.0			22.0			28.0		
01020 BORON	B,DISS	UG/L	290			170			290		
01046 IRON	FE,DISS	UG/L	50			10K			57		
46570 CAL HARD	CA MG	MG/L	149$			178$			163$		
70301 DISS SOL	SUM	MG/L	454			379			482		
70302 DISS SOL	TONS/DAY		5.03			6.34			7.81		
70303 DISS SOL	TONS PER	ACRE-FT	.62			.52			.66		
70331 SUSP SED	PARTSIZE	%<.062MM	82			99			80		
70507 PHOS-T	ORTHO	MG/L P	7.500								
71886 TOTAL P	AS PO4	MG/L	25.00						19.00		
71887 TOTAL N	AS NO3	MG/L	75.0						65.0		
80154 SUSP SED	CONC	MG/L	29			265			20		
80155 SUSP SED	DISCHARG	TONS/DAY	.32			4.40			.32		
82068 POTAS-40	K-40,DIS	PC/LITER	7.30								

INITIAL DATE			82/01/11	82/02/16	82/03/22	82/04/19	82/05/21	82/06/14	82/07/22	82/08/23	82/09/21
INITIAL TIME			1100	1500	1130	1145	0930	1500	1125	1445	1020
MEDIUM-USGS REMARK			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010 WATER	TEMP	CENT	.5	13.0	10.0	17.0	12.5	27.0	27.5	28.5	16.0
00011 WATER	TEMP	FAHN	32.9$	55.4$	50.0$	62.6$	54.5$	80.6$	81.5$	83.3$	60.8$
00020 AIR	TEMP	CENT	5.0	9.5	13.0	19.5	18.0	26.0	29.5	32.0	20.0

(SAMPLE CONTINUED ON NEXT PAGE)

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08317200
35 32 49.0 106 13 41.0 2
SANTA FE RIVER ABOVE COCHITI LAKE N. MEX.
35049 NEW MEXICO SANTA FE
120991

/TYPA/AMBNT/STREAM

112WRD 13020201
SURFACE SAMPLES

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

INITIAL DATE				82/01/11	82/02/16	82/03/22	82/04/19	82/05/21	82/06/14	82/07/22	82/08/23	82/09/21
INITIAL TIME				1100	1500	1130	1145	0930	1500	1125	1445	1020
MEDIUM-USGS REMARK				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00027	COLLECT	AGENCY	CODE	1028	1028	80020	1028	80020	1028	1028	80020	1028
00028	ANALYZE	AGENCY	CODE	1028	1028	80020	1028	80020	1028	1028	80020	1028
00061	STREAM	FLOW,	INST-CFS	5	8	8	4	5	2	2	3	9
00095	CNDUCTVY	AT 25C	MICROMHO	750	580	690	630	650	640	650	570	500
00340	COD	HI LEVEL	MG/L					94				
00400	PH		SU	8.50	8.10	8.10	8.40	7.90	7.90	8.30	8.10	8.50
00403	PH	LAB	SU	7.6	6.9	7.0	7.0	7.3	7.0	7.5	7.9	6.6
00600	TOTAL N	N	MG/L					17.00				
00605	ORG N	N	MG/L					4.000				
00610	NH3+NH4-	N TOTAL	MG/L					12.000				
00612	UN-IONZD	NH3-N	MG/L					.211$				
00619	UN-IONZD	NH3-NH3	MG/L					.257$				
00625	TOT KJEL	N	MG/L					16.000				
00630	NO2&NO3	N-TOTAL	MG/L					1.10				
00631	NO2&NO3	N-DISS	MG/L					1.2				
00660	ORTHOPO4	PO4	MG/L					4.30				
00665	PHOS-TOT		MG/L P					5.500				
00671	PHOS-DIS	ORTHO	MG/L P					1.400				
00680	T ORG C	C	MG/L					16.0				
00900	TOT HARD	CACO3	MG/L			120		150			140	
00915	CALCIUM	CA,DISS	MG/L			36.0		46.0			45.0	
00925	MGNSIUM	MG,DISS	MG/L			6.8		7.9			6.9	
00930	SODIUM	NA,DISS	MG/L			90.00		72.00			64.00	
00931	SODIUM	ADSBTION	RATIO			3.8		2.7			2.4	
00932	PERCENT	SODIUM	%			62		49			48	
00935	PTSSIUM	K,DISS	MG/L			.80		10.00			8.80	
00940	CHLORIDE	TOTAL	MG/L			29		37			36	
00945	SULFATE	SO4-TOT	MG/L			38		40			39	
00950	FLUORIDE	F,DISS	MG/L			.70		1.00			.80	
00955	SILICA	DISOLVED	MG/L			24.0		23.0			24.0	
01020	BORON	B,DISS	UG/L			220		230			200	
01046	IRON	FE,DISS	UG/L			52		77			13	
46570	CAL HARD	CA MG	MG/L			118$		147$			141$	
70301	DISS SOL	SUM	MG/L			346		386			333	
70302	DISS SOL	TONS/DAY				7.38		5.32			2.97	
70303	DISS SOL	TONS PER	ACRE-FT			.47		.52			.45	
70331	SUSP SED	PARTSIZE	%<.062MM			85		86				
70337	SUSP SED	PARTSIZE	%<.002MM								70	

(SAMPLE CONTINUED ON NEXT PAGE)

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35 32 49.0 106 13 41.0 2
SANTA FE RIVER ABOVE COCHITI LAKE N. MEX.
35049 NEW MEXICO SANTA FE
120991

/TYPA/AMBNT/STREAM

112WRD 13020201
SURFACE SAMPLES

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

INITIAL DATE				82/01/11	82/02/16	82/03/22	82/04/19	82/05/21	82/06/14	82/07/22	82/08/23	82/09/21
INITIAL TIME				1100	1500	1130	1145	0930	1500	1125	1445	1020
MEDIUM-USGS REMARK				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
70338	SUSP SED	PARTSIZE	%<.004MM								81	
70340	SUSP SED	PARTSIZE	%<.016MM								96	
70342	SUSP SED	PARTSIZE	%<.062MM								100	
71886	TOTAL P	AS PO4	MG/L					17.00				
71887	TOTAL N	AS NO3	MG/L					76.0				
80154	SUSP SED	CONC	MG/L			74		68			510	
80155	SUSP SED	DISCHARG	TONS/DAY			1.60		.94			4.50	

INITIAL DATE				82/11/19	83/01/04	83/03/08	83/05/09	83/07/13	83/08/08	83/09/12	83/11/16	84/01/18
INITIAL TIME				1300	1012	1325	1430	1200	1200	1430	1200	1500
MEDIUM-USGS REMARK				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT	10.5	.5	15.0	17.5	22.5	22.5	28.5	6.0	.0
00011	WATER	TEMP	FAHN	50.9$	32.9$	59.0$	63.5$	72.5$	72.5$	83.3$	42.8$	32.0$
00020	AIR	TEMP	CENT	11.0	.5	15.0	23.5	23.0	26.0	29.0	11.0	-2.0
00025	BAROMTRC	PRESSURE	MM OF HG									624
00027	COLLECT	AGENCY	CODE	1028	1028	1028	1028	1028	1028	1028	1028	1028
00028	ANALYZE	AGENCY	CODE	1028	1028	1028	1028	1028	80020	1028	1028	1028
00061	STREAM	FLOW,	INST-CFS	6	6	8	40	13	6	4	7	5
00065	STREAM	STAGE	FEET				1.45	1.14	.98			
00095	CNDUCTVY	AT 25C	MICROMHO	550	547	570	232	367	530	595		625
00300	DO		MG/L									11.2
00301	DO	SATUR	PERCENT									76.7$
00340	COD	HI LEVEL	MG/L	60				57			66	
00400	PH		SU	8.10	8.00	8.10	7.80	7.20	7.90	8.00	7.70	7.30
00403	PH	LAB	SU	7.5		7.3	7.4	7.0			7.1	
00600	TOTAL N	N	MG/L	20.00								
00605	ORG N	N	MG/L	8.000								
00610	NH3+NH4-	N TOTAL	MG/L	11.000					5.600			
00612	UN-IONZD	NH3-N	MG/L	.261$					.204$			
00619	UN-IONZD	NH3-NH3	MG/L	.318$					.247$			
00625	TOT KJEL	N	MG/L	19.000					10.000			
00630	NO2&NO3	N-TOTAL	MG/L	1.30					4.50			
00631	NO2&NO3	N-DISS	MG/L	1.3					4.4			
00660	ORTHOPO4	PO4	MG/L	13.00								
00665	PHOS-TOT		MG/L P	4.400					4.100			
00671	PHOS-DIS	ORTHO	MG/L P	4.200					3.300			
00680	T ORG C	C	MG/L	21.0					19.0		17.0	
00900	TOT HARD	CACO3	MG/L	130		150						

(SAMPLE CONTINUED ON NEXT PAGE)

08317200
35 32 49.0 106 13 41.0 2
SANTA FE RIVER ABOVE COCHITI LAKE N. MEX.
35049 NEW MEXICO SANTA FE
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/TYPA/AMBNT/STREAM

112WRD 13020201
SURFACE SAMPLES

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

INITIAL DATE				82/11/19	83/01/04	83/03/08	83/05/09	83/07/13	83/08/08	83/09/12	83/11/16	84/01/18
INITIAL TIME				1300	1012	1325	1430	1200	1200	1430	1200	1500
MEDIUM-USGS	REMARK			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00915	CALCIUM	CA,DISS	MG/L	40.0		46.0	24.0	31.0			44.0	
00925	MGNSIUM	MG,DISS	MG/L	7.7		8.3	4.0	4.1			7.7	
00930	SODIUM	NA,DISS	MG/L	57.00		53.00	15.00	32.00			57.00	
00931	SODIUM	ADSBTION	RATIO	2.3		2.0						
00932	PERCENT	SODIUM	%	47		42						
00935	PTSSIUM	K,DISS	MG/L	8.00		6.70	2.60	5.70			7.10	
00940	CHLORIDE	TOTAL	MG/L	32		29	9	18			29	
00945	SULFATE	SO4-TOT	MG/L	37		39	23	26			46	
00950	FLUORIDE	F,DISS	MG/L	1.00		.80	.20	.70			1.00	
00955	SILICA	DISOLVED	MG/L	21.0		22.0	14.0	16.0			22.0	
01020	BORON	B,DISS	UG/L	170		160	30	90			140	
01046	IRON	FE,DISS	UG/L	66		36	16	30			59	
46570	CAL HARD	CA MG	MG/L	132$		149$	76$	94$			142$	
70301	DISS SOL	SUM	MG/L	337		340						
70302	DISS SOL	TONS/DAY		5.37		7.25						
70303	DISS SOL	TONS PER	ACRE-FT	.46		.46						
70331	SUSP SED	PARTSIZE	%<.062MM	92		35	70	68			68	
71886	TOTAL P	AS PO4	MG/L	14.00					13.00			
71887	TOTAL N	AS NO3	MG/L	90.0								
80154	SUSP SED	CONC	MG/L	28		112	2140	732			93	
80155	SUSP SED	DISCHARG	TONS/DAY	.45								

INITIAL DATE				84/05/24	84/07/03	84/09/26	84/11/20	85/01/03	85/03/06	85/05/15	85/07/18	85/09/24
INITIAL TIME				1215	1600	1500	1045	1500	1430	1330	1130	1045
MEDIUM-USGS	REMARK			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT	26.0	25.5	11.5	7.0	.0	9.0	18.0	26.0	12.5
00011	WATER	TEMP	FAHN	78.8$	77.9$	52.7$	44.6$	32.0$	48.2$	64.4$	78.8$	54.5$
00020	AIR	TEMP	CENT	29.0	28.5	10.0	8.5	2.5	14.5	28.5	33.0	27.0
00025	BAROMTRC	PRESSURE	MM OF HG	625	631	638	633	630	632	634	635	636
00027	COLLECT	AGENCY	CODE	1028	1028	1028	1028	1028	1028	1028	1028	1028
00028	ANALYZE	AGENCY	CODE	80020	80020	80020	80020	1028	80020	80020	80020	1028
00061	STREAM	FLOW,	INST-CFS	2	2	2	9	10	8	50	4	7
00095	CNDUCTVY	AT 25C	MICROMHO	590	550	540		525		252	634	591
00300	DO		MG/L	10.2		8.6	10.0	12.2	10.5	7.6	8.6	8.6
00301	DO	SATUR	PERCENT	124.4$		77.5$	82.0$	83.6$	90.5$	80.0$	104.9$	79.6$
00340	COD	HI LEVEL	MG/L			60	28				80	
00400	PH		SU	9.00	8.60	7.00	7.90	7.60	8.20	7.50		8.10
00403	PH	LAB	SU	7.1	7.0	6.8	8.6		7.4	8.2	8.0	

(SAMPLE CONTINUED ON NEXT PAGE)

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35 32 49.0 106 13 41.0 2
SANTA FE RIVER ABOVE COCHITI LAKE N. MEX.
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SURFACE SAMPLES

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

INITIAL DATE			84/05/24	84/07/03	84/09/26	84/11/20	85/01/03	85/03/06	85/05/15	85/07/18	85/09/24
INITIAL TIME			1215	1600	1500	1045	1500	1430	1330	1130	1045
MEDIUM-USGS	REMARK		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00610	NH3+NH4- N TOTAL	MG/L			12.000	9.400				4.500	
00612	UN-IONZD NH3-N	MG/L			.025$	.108$				.258$	
00619	UN-IONZD NH3-NH3	MG/L			.030$	.131$				.314$	
00625	TOT KJEL N	MG/L			17.000	12.000				7.600	
00630	NO2&NO3 N-TOTAL	MG/L			4.60	2.50				4.50	
00631	NO2&NO3 N-DISS	MG/L			4.3	2.6				4.4	
00665	PHOS-TOT	MG/L P			6.000	4.500					
00671	PHOS-DIS ORTHO	MG/L P			5.300	4.000				4.100	
00680	T ORG C C	MG/L			14.0	8.2				25.0	
00915	CALCIUM CA,DISS	MG/L	43.0	36.0	36.0	49.0		48.0	26.0	36.0	
00925	MGNSIUM MG,DISS	MG/L	8.8	5.6	5.4	7.3		7.9	4.2	5.2	
00930	SODIUM NA,DISS	MG/L	66.00	61.00	60.00	80.00		64.00	19.00	77.00	
00935	PTSSIUM K,DISS	MG/L	8.10	9.10	7.90	7.70		6.60	2.60	9.30	
00940	CHLORIDE TOTAL	MG/L	32	36	32	33		32	10	34	
00945	SULFATE SO4-TOT	MG/L	55	40	40	49		48	29	32	
00950	FLUORIDE F,DISS	MG/L	1.00	1.10	1.10	.80		.90	.40	.80	
00955	SILICA DISOLVED	MG/L	17.0	16.0	19.0	24.0		23.0	16.0	21.0	
01020	BORON B,DISS	UG/L	160	170	160	140		140	40	150	
01046	IRON FE,DISS	UG/L	22	39	30	33		18	190	23	
46570	CAL HARD CA MG	MG/L	144$	113$	112$	152$		152$	82$	111$	
70331	SUSP SED PARTSIZE	%<.062MM	85	79	97	82		97	55		
80154	SUSP SED CONC	MG/L	17	22	61	32		73	1020	107	
82398	SAMPLING METHOD	(CODES)			30						

INITIAL DATE			85/11/06	86/03/12	86/03/12	86/05/30	87/01/07	87/03/31	87/05/12	87/07/15	87/11/16
INITIAL TIME			1415	1415	1430	0930	1015	1000	1230	1030	1300
MEDIUM-USGS	REMARK		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER TEMP	CENT	12.0	11.0	11.0	12.0	5.0	5.5	10.0	22.0	10.0
00011	WATER TEMP	FAHN	53.6$	51.8$	51.8$	53.6$	41.0$	41.9$	50.0$	71.6$	50.0$
00020	AIR TEMP	CENT	16.0		8.0	16.0	4.5	8.0	23.5	25.0	11.0
00025	BAROMTRC PRESSURE	MM OF HG	628		618	630	635	630	640	632	632
00027	COLLECT AGENCY	CODE	1028	1028	1028	1028	1028	1028	1028	1028	1028
00028	ANALYZE AGENCY	CODE	80020	1028	80020	80020	1028	80020	80020	80020	80020
00061	STREAM FLOW,	INST-CFS	10		12	6	12	9	18	4	11
00095	CNDUCTVY AT 25C	MICROMHO	570		550	60	0	460	290	550	515
00300	DO	MG/L	9.2			8.4	11.5	8.5	8.2	8.1	10.6
00301	DO SATUR	PERCENT	85.2$			77.8$	89.8$	66.4$	72.6$	92.1$	93.8$
00340	COD HI LEVEL	MG/L	34							10K	43

(SAMPLE CONTINUED ON NEXT PAGE)

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SANTA FE RIVER ABOVE COCHITI LAKE N. MEX.
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SURFACE SAMPLES

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

INITIAL DATE				85/11/06	86/03/12	86/03/12	86/05/30	87/01/07	87/03/31	87/05/12	87/07/15	87/11/16
INITIAL TIME				1415	1415	1430	0930	1015	1000	1230	1030	1300
MEDIUM-USGS REMARK				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00400	PH		SU	8.40		8.50	8.30	7.30	.00	.00	7.50	9.00
00403	PH	LAB	SU	8.5		8.4	8.1		7.7	7.4	8.8	8.8
00600	TOTAL N	N	MG/L	2.30								
00605	ORG N	N	MG/L	.940								
00610	NH3+NH4-	N TOTAL	MG/L	.060							.030	.020
00612	UN-IONZD	NH3-N	MG/L	.003$							.0004$	.003$
00619	UN-IONZD	NH3-NH3	MG/L	.004$							.0005$	.004$
00625	TOT KJEL	N	MG/L	1.000							1.100	.700
00630	NO2&NO3	N-TOTAL	MG/L	1.30							.60	1.90
00631	NO2&NO3	N-DISS	MG/L	1.3							.6	1.8
00665	PHOS-TOT		MG/L P	3.500							2.200	3.500
00671	PHOS-DIS	ORTHO	MG/L P	1.300							.960	3.400
00680	T ORG C	C	MG/L	7.1							7.4	6.2
00900	TOT HARD	CACO3	MG/L	140		140	120					
00915	CALCIUM	CA,DISS	MG/L	44.0		43.0	37.0		47.0	30.0	37.0	43.0
00925	MGNSIUM	MG,DISS	MG/L	7.1		7.2	6.8		7.5	4.6	4.8	6.7
00930	SODIUM	NA,DISS	MG/L	65.00		81.00	68.00		59.00	31.00	88.00	59.00
00931	SODIUM	ADSBTION	RATIO	2.5		3.1	2.8					
00932	PERCENT	SODIUM	%	49		55	53					
00935	PTSSIUM	K,DISS	MG/L	6.20		7.00	6.80		6.20	3.50	7.20	7.40
00940	CHLORIDE	TOTAL	MG/L	37		37	40		37	17	50	
00945	SULFATE	SO4-TOT	MG/L	52		48	50		51	27	45	340
00950	FLUORIDE	F,DISS	MG/L	.90		.80	.90		.80	.50	1.00	.10
00955	SILICA	DISOLVED	MG/L	24.0		23.0	20.0		20.0	17.0	22.0	21.0
01020	BORON	B,DISS	UG/L	160		150	150		120	70	260	120
01046	IRON	FE,DISS	UG/L	9		19	26		21	97	11	16
46570	CAL HARD	CA MG	MG/L	139$		137$	120$		148$	94$	112$	135$
70301	DISS SOL	SUM	MG/L	361		379	342					
70331	SUSP SED	PARTSIZE	%<.062MM				5				69	25
71886	TOTAL P	AS PO4	MG/L	11.00								
71887	TOTAL N	AS NO3	MG/L	10.0								
80154	SUSP SED	CONC	MG/L	38	49	49	275				24	103

INITIAL DATE				88/03/03	88/05/09	88/07/06	89/01/26	89/02/10	89/04/05	89/07/19	89/11/21	90/02/28
INITIAL TIME				1520	1130	0930	1302	1230	1310	1400	1102	1115
MEDIUM-USGS REMARK				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT	11.0	15.0	21.0	6.5	7.0	18.0	29.5	7.0	6.4
00011	WATER	TEMP	FAHN	51.8$	59.0$	69.8$	43.7$	44.6$	64.4$	85.1$	44.6$	43.5$

(SAMPLE CONTINUED ON NEXT PAGE)

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35 32 49.0 106 13 41.0 2
SANTA FE RIVER ABOVE COCHITI LAKE N. MEX.
35049 NEW MEXICO SANTA FE
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/TYPA/AMBNT/STREAM

112WRD 13020201
SURFACE SAMPLES

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

	INITIAL DATE			88/03/03	88/05/09	88/07/06	89/01/26	89/02/10	89/04/05	89/07/19	89/11/21	90/02/28
	INITIAL TIME			1520	1130	0930	1302	1230	1310	1400	1102	1115
	MEDIUM-USGS	REMARK		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00020	AIR	TEMP	CENT	13.0	19.5	24.0	12.0	6.5	25.5	27.5	19.0	8.0
00025	BAROMTRC	PRESSURE	MM OF HG	630	635	650	621	623	624	631	615	680
00027	COLLECT	AGENCY	CODE	1028	1028	1028	1028	1028	1028	1028	1028	1028
00028	ANALYZE	AGENCY	CODE	80020	80020	80020	1028	80020	80020	80020	80020	80020
00061	STREAM	FLOW,	INST-CFS	7	7	8	8	9	6	2J	6	8
00095	CNDUCTVY	AT 25C	MICROMHO	620	725	0	500	500	610	750	630	600
00300	DO		MG/L	9.2	9.6	7.4	12.4	10.4	10.4	5.8	11.2	11.0
00301	DO	SATUR	PERCENT	82.9$	94.2$	82.2$	99.2$	85.3$	109.5$	74.4$	91.8$	88.0$
00340	COD	HI LEVEL	MG/L							30	37	
00400	PH		SU	8.30	9.00	8.30	8.63	8.70	9.10	8.92	8.60	8.77
00403	PH	LAB	SU	8.0	8.7	7.9		8.5	8.8	8.3	7.7	8.0
00610	NH3+NH4-	N TOTAL	MG/L							1.300	1.900	
00612	UN-IONZD	NH3-N	MG/L							.510$	.105$	
00619	UN-IONZD	NH3-NH3	MG/L							.620$	.127$	
00625	TOT KJEL	N	MG/L							2.800	3.500	
00630	NO2&NO3	N-TOTAL	MG/L							3.70	2.40	
00631	NO2&NO3	N-DISS	MG/L							3.5	2.4	
00665	PHOS-TOT		MG/L P							3.400	4.700	
00671	PHOS-DIS	ORTHO	MG/L P							2.700	3.800	
00680	T ORG C	C	MG/L							8.2	7.9	
00915	CALCIUM	CA,DISS	MG/L	48.0	49.0	39.0		47.0	46.0	40.0	53.0	52.0
00925	MGNSIUM	MG,DISS	MG/L	6.5	7.8	5.8		7.8	6.5	6.5	7.6	8.4
00930	SODIUM	NA,DISS	MG/L	71.00	91.00	45.00		67.00	87.00	110.00	79.00	76.00
00935	PTSSIUM	K,DISS	MG/L	6.90	6.70	6.60		7.40	7.80	13.00	9.90	8.50
00940	CHLORIDE	TOTAL	MG/L	32	37	18		37	44	45	39	41
00945	SULFATE	SO4-TOT	MG/L	45	49	26		40	44	39	43	40
00950	FLUORIDE	F,DISS	MG/L	1.00	.90	.50		.80	.90	1.00	.80	.70
00955	SILICA	DISOLVED	MG/L	25.0	26.0	26.0		23.0	22.0	27.0	27.0	26.0
01020	BORON	B,DISS	UG/L	130	180	90		120	180	230	200	170
01046	IRON	FE,DISS	UG/L	22	11	1400		8	13	11	40	83
46570	CAL HARD	CA MG	MG/L	147$	154$	121$		149$	142$	127$	164$	164$
70331	SUSP SED	PARTSIZE	%<.062MM							77		
80154	SUSP SED	CONC	MG/L							27		

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SURFACE SAMPLES

	INITIAL DATE			90/07/11	90/09/18	91/01/11	91/06/05	92/03/10	92/06/15
	INITIAL TIME			1030	0930	1430	1102	1430	1245
	MEDIUM-USGS	REMARK		WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT	20.0	15.5	7.0	22.5	12.0	24.0
00011	WATER	TEMP	FAHN	68.0$	59.9$	44.6$	72.5$	53.6$	75.2$
00020	AIR	TEMP	CENT	24.5	15.0	7.0	28.5	13.0	22.5
00025	BAROMTRC	PRESSURE	MM OF HG	660	620	630	624	635	621
00027	COLLECT	AGENCY	CODE	1028	1028	1028	1028	1028	1028
00028	ANALYZE	AGENCY	CODE	1028	80020	80020	80020	80020	1028
00061	STREAM	FLOW,	INST-CFS	7	7	9	10	29	10M
00095	CNDUCTVY	AT 25C	MICROMHO	365	565	590	575	355	415
00300	DO		MG/L	7.2	8.0	10.1	7.5	12.0	6.2
00301	DO	SATUR	PERCENT	78.3$	78.5$	82.8$	85.3$	111.1$	72.9$
00340	COD	HI LEVEL	MG/L		35	17		47	
00400	PH		SU	8.40	8.86	8.88	8.70	8.01	8.04
00403	PH	LAB	SU		8.2	8.1	8.2	7.7	
00608	NH3+NH4-	N DISS	MG/L		.920	.520		.230	
00610	NH3+NH4-	N TOTAL	MG/L		1.100	.450		.220	
00612	UN-IONZD	NH3-N	MG/L		.129$	.043$		.004$	
00613	NO2-N	DISS	MG/L		.120	.050		.070	
00615	NO2-N	TOTAL	MG/L		.140	.060		.070	
00619	UN-IONZD	NH3-NH3	MG/L		.157$	.052$		.005$	
00625	TOT KJEL	N	MG/L		1.600	1.500		1.600	
00630	NO2&NO3	N-TOTAL	MG/L		1.50	1.70		.87	
00631	NO2&NO3	N-DISS	MG/L		1.5	1.7		.9	
00665	PHOS-TOT		MG/L P		3.400	2.100		1.000	
00671	PHOS-DIS	ORTHO	MG/L P		3.200	1.800		.670	
00680	T ORG C	C	MG/L		7.5	5.4		15.0	
00915	CALCIUM	CA,DISS	MG/L		42.0	49.0	47.0	36.0	
00925	MGNSIUM	MG,DISS	MG/L		5.6	8.4	6.5	5.9	
00930	SODIUM	NA,DISS	MG/L		76.00	63.00	63.00	31.00	
00935	PTSSIUM	K,DISS	MG/L		9.40	7.30	6.10	4.50	
00940	CHLORIDE	TOTAL	MG/L		43	45	40	20	
00945	SULFATE	SO4-TOT	MG/L		44	51	49	30	
00950	FLUORIDE	F,DISS	MG/L		.50	.80	.80	.50	
00955	SILICA	DISOLVED	MG/L		23.0	20.0	24.0	18.0	
01020	BORON	B,DISS	UG/L		200	140	150	70	
01046	IRON	FE,DISS	UG/L		34	17	8	310	

(SAMPLE CONTINUED ON NEXT PAGE)

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

08317200
35 32 49.0 106 13 41.0 2
SANTA FE RIVER ABOVE COCHITI LAKE N. MEX.
35049 NEW MEXICO SANTA FE
120991

/TYPA/AMBNT/STREAM

112WRD 13020201
SURFACE SAMPLES

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

	INITIAL DATE			90/07/11	90/09/18	91/01/11	91/06/05	92/03/10	92/06/15
	INITIAL TIME			1030	0930	1430	1102	1430	1245
	MEDIUM-USGS REMARK			WATER	WATER	WATER	WATER	WATER	WATER
46570	CAL HARD	CA MG	MG/L		128$	157$	144$	114$	
70331	SUSP SED	PARTSIZE	%<.062MM			67	87		
70507	PHOS-T	ORTHO	MG/L P		3.600	1.800		.660	
80154	SUSP SED	CONC	MG/L			37	100		

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002025 URG110002025
35 33 24.0 106 14 47.0 4
SANTA FE RIVER AT TETILLA PEAK ACCESS ROAD BRIDG
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
UPPER RIO GRANDE-ABOVE PECOS RIVER /TYPA/AMBNT/STREAM
21NMEX 840907 13020201011 0006.280 ON
SURFACE SAMPLES

INITIAL DATE				01/01/01	84/08/07	84/08/07	84/08/08	84/08/08	84/09/05	84/09/05	84/09/06	84/10/30
INITIAL TIME					1115	1600	0945	1520	1235	1710	0855	1545
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT		23.5	26.0	19.0	26.0	22.2	25.0	14.0	
00011	WATER	TEMP	FAHN		74.3$	78.8$	66.2$	78.8$	72.0$	77.0$	57.2$	
00042	ALTITUDE	FEET	AB MSL	5450								
00061	STREAM	FLOW,	INST-CFS		6			3	4			
00095	CNDUCTVY	AT 25C	MICROMHO		397	426	403	470	560	570	475	
00116	INTNSVE	SURVEY	IDENT		843505	843505	843505	843505	843505	843505	843505	
00300	DO		MG/L		3.8	4.4	5.6	4.3	5.7	2.9	6.2	
00301	DO	SATUR	PERCENT		53.4$	65.5$	72.8$	63.3$	79.1$	42.2$	72.8$	
00400	PH		SU					7.80	7.80	7.40	7.60	
00430	CO3 ALK	CACO3	MG/L					0				
00440	HCO3 ION	HCO3	MG/L					183				
00530	RESIDUE	TOT NFLT	MG/L		11350	7087	2934	772	69	61	393	52
00600	TOTAL N	N	MG/L		50.85C	27.27C	16.13C	12.35C	19.72C	19.63C	16.28C	17.10C
00605	ORG N	N	MG/L		42.820C	19.180C	10.750C	5.290C	2.980C	4.280C	2.130C	6.900C
00610	NH3+NH4-	N TOTAL	MG/L		4.780	5.020	3.850	4.110	8.520	5.050	5.550	7.900
00612	UN-IONZD	NH3-N	MG/L					.152$	.243$	.071$	.055$	
00619	UN-IONZD	NH3-NH3	MG/L					.185$	.295$	.086$	.067$	
00625	TOT KJEL	N	MG/L		47.600	24.200	14.600	9.400	11.500	9.330	7.680	14.800
00630	NO2&NO3	N-TOTAL	MG/L		3.25	3.07	1.53	2.95	8.22	10.30	8.60	2.30
00640	T INORG.	NITROGEN	MG/L N		8.03C	8.09C	5.38C	7.06C	16.74C	15.35C	14.15C	10.20C
00665	PHOS-TOT		MG/L P		2.410	3.080	3.010	2.560	4.150	3.510	3.850	2.690
00916	CALCIUM	CA-TOT	MG/L								42.4	
00927	MGNSIUM	MG,TOT	MG/L								3.4	
00929	SODIUM	NA,TOT	MG/L								59.80	
00937	PTSSIUM	K,TOT	MG/L								8.97	
00940	CHLORIDE	TOTAL	MG/L								39	
00945	SULFATE	SO4-TOT	MG/L					40			44	
01002	ARSENIC	AS,TOT	UG/L					6			5K	
01007	BARIUM	BA,TOT	UG/L					230			100	
01027	CADMIUM	CD,TOT	UG/L					1K			3	
01034	CHROMIUM	CR,TOT	UG/L					71			6	
01051	LEAD	PB,TOT	UG/L					42			5K	
01077	SILVER	AG,TOT	UG/L					2.0			1.0K	
01147	SELENIUM	SE,TOT	UG/L					5K			5K	
31616	FEC COLI	MFM-FCBR	/100ML					24000J			1900J	

(SAMPLE CONTINUED ON NEXT PAGE)

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002025 URG110002025
35 33 24.0 106 14 47.0 4
SANTA FE RIVER AT TETILLA PEAK ACCESS ROAD BRIDG
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
UPPER RIO GRANDE-ABOVE PECOS RIVER /TYPA/AMBNT/STREAM
21NMEX 840907 13020201011 0006.280 ON
SURFACE SAMPLES

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

INITIAL DATE			01/01/01	84/08/07	84/08/07	84/08/08	84/08/08	84/09/05	84/09/05	84/09/06	84/10/30
INITIAL TIME				1115	1600	0945	1520	1235	1710	0855	1545
MEDIUM			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
46570 CAL HARD	CA MG	MG/L								120$	
70300 RESIDUE	DISS-180 C	MG/L					353				
71900 MERCURY	HG,TOTAL	UG/L					.5K			.5K	

INITIAL DATE			84/12/05	85/02/25	85/03/14	85/05/21	85/05/27	85/05/28	85/05/28	85/05/29	85/05/29
INITIAL TIME			1545	1130	1540	1150	1420	1200	1600	1110	1710
MEDIUM			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010 WATER	TEMP	CENT		6.6		13.5	21.2	17.0	23.0	17.2	22.9
00011 WATER	TEMP	FAHN		43.9$		56.3$	70.2$	62.6$	73.4$	63.0$	73.2$
00061 STREAM	FLOW,	INST-CFS	5	9	52	27	37				50
00095 CNDUCTVY	AT 25C	MICROMHO		766		283	207	226	218	206	228
00300 DO		MG/L		9.4		8.1	6.8	5.7	5.9	7.0	6.1
00301 DO	SATUR	PERCENT		94.1$		93.3$	92.0$	71.8$	82.8$	88.2$	85.6$
00400 PH		SU		8.10		8.00	7.80	7.90	7.90	7.90	7.80
00440 HCO3 ION	HCO3	MG/L			149						
00530 RESIDUE	TOT NFLT	MG/L	52	80	223	449	279	343	511	344	509
00600 TOTAL N	N	MG/L	7.56C	7.08C		3.73C	1.58C	2.49C	2.67C	2.71C	2.73C
00605 ORG N	N	MG/L	.000C	1.050C		1.060C	.260C	.040C	.550C	.530C	.200C
00608 NH3+NH4-	N DISS	MG/L				2.400					
00610 NH3+NH4-	N TOTAL	MG/L	5.800	4.610		2.200	.600	1.840	1.300	1.600	1.700
00612 UN-IONZD	NH3-N	MG/L		.081$		.047$	.016$	.045$	.049$	.040$	.051$
00619 UN-IONZD	NH3-NH3	MG/L		.098$		.057$	.019$	.055$	.059$	.049$	.062$
00625 TOT KJEL	N	MG/L	5.100	5.660		3.260	.860	1.880	1.850	2.130	1.900
00630 NO2&NO3	N-TOTAL	MG/L	2.46	1.42		.47	.72	.61	.82	.58	.83
00631 NO2&NO3	N-DISS	MG/L				.6					
00640 T INORG.	NITROGEN	MG/L N	8.26C	6.03C		2.67C	1.32C	2.45C	2.12C	2.18C	2.53C
00665 PHOS-TOT		MG/L P	2.800	2.380		1.190	.640	1.100	1.130	1.070	1.100
00666 PHOS-DIS		MG/L P				.950					
00671 PHOS-DIS	ORTHO	MG/L P				.910					
00916 CALCIUM	CA-TOT	MG/L			36.4						
00927 MGNSIUM	MG,TOT	MG/L			5.2						
00929 SODIUM	NA,TOT	MG/L			18.40						
00937 PTSSIUM	K,TOT	MG/L			3.12						
00940 CHLORIDE	TOTAL	MG/L			12						
00945 SULFATE	SO4-TOT	MG/L			23						
01002 ARSENIC	AS,TOT	UG/L						5K			
01007 BARIUM	BA,TOT	UG/L						160			
01027 CADMIUM	CD,TOT	UG/L						2K			

(SAMPLE CONTINUED ON NEXT PAGE)

URG110.002025 URG110002025
35 33 24.0 106 14 47.0 4
SANTA FE RIVER AT TETILLA PEAK ACCESS ROAD BRIDG
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
UPPER RIO GRANDE-ABOVE PECOS RIVER /TYPA/AMBNT/STREAM
21NMEX 840907 13020201011 0006.280 ON
SURFACE SAMPLES

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

INITIAL DATE				84/12/05	85/02/25	85/03/14	85/05/21	85/05/27	85/05/28	85/05/28	85/05/29	85/05/29
INITIAL TIME				1545	1130	1540	1150	1420	1200	1600	1110	1710
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
01034	CHROMIUM	CR,TOT	UG/L						5K			
01045	IRON	FE,TOT	UG/L						6200			
01051	LEAD	PB,TOT	UG/L						10K			
01077	SILVER	AG,TOT	UG/L						2.0K			
01147	SELENIUM	SE,TOT	UG/L						5K			
31616	FEC COLI	MFM-FCBR	/100ML		30			290				
46570	CAL HARD	CA MG	MG/L			112$						
50060	CHLORINE	TOT RESD	MG/L					.09				
71900	MERCURY	HG,TOTAL	UG/L						.5K			

INITIAL DATE				86/08/05	86/08/05	86/08/06	86/08/07	86/08/07	88/02/25
INITIAL TIME				1040	1545	1240	0905	1400	1350
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT	22.5	30.5	26.0	20.0	30.0	14.8
00011	WATER	TEMP	FAHN	72.5$	86.9$	78.8$	68.0$	86.0$	58.6$
00070	TURB	JKSN	JTU						24.0
00095	CNDUCTVY	AT 25C	MICROMHO	462	534	510	385	518	759
00116	INTNSVE	SURVEY	IDENT	863508	863508	863508	863508	863508	
00300	DO		MG/L	7.4	6.2	7.3	6.7	7.3	8.4
00301	DO	SATUR	PERCENT	102.7$	99.7$	108.8$	89.0$	117.3$	100.6$
00400	PH		SU	8.40	8.80	8.40	8.20	8.50	8.52
00410	T ALK	CACO3	MG/L			170			139
00440	HCO3 ION	HCO3	MG/L			208			170
00530	RESIDUE	TOT NFLT	MG/L	25	9	21	332	59	22
00600	TOTAL N	N	MG/L	8.50C	8.14C	8.87C	7.89C	7.99C	8.74C
00605	ORG N	N	MG/L	1.420C	1.560C	.800C	2.380C	1.353C	1.850C
00610	NH3+NH4-	N TOTAL	MG/L	.780	.180	1.530	.440	.357	6.010
00612	UN-IONZD	NH3-N	MG/L	.083$	.062$	.203$	.026$	.072$	.491$
00619	UN-IONZD	NH3-NH3	MG/L	.101$	.075$	.247$	.032$	.088$	.598$
00625	TOT KJEL	N	MG/L	2.200	1.740	2.330	2.820	1.710	7.860
00630	NO2&NO3	N-TOTAL	MG/L	6.30	6.40	6.54	5.07	6.28	.88
00640	T INORG.	NITROGEN	MG/L N	7.08C	6.58C	8.07C	5.51C	6.64C	6.89C
00665	PHOS-TOT		MG/L P	2.640	2.390	3.100	2.910	.170	2.700
00900	TOT HARD	CACO3	MG/L						60
00915	CALCIUM	CA,DISS	MG/L			44.0			170.0
00925	MGNSIUM	MG,DISS	MG/L			6.3			4.9
00930	SODIUM	NA,DISS	MG/L			64.40			69.00
00935	PTSSIUM	K,DISS	MG/L			6.63			10.00

(SAMPLE CONTINUED ON NEXT PAGE)

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002025 URG110002025
35 33 24.0 106 14 47.0 4
SANTA FE RIVER AT TETILLA PEAK ACCESS ROAD BRIDG
35049 NEW MEXICO SANTA FE
WESTERN GULF 120900
UPPER RIO GRANDE-ABOVE PECOS RIVER /TYPA/AMBNT/STREAM
21NMEX 840907 13020201011 0006.280 ON
SURFACE SAMPLES

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

	INITIAL DATE			86/08/05	86/08/05	86/08/06	86/08/07	86/08/07	88/02/25
	INITIAL TIME			1040	1545	1240	0905	1400	1350
	MEDIUM			WATER	WATER	WATER	WATER	WATER	WATER
00940	CHLORIDE	TOTAL	MG/L			41			35
00945	SULFATE	SO4-TOT	MG/L			39			
00946	SULFATE	SO4-DISS	MG/L						40.2
01002	ARSENIC	AS,TOT	UG/L			5			5K
01007	BARIUM	BA,TOT	UG/L			140			100
01027	CADMIUM	CD,TOT	UG/L			1K			1K
01034	CHROMIUM	CR,TOT	UG/L			5K			5K
01051	LEAD	PB,TOT	UG/L			10K			10K
01077	SILVER	AG,TOT	UG/L			1.0K			2.0
01105	ALUMINUM	AL,TOT	UG/L						1300
01147	SELENIUM	SE,TOT	UG/L			5K			5K
31616	FEC COLI	MFM-FCBR	/100ML			200K			21K
46570	CAL HARD	CA MG	MG/L			136$			445$
50060	CHLORINE	TOT RESD	MG/L			.10			
70300	RESIDUE	DISS-180	C MG/L	394	398	373	333	380	392
71900	MERCURY	HG,TOTAL	UG/L			.5K			.5K
74041	WQF	SAMPLE	UPDATED	861003	861003	861003	861003	861003	880509

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

HRG87
35 33 37.0 106 14 09.0 4
SANTA FE RIVER AT LA BAJADA
35049 NEW MEXICO SANTA FE
120991

/TYPA/AMBNT/STREAM

21NMEX 13020201011 0006.770 ON
0003 FEET DEPTH

	INITIAL DATE			75/05/12	75/07/15	75/08/04	75/09/08	75/10/20	76/01/05	76/05/02	76/08/13
	INITIAL TIME			1515	1515	1230	0945	1530	1030	1130	1230
	MEDIUM			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT	25.0	31.1	28.9	17.2	17.8	.6	14.4	25.6
00011	WATER	TEMP	FAHN	77.0$	88.0$	84.0$	63.0$	64.0$	33.1$	58.0$	78.0$
00060	STREAM	FLOW	CFS	3	3	2	16	6	8	10	4
00070	TURB	JKSN	JTU	24.0	25.0	100.0	47.0	13.0	13.0	21.0	25.0
00095	CNDUCTVY	AT 25C	MICROMHO	560	540	630	660	630	730	590	680
00610	NH3+NH4-	N TOTAL	MG/L	2.073	2.330	3.480	5.652	1.770	8.790	8.567	6.387
00620	NO3-N	TOTAL	MG/L	2.460	3.520	2.590	1.030	4.382	.419	.770	.933
00665	PHOS-TOT		MG/L P	1.114	.108	.864	2.500	3.500	4.780	5.250	3.930

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

352087 NM HRG87 92500 100901 USFS031040
35 33 37.0 106 14 09.0 2
SANTA FE RIVER LA BAJADA
35049 NEW MEXICO SANTA FE
RIO GRANDE
SANTA FE RIVER /TYPA/AMBNT/STREAM
113FORS3 790721 13020201011 0006.770 ON
SURFACE SAMPLES

	INITIAL DATE			75/03/28	75/04/10	75/05/12	75/07/14	75/08/04	75/09/08	76/05/02	76/08/13
	INITIAL TIME			1545	1300	1515	1515	1230	0945	1130	1230
	MEDIUM			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT	14.5	5.5	25.0	31.1	28.2	17.2	14.4	25.6
00011	WATER	TEMP	FAHN	58.1$	41.9$	77.0$	88.0$	82.8$	63.0$	57.9$	78.1$
00020	AIR	TEMP	CENT	8.9	5.5	29.3	31.1	29.3	19.4	15.0	
00061	STREAM	FLOW,	INST-CFS	8	7	3	3	2	8	4	3
00076	TURB	TRBIDMTR	HACH FTU	13.0		24.0	25.0	100.0	47.0	21.0	25.0
00300	DO		MG/L	9.0	10.0	11.0	9.0	8.0	8.2	9.0	
00301	DO	SATUR	PERCENT	86.5$	78.1$	131.0$	120.0$	101.3$	84.5$	86.5$	
00400	PH		SU	9.20	9.25	9.80	9.50	9.00	9.00	9.20	
00630	NO2&NO3	N-TOTAL	MG/L			2.46	3.52	2.59	1.03	.77	.93

URG110.002020 URG110002020
35 34 47.0 106 16 34.0 4
SANTA FE RIVER 3/16 MI ABOVE MARSH
35043 NEW MEXICO SANDOVAL
WESTERN GULF 120900
UPPER RIO GRANDE-ABOVE PECOS RIVER /TYPA/AMBNT/STREAM
21NMEX 840907 13020201011 0003.880 ON
SURFACE SAMPLES

INITIAL DATE				01/01/01	84/08/07	84/08/07	84/08/08	84/08/08	84/08/08	84/09/05	84/09/05	84/09/06
INITIAL TIME					1200	1530	0920	1305	1500	1310	1645	0920
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT		25.0	26.0	19.3		25.0	17.5	25.0	15.0
00011	WATER	TEMP	FAHN		77.0$	78.8$	66.7$		77.0$	63.5$	77.0$	59.0$
00042	ALTITUDE	FEET	AB MSL	5370								
00061	STREAM	FLOW,	INST-CFS		6				3	3		
00095	CNDUCTVY	AT 25C	MICROMHO		423	382	357		322	546	560	506
00116	INTNSVE	SURVEY	IDENT		843505	843505	843505	843505	843505	843505	843505	843505
00300	DO		MG/L		3.1	3.4	5.0		3.8	4.9	4.0	6.2
00301	DO	SATUR	PERCENT		44.9$	50.5$	64.8$		55.1$	61.5$	58.0$	74.1$
00400	PH		SU						7.70	7.60	7.50	7.50
00430	CO3 ALK	CACO3	MG/L						0			
00440	HCO3 ION	HCO3	MG/L						185			130
00530	RESIDUE	TOT NFLT	MG/L		15553	9241	3754		1461	157	163	393
00610	NH3+NH4-	N TOTAL	MG/L		11.700	5.620	2.750		2.930	7.380	5.910	3.130
00612	UN-IONZD	NH3-N	MG/L						.081$	.096$	.104$	.027$
00619	UN-IONZD	NH3-NH3	MG/L						.099$	.116$	.127$	.033$
00625	TOT KJEL	N	MG/L		81.700	33.700	14.200		9.000	10.800	8.490	3.650
00630	NO2&NO3	N-TOTAL	MG/L		2.73	3.37	1.96		3.03	8.10	11.20	10.60
00665	PHOS-TOT		MG/L P		3.870	3.350	2.980		2.760	4.730	.470	4.560
00916	CALCIUM	CA-TOT	MG/L									40.8
00927	MGNSIUM	MG,TOT	MG/L									4.4
00929	SODIUM	NA,TOT	MG/L									59.80
00937	PTSSIUM	K,TOT	MG/L									8.97
00940	CHLORIDE	TOTAL	MG/L									40
00945	SULFATE	SO4-TOT	MG/L						36			44
01002	ARSENIC	AS,TOT	UG/L						43			5K
01007	BARIUM	BA,TOT	UG/L						640			140
01027	CADMIUM	CD,TOT	UG/L						3			1
01034	CHROMIUM	CR,TOT	UG/L						100			11
01051	LEAD	PB,TOT	UG/L						77			5K
01077	SILVER	AG,TOT	UG/L						3.0			1.0
01147	SELENIUM	SE,TOT	UG/L						5K			5K
31616	FEC COLI	MFM-FCBR	/100ML					40000J				627J
46570	CAL HARD	CA MG	MG/L									120$
70300	RESIDUE	DISS-180	C MG/L						353			
71900	MERCURY	HG,TOTAL	UG/L						.5K			.5K

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002005 URG110002005
35 35 08.0 106 17 55.0 4
SANTA FE RIVER AT COCHITI SPRINGS (BELOW DAM)
35043 NEW MEXICO SANDOVAL
WESTERN GULF 120900
UPPER RIO GRANDE-ABOVE PECOS RIVER /TYPA/AMBNT/STREAM
21NMEX 840907 13020201011 0002.500 ON
SURFACE SAMPLES

INITIAL DATE				01/01/01	84/08/07	84/08/08	84/08/08	85/05/28	85/05/29	86/08/05	86/08/06	86/08/07
INITIAL TIME					1330	1405	1410	1640	1200	1130	1215	0950
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT		17.2	16.0		17.0	17.2	20.0	16.8	18.0
00011	WATER	TEMP	FAHN		63.0$	60.8$		62.6$	63.0$	68.0$	62.2$	64.4$
00042	ALTITUDE	FEET	AB MSL	5320								
00061	STREAM	FLOW,	INST-CFS		.7	.7						
00095	CNDUCTVY	AT 25C	MICROMHO		694	738		754	902	935	477	479
00116	INTNSVE	SURVEY	IDENT		843505	843505	843505			863508	863508	863508
00300	DO		MG/L		2.3	2.3		3.0	3.5	5.5	6.1	5.8
00301	DO	SATUR	PERCENT		28.8$	28.0$		37.6$	43.9$	72.7$	76.5$	74.2$
00400	PH		SU		7.40	7.30		7.40	7.40	8.00	8.10	8.00
00410	T ALK	CACO3	MG/L								149	
00430	CO3 ALK	CACO3	MG/L			0						
00440	HCO3 ION	HCO3	MG/L			277					181	
00530	RESIDUE	TOT NFLT	MG/L		1K	1K		30	19	11	3K	3K
00600	TOTAL N	N	MG/L					2.20C	2.29C	.85C	1.47C	.84C
00605	ORG N	N	MG/L					.000C	.060C	.250K	.870C	.200C
00610	NH3+NH4-	N TOTAL	MG/L		.010	.030		.200	.230	.100K	.100K	.120
00612	UN-IONZD	NH3-N	MG/L		.00008$	.0002$		.002$	.002$	.004$	.004$	.004$
00619	UN-IONZD	NH3-NH3	MG/L		.00010$	.0002$		.002$	.002$	.005$	.005$	.005$
00625	TOT KJEL	N	MG/L		.380	.660		.150	.290	.350	.970	.320
00630	NO2&NO3	N-TOTAL	MG/L		2.18	1.38		2.00	2.00	.50	.50	.52
00640	T INORG.	NITROGEN	MG/L N					2.20C	2.23C	.60C	.60C	.64C
00665	PHOS-TOT		MG/L P		.070	.070		.110	.100	.010K	.010K	.010K
00915	CALCIUM	CA,DISS	MG/L								53.6	
00925	MGNSIUM	MG,DISS	MG/L								7.8	
00930	SODIUM	NA,DISS	MG/L								64.90	
00935	PTSSIUM	K,DISS	MG/L								3.90	
00940	CHLORIDE	TOTAL	MG/L								26	
00945	SULFATE	SO4-TOT	MG/L			75					114	
01002	ARSENIC	AS,TOT	UG/L			5K					5K	
01007	BARIUM	BA,TOT	UG/L			100K					100	
01027	CADMIUM	CD,TOT	UG/L			1K					1K	
01034	CHROMIUM	CR,TOT	UG/L			16					5K	
01051	LEAD	PB,TOT	UG/L			5K					10K	
01077	SILVER	AG,TOT	UG/L			1.0K					1.0K	
01147	SELENIUM	SE,TOT	UG/L			5K					5K	

(SAMPLE CONTINUED ON NEXT PAGE)

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

URG110.002005 URG110002005
35 35 08.0 106 17 55.0 4
SANTA FE RIVER AT COCHITI SPRINGS (BELOW DAM)
35043 NEW MEXICO SANDOVAL
WESTERN GULF 120900
UPPER RIO GRANDE-ABOVE PECOS RIVER /TYPA/AMBNT/STREAM
21NMEX 840907 13020201011 0002.500 ON
SURFACE SAMPLES

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

INITIAL DATE				01/01/01	84/08/07	84/08/08	84/08/08	85/05/28	85/05/29	86/08/05	86/08/06	86/08/07
INITIAL TIME					1330	1405	1410	1640	1200	1130	1215	0950
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
31616	FEC COLI	MFM-FCBR	/100ML				10K				200K	
46570	CAL HARD	CA MG	MG/L								166$	
50060	CHLORINE	TOT RESD	MG/L								.09	
70300	RESIDUE	DISS-180 C	MG/L			490				405	388	390
71900	MERCURY	HG,TOTAL	UG/L			.5K					.5K	
74041	WQF	SAMPLE	UPDATED							861003	861003	861003

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

08900300
35 35 39.0 106 21 13.0 2
RIO GRANDE COCHITI TO ISLETA X-SECTION 3,NM
35043 NEW MEXICO SANDOVAL
120991

/TYPA/AMBNT/STREAM

112WRD 13020201010 0004.900 ON
SURFACE SAMPLES

	INITIAL DATE			70/05/12	71/05/03	71/09/13	72/03/20	72/11/10	73/01/14	73/11/26	73/12/18	74/01/14
	INITIAL TIME			1515	1540	1515	1330	1540	1300	1215	1315	1300
	MEDIUM-USGS REMARK			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00004	STREAM	WIDTH	FEET		156	111	153	151				
00010	WATER	TEMP	CENT	18.0	19.0	26.0	12.5	7.5	1.0	5.5		2.0
00011	WATER	TEMP	FAHN	64.4$	66.2$	78.8$	54.5$	45.5$	33.8$	41.9$		35.6$
00055	STREAM	VELOCITY	FT/SEC		3.2	1.2	4.5	3.4				
00061	STREAM	FLOW,	INST-CFS	2500	1100	100	1700	1150	660	1350	1620	1290
00064	DEPTH OF	STREAM	MEAN(FT)		2.2	.8	2.5	2.3				
70331	SUSP SED	PARTSIZE	%<.062MM			96			72		26	0
70332	SUSP SED	PARTSIZE	%<.125MM			99			79		31	0
70333	SUSP SED	PARTSIZE	%<.250MM			100			100		38	72
70334	SUSP SED	PARTSIZE	%<.500MM								68	79
70335	SUSP SED	PARTSIZE	%<1.00MM								78	100
70336	SUSP SED	PARTSIZE	%<2.00MM								100	
70342	SUSP SED	PARTSIZE	%<.062MM	40	33		29	21		16		
70343	SUSP SED	PARTSIZE	%<.125MM	74	41		61	63		19		
70344	SUSP SED	PARTSIZE	%<.250MM	94	56		88	96		64		
70345	SUSP SED	PARTSIZE	%<.500MM	100	93		98	100		98		
70346	SUSP SED	PARTSIZE	%<1.00MM		100		100			100		
80154	SUSP SED	CONC	MG/L	1800	1110	131	1160	2360	23	409	103	23
80155	SUSP SED	DISCHARG	TONS/DAY	12200.00	3300.00	35.00	5319.99	7329.99	41.00	1490.00	451.00	77.00
80156	TOT SED	DISCHARG	TONS/DAY		3490.00	155.00	7909.99	10100.00				
80158	BED MATL	PARTSIZE	%<.062MM	0	5	3	0	9				
80159	BED MATL	PARTSIZE	%<.125MM	4	13	4	10	17				
80160	BED MATL	PARTSIZE	%<.250MM	42	34	22	38	58				
80161	BED MATL	PARTSIZE	%<.500MM	65	84	77	64	77				
80162	BED MATL	PARTSIZE	%<1.00MM	71	99	97	76	89				
80163	BED MATL	PARTSIZE	%<2.00MM		100	100						
80164	BED MATL	PARTSIZE	%<.062MM							32	0	0
80165	BED MATL	PARTSIZE	%<.125MM							32	0	0
80166	BED MATL	PARTSIZE	%<.250MM							32	3	1
80167	BED MATL	PARTSIZE	%<.500MM							34	25	5
80168	BED MATL	PARTSIZE	%<1.00MM							34	42	18
80169	BED MATL	PARTSIZE	%<2.00MM	75	100	98	78	93		86	63	74
80170	BED MATL	PARTSIZE	%<4.00MM	76		100	81	97		94	76	96
80171	BED MATL	PARTSIZE	%<8.00MM	76			86	99		98	87	99
80172	BED MATL	PARTSIZE	%<16.0MM	76			90	100		100	91	100

(SAMPLE CONTINUED ON NEXT PAGE)

08900300
35 35 39.0 106 21 13.0 2
RIO GRANDE COCHITI TO ISLETA X-SECTION 3,NM
35043 NEW MEXICO SANDOVAL
120991

/TYPA/AMBNT/STREAM

112WRD 13020201010 0004.900 ON
SURFACE SAMPLES

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

INITIAL DATE				70/05/12	71/05/03	71/09/13	72/03/20	72/11/10	73/01/14	73/11/26	73/12/18	74/01/14
INITIAL TIME				1515	1540	1515	1330	1540	1300	1215	1315	1300
MEDIUM-USGS REMARK				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
80173 BED MATL	PARTSIZE	%<32.0MM		100			100				100	

INITIAL DATE			74/05/22	74/09/16	75/05/12	75/07/06	75/07/16	75/11/06	79/04/24	79/07/09	80/01/21
INITIAL TIME			1115	1400	1315	1530	1510	1300	1300	1100	1321
MEDIUM-USGS REMARK			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010 WATER	TEMP	CENT	16.0	22.0				12.0	12.5	19.0	4.5
00011 WATER	TEMP	FAHN	60.8$	71.6$				53.6$	54.5$	66.2$	40.1$
00061 STREAM	FLOW,	INST-CFS	900	162	3010		3950	1810			
70331 SUSP SED	PARTSIZE	%<.062MM	93	99	80		89	55	59	82	83
70332 SUSP SED	PARTSIZE	%<.125MM	100	100	85		93	72	67	87	88
70333 SUSP SED	PARTSIZE	%<.250MM			91		98	100	86	94	95
70334 SUSP SED	PARTSIZE	%<.500MM			100		100		97	100	100
70335 SUSP SED	PARTSIZE	%<1.00MM							100		
80154 SUSP SED	CONC	MG/L	28	56	90		31	13	155	27	11
80155 SUSP SED	DISCHARG	TONS/DAY	68.00	24.00	731.00		331.00	64.00			
80158 BED MATL	PARTSIZE	%<.062MM							2	0	
80159 BED MATL	PARTSIZE	%<.125MM							6	0	
80160 BED MATL	PARTSIZE	%<.250MM							16	0	
80161 BED MATL	PARTSIZE	%<.500MM							29	1	
80164 BED MATL	PARTSIZE	%<.062MM				0					
80165 BED MATL	PARTSIZE	%<.125MM				1					
80166 BED MATL	PARTSIZE	%<.250MM				6					
80167 BED MATL	PARTSIZE	%<.500MM				30					
80168 BED MATL	PARTSIZE	%<1.00MM				62			37	2	
80169 BED MATL	PARTSIZE	%<2.00MM				80			49	4	
80170 BED MATL	PARTSIZE	%<4.00MM				88			62	5	
80171 BED MATL	PARTSIZE	%<8.00MM				96			76	9	
80172 BED MATL	PARTSIZE	%<16.0MM				100			87	22	
80173 BED MATL	PARTSIZE	%<32.0MM							100	100	

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

08900200
35 36 16.0 106 20 10.0 2
RIO GRANDE COCHITI TO ISLETA X-SECTION 2,NM
35043 NEW MEXICO SANDOVAL
120991

/TYPA/AMBNT/STREAM

112WRD 13020201010 0005.970 ON
SURFACE SAMPLES

	INITIAL DATE			70/05/12	70/11/01	70/11/01	71/05/03	71/09/13	72/03/20	72/11/10	73/06/11	73/11/26
	INITIAL TIME			1230	0920	1345	1415	1345	1130	1400	1030	1110
	MEDIUM-USGS	REMARK		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00004	STREAM	WIDTH	FEET				138		134	136	269	
00010	WATER	TEMP	CENT	16.5	7.5		18.0	24.0	11.5	7.0	10.0	6.0
00011	WATER	TEMP	FAHN	61.7$	45.5$		64.4$	75.2$	52.7$	44.6$	50.0$	42.8$
00055	STREAM	VELOCITY	FT/SEC				3.5		4.4	4.3	5.4	
00061	STREAM	FLOW,	INST-CFS	2640			1100	110	1700	1230	5130	1320
00064	DEPTH OF	STREAM	MEAN(FT)				2.3		2.9	2.1	3.5	
70331	SUSP SED	PARTSIZE	%<.062MM					95				
70332	SUSP SED	PARTSIZE	%<.125MM					99				
70333	SUSP SED	PARTSIZE	%<.250MM					100				
70342	SUSP SED	PARTSIZE	%<.062MM	32			32		16	22	18	30
70343	SUSP SED	PARTSIZE	%<.125MM	63			40		34	57	46	40
70344	SUSP SED	PARTSIZE	%<.250MM	95			50		52	84	89	60
70345	SUSP SED	PARTSIZE	%<.500MM	100			85		84	100	98	93
70346	SUSP SED	PARTSIZE	%<1.00MM				100		100		100	100
80154	SUSP SED	CONC	MG/L	1920			1080	145	1990	2270	1210	184
80155	SUSP SED	DISCHARG	TONS/DAY	12800.00			3210.00	43.00	9129.99	7539.99	16800.00	656.00
80156	TOT SED	DISCHARG	TONS/DAY				5199.99		12900.00	10200.00	26800.00	
80158	BED MATL	PARTSIZE	%<.062MM	1	0	0	0	2	0	17	0	
80159	BED MATL	PARTSIZE	%<.125MM	14	4	4	0	9	1	32	1	
80160	BED MATL	PARTSIZE	%<.250MM	48	49	49	9	30	11	61	28	
80161	BED MATL	PARTSIZE	%<.500MM	64	81	81	56	61	60	78	75	
80162	BED MATL	PARTSIZE	%<1.00MM	70	98	98	80	86	77	91	93	
80164	BED MATL	PARTSIZE	%<.062MM									0
80165	BED MATL	PARTSIZE	%<.125MM									0
80166	BED MATL	PARTSIZE	%<.250MM									1
80167	BED MATL	PARTSIZE	%<.500MM									37
80168	BED MATL	PARTSIZE	%<1.00MM									68
80169	BED MATL	PARTSIZE	%<2.00MM	79	99	99	84	97	79	94	96	86
80170	BED MATL	PARTSIZE	%<4.00MM	82	99	99	92	100	91	98	98	96
80171	BED MATL	PARTSIZE	%<8.00MM	83	100	100	95		96	99	99	99
80172	BED MATL	PARTSIZE	%<16.0MM	84			98		99	100	100	100
80173	BED MATL	PARTSIZE	%<32.0MM	100			100		100			

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

08900200
35 36 16.0 106 20 10.0 2
RIO GRANDE COCHITI TO ISLETA X-SECTION 2,NM
35043 NEW MEXICO SANDOVAL
120991

/TYPA/AMBNT/STREAM

112WRD 13020201010 0005.970 ON
SURFACE SAMPLES

INITIAL DATE				74/01/14	74/05/22	74/09/16	75/05/12	75/07/16	75/11/06	79/04/24	79/07/09	80/01/21
INITIAL TIME				1100	1030	1120	1100	1345	1100	1045	1000	1221
MEDIUM-USGS REMARK				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT	1.0	16.0	19.5			14.5	12.5	18.5	4.5
00011	WATER	TEMP	FAHN	33.8$	60.8$	67.1$			58.1$	54.5$	65.3$	40.1$
00061	STREAM	FLOW,	INST-CFS	1300	891	162	3030	3970	1770			
70331	SUSP SED	PARTSIZE	%<.062MM	74	94	95	88	88	16	82	94	81
70332	SUSP SED	PARTSIZE	%<.125MM	84	100	100	92	92	31	86	97	87
70333	SUSP SED	PARTSIZE	%<.250MM	100			96	95	71	93	100	100
70334	SUSP SED	PARTSIZE	%<.500MM				100	100	100	98		
70335	SUSP SED	PARTSIZE	%<1.00MM							100		
80154	SUSP SED	CONC	MG/L	23	29	19	81	29	19	97	22	13
80155	SUSP SED	DISCHARG	TONS/DAY	81.00	70.00	8.30	663.00	311.00	91.00			

Remark codes: K - less than, J - estimated, C - calculated by investigator, $ - calculated by STORET.

Data Source 8. Eleven water analyses from the Energy Development Monitoring program from the U.S.G.S. gauging station below La Bajada Mine and La Bajada Mine pit from 1974-79 reported to the Water Pollution Control Section, Environmental Improvement Division, Health and Environment Department, Santa Fe, New Mexico.

REPORT TO: Water Pollution Control Section
Environmental Improvement Division
Health & Environment Department
P. O. Box 968 - Crown Building
Santa Fe, NM 87503
ATTENTION: Charlie Lin

LAB NUMBER ITC-1610
DATE RECEIVED 2/9/77
DATE REPORTED _____ Initials

WATER OR WASTEWATER ANALYSES-ENERGY DEVELOPMENT MONITORING PROGRAM

Sample Location Santa Fe River @ USGS Gaging Station
Sampling Site 38

Lat/Long ° ' " ; ° ' " T ___ R ___ S ___

Station/Well Code _____ NPDES No _____ Outfall No ___

Collected 770206 1130 By Charlie Rybander Permits & Regs
Date Time Name Unit

Pumping Conditions _____

Water Level _____ pH (00400) 7.8

Staff Gage Height _____ Conductivity (Uncorrected) 700 µmho

Control Structure _____ Water Temp (00010) 4 °C

Discharge _____ Conductivity at 25°C (00094) _____ µmho

Sample Type Grab

RADIOCHEMISTRY

			Date Analyzed
From F, A-HNO_3 sample:			
☐ Gross alpha, dissolved (Rel to U-238)	____ ± ____	pCi/l	____
☐ Radium-226, dissolved (radon eman)	____ ± ____	pCi/l	____
☐ Radium-228, dissolved	____ ± ____	pCi/l	____
☐ Lead-210, dissolved	____ ± ____	pCi/l	____
From NF, A-HNO_3 sample:			
☒ Gross alpha, total (Rel to U-238)	____ ± ____	pCi/l	____
☒ Radium-226, total	____ ± ____	pCi/l	____
☒ Radium-228, total	____ ± ____	pCi/l	____
☐ Lead-210, total	____ ± ____	pCi/l	____

Remarks _____

JUL 1070

This form accompanies 1 sample(s) marked as follows to indicate field treatment (circle):

NF, A-HNO_3 :Whole sample; acidified with 5 ml conc HNO_3/l

F, A-HNO_3 :Filtered sample (0.45µ membrane filter); acidified with 5 ml conc HNO_3/l

REPORT TO: Water Pollution Control Section
Environmental Improvement Division
Health & Environment Department
P. O. Box 963 - Crown Building
Santa Fe, NM 87503
ATTENTION: Maxine Goad

LAB NUMBER [illegible] 167

DATE RECEIVED 11/9/78

DATE REPORTED 7/11/79 [illegible]
Initials

WATER OR WASTEWATER ANALYSES-ENERGY DEVELOPMENT MONITORING PROGRAM

Sample Location Lone Star Mine Pit - La Bajada

Lat/Long ___ ° ' " ; ___ ° ' " T ___ R ___ S ___

Station/Well Code ______ NPDES No ______ Outfall No ______

Collected 7811071200 By Maxine Goad - Permits
Date Time Name Unit

Pumping Conditions ______

Water Level ______ pH (00400) ______

Staff Gage Height ______ Conductivity (Uncorrected) 720 µmho

Control Structure ______ Water Temp (00010) 14.5 °C

Discharge ______ Conductivity at 25°C (00094) ______ µmho

Sample Type Grab

RADIOCHEMISTRY

From F, A-HCl sample:

				Date Analyzed
☐ Gross alpha, dissolved (Rel to U-238)		±	pCi/l	
☐ Radium-226, dissolved (radon eman)		±	pCi/l	
☐ Radium-228, dissolved		±	pCi/l	
☐ Lead-210, dissolved		±	pCi/l	

From NF, A-~~HCl~~ HNO_3 sample:

☐ Gross alpha, total (Rel to U-238)		±	pCi/l	
☒ Radium-226, total	0.22	± 0.02 @ 15 [illegible]	pCi/l	6/79
☒ Radium-228, total	0.6	± 0.8 @ 1 [illegible]	pCi/l	6/79
☐ Lead-210, total		±	pCi/l	

Remarks Sample looks as clear as a typical filtered sample

This form accompanies 1 sample(s) marked as follows to indicate field treatment (circle):

(NF, A-~~HCl~~ HNO_3:) Whole sample; acidified with 5 ml conc HCl/l

F, A-HCl: Filtered sample (0.45µ membrane filter); acidified with 5 ml conc HCl/l

REPORT TO: Water Pollution Control Section
Environmental Improvement Division
Health & Environment Department
P. O. Box 968 - Crown Building
Santa Fe, NM 87503
ATTENTION: Maxine Goad

LAB NUMBER HM-C-44 (168)
DATE RECEIVED
DATE REPORTED
Initials

WATER OR WASTEWATER ANALYSES-ENERGY DEVELOPMENT MONITORING PROGRAM

Sample Location LONE STAR - MINE PIT, La Bajada

Lat/Long ° ' " ; ° ' " T R S

Station/Well Code NPDES No Outfall No

Collected 7811071200 By Maxine Goad Permits
Date Time Name Unit

Pumping Conditions —

Water Level —

Staff Gage Height —

Control Structure —

Discharge —

Sample Type Grab

pH (00400) —

Conductivity (Uncorrected) 720 µmho

Water Temp (00010) 14.5 °C

Conductivity at 25°C (00094) µmho

GENERAL WATER CHEMISTRY AND NITROGEN ANALYSES

From NF, NA sample:

		Date Analyzed
☐ Conductivity (25°C)(00095)	µmho	
☐ Total nonfilterable residue (suspended)(00530)	mg/l	

From NF, A-H_2SO_4 sample:

☐ Nitrate + nitrite, total (00630)	mg/l	
☐ Ammonia, total (00610)	mg/l	
☐ Chemical oxygen demand (00340)	mg/l	

From NF, NA sample:

			Date Analyzed
☒ Bicarbonate	(00440)	mg/l	
☒ Calcium	(00915)	mg/l	
☒ Chloride	(00940)	mg/l	
☒ Potassium	(00935)	mg/l	
☒ Sodium	(00930)	mg/l	
☒ Sulfate	(00945)	mg/l	
☒ Total filterable residue (dissolved)(00515)		mg/l	

From F, A-H_2SO_4 sample:

☐ Nitrate + nitrite, dissolved (00631)	mg/l	
☐ Ammonia, dissolved (00608)	mg/l	

This form accompanies 2 sample(s) marked as follows to indicate field treatment:
NF: Whole sample (no filtration) NA: No acid added
F: Filtered in field with 0.45µ membrane filter
A-H_2SO_4: Acidified with 2 ml conc H_2SO_4/l

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CUSTOMER: U. S. GEOLOGICAL SURVEY LAB
ATTENTION: J. L. Kunkler
ADDRESS: Federal Bldg., Cathedral Pl.
CITY: J. L. Kunkler Project
S.O. NO.: Santa Fe, New Mexico 87501
3176

RECEIVED USGS WRD JAN 29 1979 SANTA FE, N.M.

ALBUQUERQUE LABORATORY

REPORT OF ANALYSIS

TYPE OF ANALYSIS: DETERMINATION of RADIUM-226, TOTAL URANIUM, MOLYBDENUM, VANADIUM, and SELENIUM in WATER SAMPLES

CUSTOMER ORDER NUMBER:

SAMPLES RECEIVED 12/29/78

Sample Identification	Total Volume (ml)	Type of Analysis	mg/l	pCi/l
Santa Fe, N.M. Site 36 Latitude 35° 32' 49" longitude 106° 13' 14"	2000	Ra-226		0.22 ± 0.06
		Uranium	0.022	
		Molybdenum	0.010	
		Vanadium	<0.040	
		Selenium	0.032	

gross alpha
gross beta
TOS
major cations & anions

☐ REPORTED VIA TELEPHONE
☐ REPORTED VIA TWX

eberline
P.O. BOX 3874 ALBUQUERQUE, NEW MEXICO 87110
PHONE (505) 345 3461 TWX: 910 989 0678

APPROVED BY Michael A. Ortiz MICHAEL A. ORTIZ, Laboratory Manager 1/26/79 DAT

REPORT TO: Water Pollution Control Section
Environmental Improvement Division
Health & Environment Department
P. O. Box 963 - Crown Building
Santa Fe, NM 87503
ATTENTION: Charlie Hubbard

LAB NUMBER HM-1177
DATE RECEIVED 5/6/79
DATE REPORTED 5/8/79 MJ
Initials

WATER OR WASTEWATER ANALYSES-ENERGY DEVELOPMENT MONITORING PROGRAM

Sample Location SANTA FE RIVER UPSTREAM 1/4 MILE FROM LABATADA MINE #35 SAMPLE SITE

Lat/Long ° ' "; ° ' " T ___ R ___ S ___

Station/Well Code ___ NPDES No ___ Outfall No ___

Collected 790506 0930 By Charlie Hubbard Permits & Regs.
Date Time Name Unit

Pumping Conditions ___

Water Level ___ pH (00400) 8.0

Staff Gage Height ___ Conductivity (Uncorrected) 560 µmho

Control Structure ___ Water Temp (00010) 4 °C

Discharge ___ Conductivity at 25°C (00094) ___ µmho

Sample Type Grab

METAL ANALYSES

From NF, A-HNO_3 sample:		Date Analyzed	From F, A-HNO_3 sample:		Date Analyzed
☒ Arsenic, total	42.0 µg/l	4/26/79	☐ Arsenic, dissolved	___ µg/l	___
☒ Barium, total	183 µg/l	4/26/79	☐ Barium, dissolved	___ µg/l	___
☒ Cadmium, total	<1.0 µg/l	4/26/79	☐ Cadmium, dissolved	___ µg/l	___
☒ Lead, total	<5.0 µg/l	4/26/79	☐ Lead, dissolved	___ µg/l	___
☒ Molybdenum, tot	[illegible] µg/l	[illegible]	☐ Molybdenum, diss	___ µg/l	___
☒ Selenium, total	<5.0 µg/l	4/26/79	☐ Selenium, diss	___ µg/l	___
☒ Uranium, total	<5.0 µg/l	5/3/79	☐ Uranium, diss	___ µg/l	___
☒ Vanadium, total	[illegible] µg/l	[illegible]	☐ Vanadium, diss	___ µg/l	___
☒ Zinc, total	[illegible] µg/l	[illegible]	☐ Zinc, dissolved	___ µg/l	___

Remarks ___

This form accompanies 1 sample(s) marked as follows to indicate field treatment (circle):

(NF, A-HNO_3) Whole sample; acidified with 5 ml conc HNO_3/l

F, A-HNO_3: Filtered sample (0.45µmembrane filter); acidified with 5 ml conc HNO_3/l

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REPORT TO: Water Pollution Control Section
Environmental Improvement Division
Health & Environment Department
P. O. Box 968 - Crown Building
Santa Fe, NM 87503
ATTENTION: Charlie Nylander

LAB NUMBER HM-1075
DATE RECEIVED 3/1/79
DATE REPORTED 5/8/79 mj
Initials

WATER OR WASTEWATER ANALYSES-ENERGY DEVELOPMENT MONITORING PROGRAM

Sample Location Santa Fe River @ USGS Gaging Station
Sampling Site 38

Lat/Long ° ' "; ° ' " T ___ R ___ S ___

Station/Well Code ___ NPDES No ___ Outfall No •

Collected 790306 1130 By Charlie Nylander Permits and Regs.
Date Time Name Unit

Pumping Conditions ___

Water Level ___ pH (00400) ___

Staff Gage Height ___ Conductivity (Uncorrected) ___ µmho

Control Structure ___ Water Temp (00010) ___ °C

Discharge ___ Conductivity at 25°C (00094) ___ µmho

Sample Type Grab

METAL ANALYSES

From NF, A-HNO_3 sample:		Date Analyzed	From F, A-HNO_3 sample:		Date Analyzed
☒ Arsenic, total	<5.0 µg/l	4/16/79	☐ Arsenic, dissolved	___ µg/l	___
☒ Barium, total	163 µg/l	4/12/79	☐ Barium, dissolved	___ µg/l	___
☒ Cadmium, total	<1.0 µg/l	4/16/79	☐ Cadmium, dissolved	___ µg/l	___
☒ Lead, total	<5.0 µg/l	4/16/79	☐ Lead, dissolved	___ µg/l	___
☒ Molybdenum, tot	<5.0 µg/l	4/16/79	☐ Molybdenum, diss	___ µg/l	___
☒ Selenium, total	<5.0 µg/l	4/16/79	☐ Selenium, diss	___ µg/l	___
☒ Uranium, total	<5.0 µg/l	5/3/79	☐ Uranium, diss	___ µg/l	___
☒ Vanadium, total	<10 µg/l	4/16/79	☐ Vanadium, diss	___ µg/l	___
☒ Zinc, total	20 µg/l	4/16/79	☐ Zinc, dissolved	___ µg/l	___

Remarks ___

This form accompanies 1 sample(s) marked as follows to indicate field treatment (circle):

NF, A-HNO_3: Whole sample; acidified with 5 ml conc HNO_3/l

F, A-HNO_3: Filtered sample (0.45µmembrane filter); acidified with 5 ml conc HNO_3/l

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REPORT TO: Water Pollution Control Section
Environmental Improvement Division
Health & Environment Department
P. O. Box 968 - Crown Building
Santa Fe, NM 87503
ATTENTION: [illegible]

LAB NUMBER LV-1076-
DATE RECEIVED 5/8/79
DATE REPORTED: 5/8/79 JmJ
Initials

WATER OR WASTEWATER ANALYSES-ENERGY DEVELOPMENT MONITORING PROGRAM

Sample Location [illegible]

Lat/Long [illegible]

Station/Well Code _____ NPDES No _____ Outfall No _____

Collected [illegible] By [illegible]
Date Time Name

Pumping Conditions _____

Water Level _____

Staff Gage Height _____

Control Structure _____

Discharge _____

Sample Type [illegible]

pH (00400) _____

Conductivity (Uncorrected) 1.05 µmho

Water Temp (00010) 70 °C

Conductivity at 25°C (00094) _____ µmho

METAL ANALYSES

From NF, A-HNO_3 sample:		Date Analyzed	From F, A-HNO_3 sample:		Date Analyzed
☒ Arsenic, total	[illegible] µg/l	[illegible]	☐ Arsenic, dissolved	_____ µg/l	_____
☒ Barium, total	81 µg/l	[illegible]	☐ Barium, dissolved	_____ µg/l	_____
☒ Cadmium, total	[illegible] µg/l	[illegible]	☐ Cadmium, dissolved	_____ µg/l	_____
☒ Lead, total	[illegible] µg/l	[illegible]	☐ Lead, dissolved	_____ µg/l	_____
☒ Molybdenum, tot	[illegible] µg/l	[illegible]	☐ Molybdenum, diss	_____ µg/l	_____
☒ Selenium, total	[illegible] µg/l	[illegible]	☐ Selenium, diss	_____ µg/l	_____
☒ Uranium, total	6.0 µg/l	5/7/79	☐ Uranium, diss	_____ µg/l	_____
☒ Vanadium, total	[illegible] µg/l	[illegible]	☐ Vanadium, diss	_____ µg/l	_____
☒ Zinc, total	[illegible] µg/l	[illegible]	☐ Zinc, dissolved	_____ µg/l	_____

Remarks _____

This form accompanies 1 sample(s) marked as follows to indicate field treatment ~~(circle)~~:

NF, A-HNO_3: Whole sample; acidified with 5 ml conc HNO_3/l

F, A-HNO_3: Filtered sample (0.45µmembrane filter); acidified with 5 ml conc HNO_3/l

REPORT TO: Water Pollution Control Section
Environmental Improvement Division
Health & Environment Department
P. O. Box 968 - Crown Building
Santa Fe, NM 87503
ATTENTION: Charlie Nylander

LAB NUMBER W.P. - 3625
DATE RECEIVED 3/16/79
DATE REPORTED 3/23/79 Initials

RECEIVED MAR 29 19
WATER POLLUTION CONTROL

WATER OR WASTEWATER ANALYSES-ENERGY DEVELOPMENT MONITORING PROGRAM

Sample Location: SANTA FE RIVER UPSTREAM 1/4 mile from LA BATADA MINE # 35 sample site

Lat/Long: ° ' " ; ° ' " T ___ R ___ S ___

Station/Well Code ___ NPDES No ___ Outfall No ___

Collected: 790306 0930 By CHARLES NYLANDER Permits & Regs
Date Time Name Unit

Pumping Conditions ___

Water Level ___ pH (00400) 8.0

Staff Gage Height ___ Conductivity (Uncorrected) 580 µmho

Control Structure ___ Water Temp (00010) 4 °C

Discharge ___ Conductivity at 25°C (00094) ___ µmho

Sample Type Grab

GENERAL WATER CHEMISTRY AND NITROGEN ANALYSES

From NF, NA sample:		Date Analyzed
☒ Conductivity (25°C)(00095)	___ µmho	___
☒ Total nonfilterable residue (suspended)(00530)	___ mg/l	___

From NF, A-H_2SO_4 sample:

☒ Nitrate + nitrite, total (00630)	0.165 mg/l	3/20
☒ Ammonia, total (00610)	13.55 mg/l	3-12
☒ Chemical oxygen demand (00340)	96.2 mg/l	3/15

From ~~F~~ NF, NA sample:		Date Analyzed
☒ Bicarbonate (00440)	___ mg/l	___
☒ Calcium (00915)	___ mg/l	___
☒ Chloride (00940)	___ mg/l	___
☒ Potassium (00935)	___ mg/l	___
☒ Sodium (00930)	___ mg/l	___
☒ Sulfate (00945)	___ mg/l	___
☒ Total filterable residue (dissolved)(70300)	___ mg/l	___

From F, A-H_2SO_4 sample:

☐ Nitrate + nitrite, dissolved (00631)	___ mg/l	___
☐ Ammonia, dissolved (00608)	___ mg/l	___

This form accompanies 2 sample(s) marked as follows to indicate field treatment:

~~NF:~~ Whole sample (no filtration) NA: No acid added
F: Filtered in field with 0.45µ membrane filter
~~H_2SO_4~~ Acidified with 2 ml conc H_2SO_4/l

REPORT TO: Water Pollution Control Section
Environmental Improvement Division
Health & Environment Department
P. O. Box 968 - Crown Building
Santa Fe, NM 87503
ATTENTION: Charlie Nylander

LAB NUMBER WC-3036
DATE RECEIVED 3/8/79
DATE REPORTED _____ Initials

WATER OR WASTEWATER ANALYSES-ENERGY DEVELOPMENT MONITORING PROGRAM

Sample Location: SANTA FE RIVER UPSTREAM 1/4 mile from LA BAJADA MINE # 35 sample site

Lat/Long: ° ' " ; ° ' " T ___ R ___ S ___

Station/Well Code _____ NPDES No _____ Outfall No _____

Collected: 7903060930 By Charles Nylander Permits & Regs.
Date Time Name Unit

Pumping Conditions _____

Water Level _____

Staff Gage Height _____

Control Structure _____

Discharge _____

Sample Type: Grab

pH (00400): 8.0

Conductivity (Uncorrected): 580 µmho

Water Temp (00010): 4 °C

Conductivity at 25°C (00094): _____ µmho

GENERAL WATER CHEMISTRY AND NITROGEN ANALYSES

From NF, NA sample:

			Date Analyzed
☒	Conductivity (25°C)(00095)	625 µmho	3/9
☒	Total nonfilterable residue (suspended)(00530)	41 mg/l	3-15

From NF, A-H_2SO_4 sample:

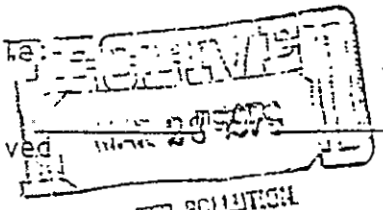
☒	Nitrate + nitrite, total (00630)	_____ mg/l	_____
☒	Ammonia, total (00610)	_____ mg/l	_____
☒	Chemical oxygen demand (00340)	_____ mg/l	_____

From ~~F~~ NF, NA sample:

			Date Analyzed
☒	Bicarbonate (00440)	252.5 mg/l	3/10/79
☒	Calcium (00915)	34.0 mg/l	3/19/79
☒	Chloride (00940)	29.0 mg/l	3/15/79
☒	Potassium (00935)	7.02 mg/l	3/14/79
☒	Sodium (00930)	55.2 mg/l	3/14/79
☒	Sulfate (00945)	44.4 mg/l	3/13/79
☒	Total filterable residue (dissolved)(70300)	311 mg/l	3/15/79

From F, A-H_2SO_4 sample:

☐	Nitrate + nitrite, dissolved (00631)	_____ mg/l	_____
☐	Ammonia, dissolved (00608)	_____ mg/l	_____



This form accompanies 2 sample(s) marked as follows to indicate field treatment:

NF: Whole sample (no filtration) NA: No acid added
F: Filtered in field with 0.45µ membrane filter

REPORT TO: Water Pollution Control Section
Environmental Improvement Division
Health & Environment Department
P. O. Box 968 - Crown Building
Santa Fe, NM 87503
ATTENTION: Charlie Nylander

LAB NUMBER WC-3031
DATE RECEIVED 3/8/79
DATE REPORTED 3/23/79 Initials

WATER OR WASTEWATER ANALYSES-ENERGY DEVELOPMENT MONITORING PROGRAM

Sample Location: LA BATADA LONE STAR MINE PIT
Sampled from SOUTHWEST CORNER - Site #7

Lat/Long ° : " ; ° : " T ___ R ___ S ___

Station/Well Code ___ NPDES No ___ Outfall No ___

Collected 790306 1030 By Charlie Nylander Permittee and Reps.
Date Time Name Unit

Pumping Conditions ___

Water Level ___ pH (00400) 7.85

Staff Gage Height ___ Conductivity (Uncorrected) 960 µmho

Control Structure ___ Water Temp (00010) E °C

Discharge ___ Conductivity at 25°C (00094) ___ µmho

Sample Type Grab

GENERAL WATER CHEMISTRY AND NITROGEN ANALYSES

From NF, NA sample:			Date Analyzed
☒	Conductivity (25°C)(00095)	___ µmho	___
☒	Total nonfilterable residue (suspended)(00530)	___ mg/l	___

From NF, A-H_2SO_4 sample:

☒	Nitrate + nitrite, total (00630)	0.08 mg/l	3/20
☒	Ammonia, total (00610)	0.06 mg/l	3-12
☒	Chemical oxygen demand (00340)	28.7 mg/l	3/15

From ~~F~~ NF, NA sample:			Date Analyz
☒	Bicarbonate (00440)	___ mg/l	___
☒	Calcium (00915)	___ mg/l	___
☒	Chloride (00940)	___ mg/l	___
☒	Potassium (00935)	___ mg/l	___
☒	Sodium (00930)	___ mg/l	___
☒	Sulfate (00945)	___ mg/l	___
☒	Total filterable residue (dissolved)(70300)	___ mg/l	___

From F, A-H_2SO_4 sample:

☐	Nitrate + nitrite, dissolved (00631)	___ mg/l	___
☐	Ammonia, dissolved (00608)	___ mg/l	___

RECEIVED
MAR 29 1979
WATER POLLUTION CONTROL

This form accompanies 2 sample(s) marked as follows to indicate field treatment:

(NF): Whole sample (no filtration) NA: No acid added
F: Filtered in field with 0.45µ membrane filter
(A-H_2SO_4): Acidified with 2 ml conc H_2SO_4/l

REPORT TO: Water Pollution Control Section
Environmental Improvement Division
Health & Environment Department
P. O. Box 968 - Crown Building
Santa Fe, NM 87503
ATTENTION: Charlie Nylander

LAB NUMBER WC-2032
DATE RECEIVED 3/8/79
DATE REPORTED _____ Initials

WATER OR WASTEWATER ANALYSES-ENERGY DEVELOPMENT MONITORING PROGRAM

Sample Location: LA BAJADA LONE STAR MINE PIT
Sampled from SOUTHWEST CORNER - S.L.17

Lat/Long ° : " ; ° : " T ___ R ___ S ___

Station/Well Code _____ NPDES No _____ Outfall No _____

Collected 790306 1030 By Charlie Nylander Permits and Regs.
Date Time Name Unit

Pumping Conditions _____

Water Level _____ pH (00400) 7.85

Staff Gage Height _____ Conductivity (Uncorrected) 960 µmho

Control Structure _____ Water Temp (00010) E °C

Discharge _____ Conductivity at 25°C (00094) _____ µmho

Sample Type Grab

GENERAL WATER CHEMISTRY AND NITROGEN ANALYSES

From NF, NA sample:

			Date Analyzed
☒	Conductivity (25°C)(00095)	1011 µmho	3/4
☒	Total nonfilterable residue (suspended)(00530)	2.0 mg/l	3-15

From NF, A-H_2SO_4 sample:

☒	Nitrate + nitrite, total (00630)	_____ mg/l	_____
☒	Ammonia, total (00610)	_____ mg/l	_____
☒	Chemical oxygen demand (00340)	_____ mg/l	_____

From NF, NA sample:

				Date Analyzed
☒	Bicarbonate	(00440)	333.3 mg/l	3/14
☒	Calcium	(00915)	62.0 mg/l	3/19
☒	Chloride	(00940)	42.0 mg/l	3/15
☒	Potassium	(00935)	9.75 mg/l	3/14
☒	Sodium	(00930)	98.0 mg/l	3/14
☒	Sulfate	(00945)	209.4 mg/l	3/13
☒	Total filterable residue (dissolved)(70300)		626 mg/l	3/15

From F, A-H_2SO_4 sample:

☐	Nitrate + nitrite, dissolved (00631)	_____ mg/l	_____
☐	Ammonia, dissolved (00608)	_____ mg/l	_____

RECEIVED
MAR 2nd/1979
WATER POLLUTION CONTROL

This form accompanies 2 sample(s) marked as follows to indicate field treatment:

NF: Whole sample (no filtration) NA: No acid added
F: Filtered in field with 0.45µ membrane filter

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REPORT TO: Water Pollution Control Section
Environmental Improvement Division
Health & Environment Department
P. O. Box 968 - Crown Building
Santa Fe, NM 87503
ATTENTION: Charlie Nylander

LAB NUMBER WO-3033
DATE RECEIVED 3/14/79
DATE REPORTED ____ Initials

WATER OR WASTEWATER ANALYSES-ENERGY DEVELOPMENT MONITORING PROGRAM

Sample Location SANTA FE RIVER @ USGS GAGING STATION
Sampling Site 3E
Lat/Long ° ' "; ° ' " T ___ R ___ S ___
Station/Well Code ___ NPDES No ___ Outfall No ___
Collected 7908 1130 By Charlie Nylander
Date Time Name Unit
Pumping Conditions ___
Water Level ___
Staff Gage Height ___
Control Structure ___
Discharge ___
Sample Type Grab

pH (00400) 7.8
Conductivity (Uncorrected) 700 µmho
Water Temp (00010) 4 °C
Conductivity at 25°C (00094) ___ µmho

GENERAL WATER CHEMISTRY AND NITROGEN ANALYSES

From NF, NA sample:

			Date Analyzed
☒ Conductivity (25°C)(00095)	619	µmho	3/14
☒ Total nonfilterable residue (suspended)(00530)	25	mg/l	3-15

From NF, A-H_2SO_4 sample:

☒ Nitrate + nitrite, total (00630)	___	mg/l	___
☒ Ammonia, total (00610)	___	mg/l	___
☒ Chemical oxygen demand (00340)	___	mg/l	___

From ~~F~~ NF, NA sample:

			Date Analyzed
☒ Bicarbonate (00440)	242	mg/l	3/14/79
☒ Calcium (00915)	36.6	mg/l	3/19/79
☒ Chloride (00940)	30.1	mg/l	3/15/79
☒ Potassium (00935)	7.07	mg/l	3/14/79
☒ Sodium (00930)	57.5	mg/l	"
☒ Sulfate (00945)	44.8	mg/l	3/13/79
☒ Total filterable residue (dissolved)(70300)	418	mg/l	3/15/79

From F, A-H_2SO_4 sample:

☐ Nitrate + nitrite, dissolved (00631)	___	mg/l	___
☐ Ammonia, dissolved (00608)	___	mg/l	___

RECEIVED MAR 19 1979 WATER POLLUTION CONTROL

This form accompanies 2 sample(s) marked as follows to indicate field treatment:
(NF:) Whole sample (no filtration) NA: No acid added
F: Filtered in field with 0.45µ membrane filter

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REPORT TO: Water Pollution Control Section
Environmental Improvement Division
Health & Environment Department
P. O. Box 968 - Crown Building
Santa Fe, NM 87503
ATTENTION: Charlie Nylander

RECEIVED
MAR 29 1979
WATER POLLUTION CONTROL

LAB NUMBER 1110 3034

DATE RECEIVED

DATE REPORTED 3/23/79 Initials

WATER OR WASTEWATER ANALYSES-ENERGY DEVELOPMENT MONITORING PROGRAM

Sample Location: SANTA FE RIVER @ USGS GAGING STATION sampling Site 38

Lat/Long: ° ' "; ° ' " T R S

Station/Well Code: NPDES No: Outfall No:

Collected: 790306 (Date) 1130 (Time) By Charlie Nylander (Name) Unit

Pumping Conditions:

Water Level: pH (00400): 7.8

Staff Gage Height: Conductivity (Uncorrected): 700 μmho

Control Structure: Water Temp (00010): 4 °C

Discharge: Conductivity at 25°C (00094): μmho

Sample Type: Grab

GENERAL WATER CHEMISTRY AND NITROGEN ANALYSES

From NF, NA sample: (Date Analyzed)

- [x] Conductivity (25°C)(00095) ______ μmho ______
- [x] Total nonfilterable residue (suspended)(00530) ______ mg/l ______

From NF, A-H_2SO_4 sample:

- [x] Nitrate + nitrite, total (00630) 0.204 mg/l 3/20
- [x] Ammonia, total (00610) 17.2 mg/l 3-12
- [x] Chemical oxygen demand (00340) 95.7 mg/l 3/15

From NF, NA sample: (Date Analyzed)

- [x] Bicarbonate (00440) ______ mg/l ______
- [x] Calcium (00915) ______ mg/l ______
- [x] Chloride (00940) ______ mg/l ______
- [x] Potassium (00935) ______ mg/l ______
- [x] Sodium (00930) ______ mg/l ______
- [x] Sulfate (00945) ______ mg/l ______
- [x] Total filterable residue (dissolved)(70300) ______ mg/l ______

From F, A-H_2SO_4 sample:

- [ ] Nitrate + nitrite, dissolved (00631) ______ mg/l ______
- [ ] Ammonia, dissolved (00608) ______ mg/l ______

This form accompanies 2 sample(s) marked as follows to indicate field treatment:

NF: Whole sample (no filtration) NA: No acid added
F: Filtered in field with 0.45μ membrane filter

Data Source 9. Report of analyses for soil samples Pecos and La Bajada Mine site done by Radian Corporation, Radian analytical Services, 10395 Old Placerville Rd., Sacramento, CA 95827 on August 2, 1990 for the Santa Fe National Forest.

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RADIAN CORPORATION

(FAX) TELECOPY COVER SHEET

Time In: _____ Time Out: _____

Pages to Follow: 39 Date: 8/2/90

TO Brian Wirtz

RADIAN OFFICES

Austin (8303)	☐	Irvine (IR)	☐
Austin (1,2,3,4,7)	☐	Milwaukee (MIL)	☐
Austin (5,6,11)	☐	Penmeter Park (PPK)	☐
Austin (SMT)	☐	Research Tri. Park (RTP)	☐
Denver (DEN)	☐	Rochester (ROC)	☐
El Segundo (LA)	☐	Washington (DC)	☐
Houston (HOU)	☐	HSB	☐

OTHER DESTINATIONS

Company Name	SF Forest
City & State	
FAX Number	505-984-3182
Cont. Number	505-988-6961

FROM Lynda Kelly

Radian Corporation
10395 Old Placerville Road
Sacramento, CA 95827
(916) 362-5332

Telecopy: (916) 362-2318

Sending Operator	SARA GUTIERREZ LESLIE CARROLL · CATHERINE ROSS
Receiving Operator	

Comments:

Per instructions from Kelly Young I'm faxing this final report to you. I will also put copies in Federal express tonight for delivery to you tomorrow. If you have any questions regarding these results please don't hesitate to call.

RADIAN CORPORATION

Radian Work Order 90-07-063

Analytical Report
08/02/90

Santa Fe National Forest

Radian Corporation
8501 MoPac Blvd
Austin, Texas

Brian Wirtz c/o KA Young

Customer Work Identification Pecos & La Bajada Mine Site
Purchase Order Number 40-8379-0-0469

Contents:

1 Analytical Data Summary
2 Sample History
3 Comments Summary
4 Notes and Definitions

Radian Analytical Services
10395 Old Placerville Road
Sacramento, CA 95827

916-362-5332

Client Services Coordinator: KAYOUNG

Certified by: Paul N Wirtz

RADIAN CORPORATION

Analytical Data Summary

Santa Fe National Forest
Radian Work Order: 90-07-063

Method/Analyte	Sample Identifications					
	#1 TOE OF UPPER ALLUVIAL 01		#1 TOE OF UPPER ALLUVIAL 02		#2 S-BANK 03	
Matrix	LEACHATE		LEACHATE		LEACHATE	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Chromium VI by SW7196						
Chromium VI			ND mg/L	0.020		
Silver by SW6010						
Silver	ND mg/L	0.0070			ND mg/L	0.0070
Aluminum by SW6010						
Aluminum	17 mg/L	0.045			2.0 mg/L	0.045
Cadmium by SW6010						
Cadmium	ND mg/L	0.0040			0.016 @ mg/L	0.0040
Copper by SW6010						
Copper	3.6 mg/L	0.0060			0.67 mg/L	0.0060
Sulfides by SW9030						
Hydrogen sulfide			ND mg/L	1.0		
Mercury by SW7470						
Mercury	ND mg/L	0.0002			ND mg/L	0.0002
Percent moisture inorganic						
Percent moisture	10.8 % MOIST.				9.9 % MOIST.	
Nickel by SW6010						
Nickel	1.8 mg/L	0.015			3.6 mg/L	0.015
Lead by SW7421						
Lead	ND mg/L	0.0030			ND mg/L	0.0030

ND Not detected at specified detection limit

@ Est. result less that 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

RADIAN CORPORATION

Analytical Data Summary

Santa Fe National Forest
Radian Work Order: 90-07-063

Method/Analyte	Sample Identifications #1 TOE OF UPPER ALLUVIAL 01	#1 TOE OF UPPER ALLUVIAL 02	#2 S-BANK 03
Matrix	leachate	LEACHATE	LEACHATE
	Result Det. Limit	Result Det. Limit	Result Det. Limit
Selenium by SW7740			
Selenium	ND mg/L 0.0050		ND mg/L 0.0050
Sulfate by SW9038			
Sulfate		780 mg/L 50	
Zinc by SW6010			
Zinc	0.13 mg/L 0.0020		0.49 mg/L 0.0020

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

RADIAN CORPORATION

Analytical Data Summary

Santa Fe National Forest
Radian Work Order: 50-07-063

Method/Analyte	Sample Identifications		
	#2 S-BANK (SPLIT)	#3 B/S OF MAJOR SPOILS	#3 B/S OF MAJOR SPOILS
	04	05	06
Matrix	LEACHATE	LEACHATE	LEACHATE
Chromium VI by SW7196			
Chromium VI	ND mg/L 0.020		ND mg/L 0.020
Silver by SW6010			
Silver		ND mg/L 0.0070	
Aluminum by SW6010			
Aluminum		0.54 mg/L 0.045	
Cadmium by SW6010			
Cadmium		ND mg/L 0.0040	
Copper by SW6010			
Copper		0.25 mg/L 0.0060	
Sulfides by SW9030			
Hydrogen sulfide	ND mg/L 1.0		ND mg/L 1.0
Mercury by SW7470			
Mercury		ND mg/L 0.0002	
Percent moisture inorganic			
Percent moisture		7.8 % MOIST.	
Nickel by SW6010			
Nickel		0.58 mg/L 0.015	
Lead by SW7421			
Lead		ND mg/L 0.0030	

ND Not detected at specified detection limit

(i) For a detailed description of flags and technical terms in this report refer to the glossary.

RADIAN CORPORATION

Analytical Data Summary

Santa Fe National Forest
Radian Work Order: 90-07-063

Method/Analyte	Sample Identifications		
	#2 S-BANK (SP-LIT) 04	#3 B/S OF MAJ-OR SPOILS 05	#3 B/S OF MAJ-OR SPOILS 06
Matrix	LEACHATE	LEACHATE	LEACHATE
	Result / Det. Limit	Result / Det. Limit	Result / Det. Limit
Selenium by SW7740			
Selenium		ND mg/L 0.0050	
Sulfate by SW9038			
Sulfate	650 mg/L 50		530 mg/L 25
Zinc by SW6010			
Zinc		0.10 mg/L 0.0020	

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

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RADIAN CORPORATION

Analytical Data Summary

Santa Fe National Forest
Radian Work Order:.S0-07-063

Method/Analyte	Sample Identifications: #4 NE CORNER OF MAIN SPOIL 07 LEACHATE			#4 NE CORNER OF MAIN SPOIL 08 LEACHATE			#5 RIVER SIDE /UPPER SPOIL 09 LEACHATE		
Matrix	LEACHATE			LEACHATE			LEACHATE		
	Result		Det. Limit	Result		Det. Limit	Result		Det. Limit
Chromium VI by SW7196									
Chromium VI				ND	mg/L	0.020			
Silver by SW6010									
Silver	ND	mg/L	0.0070				ND	mg/L	0.0070
Aluminum by SW6010									
Aluminum	0.26	mg/L	0.045				15	mg/L	0.045
Cadmium by SW6010									
Cadmium	ND	mg/L	0.0040				ND	mg/L	0.0040
Copper by SW6010									
Copper	0.12	mg/L	0.0060				0.068	mg/L	0.0060
Sulfides by SW9030									
Hydrogen sulfide				ND	mg/L	1.0			
Mercury by SW7470									
Mercury	ND	mg/L	0.0002				ND	mg/L	0.0002
Percent moisture inorganic									
Percent moisture	11.1	% MOIST.					9.2	% MOIST.	
Nickel by SW6010									
Nickel	0.70	mg/L	0.015				0.48	mg/L	0.015
Lead by SW7421									
Lead	ND	mg/L	0.0030				ND	mg/L	0.0030

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

RADIAN CORPORATION

Analytical Data Summary

Santa Fe National Forest
Radian Work Order:.SQ-07-063

Method/Analyte	Sample Identifications		
	#4 NE CORNER OF MAIN SPOIL	#4 NE CORNER OF MAIN SPOIL	#5 RIVER SIDE- /UPPER SPOIL
	07	08	09
Matrix	LEACHATE	LEACHATE	Leachate

	Result		Det. Limit	Result		Det. Limit	Result		Det. Limit
Selenium by SW7740									
Selenium	ND	mg/L	0.0050				ND	mg/L	0.0050
Sulfate by SW9038									
Sulfate				560	mg/L	25			
Zinc by SW6010									
Zinc	0.12	mg/L	0.0020				0.077	mg/L	0.0020

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

RADIAN CORPORATION

Analytical Data Summary

Santa Fe National Forest
Radian Work Order: 90-07-063

Method/Analyte	Sample Identifications					
	#5 RIVER SIDE-/UPPER SPOIL		#6 2ND MAJOR SPOIL PILE		#6 2ND MAJOR SPOIL PILE	
	10		11		12	
Matrix	LEACHATE		LEACHATE		LEACHATE	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Chromium VI by SW7196						
Chromium VI	ND mg/L	0.020			ND mg/L	0.020
Silver by SW6010						
Silver			ND mg/L	0.0070		
Aluminum by SW6010						
Aluminum			0.059 B mg/L	0.045		
Cadmium by SW6010						
Cadmium			ND mg/L	0.0040		
Copper by SW6010						
Copper			ND mg/L	0.0060		
Sulfides by SW9030						
Hydrogen sulfide	ND mg/L	1.0			ND mg/L	1.0
Mercury by SW7470						
Mercury			ND mg/L	0.0002		
Percent moisture inorganic						
Percent moisture			3.4 % MOIST.			
Nickel by SW6010						
Nickel			0.26 mg/L	0.015		
Lead by SW7421						
Lead			ND mg/L	0.0030		

ND Not detected at specified detection limit

B Est. result less that 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

RADIAN CORPORATION

Analytical Data Summary

Santa Fe National Forest
Radian Work Order: 90-07-063

Method/Analyte	Sample Identifications					
	#7 UPR UNVEGE-TATED HOT PLE 13			#7 UPR UNVEGE-TATED HOT PLE 14			#8 BANK OF S-- DRAINAGE 15		
Matrix	LEACHATE			LEACHATE			LEACHATE		
	Result		Det. Limit	Result		Det. Limit	Result		Det. Limit
Chromium VI by SW7196									
Chromium VI				ND	mg/L	0.020			
Silver by SW6010									
Silver	ND	mg/L	0.0070				ND	mg/L	0.0070
Aluminum by SW6010									
Aluminum	1.2	mg/L	0.045				0.32	mg/L	0.045
Cadmium by SW6010									
Cadmium	0.004 @	mg/L	0.0040				ND	mg/L	0.0040
Copper by SW6010									
Copper	15	mg/L	0.0060				0.16	mg/L	0.0060
Sulfides by SW9030									
Hydrogen sulfide				ND	mg/L	1.0			
Mercury by SW7470									
Mercury	ND	mg/L	0.0002				ND	mg/L	0.0002
Percent moisture inorganic									
Percent moisture	8.9	% MOIST.					7.4	% MOIST.	
Nickel by SW6010									
Nickel	1.5	mg/L	0.015				0.75	mg/L	0.015
Lead by SW7421									
Lead	ND	mg/L	0.0030				ND	mg/L	0.0030

ND Not detected at specified detection limit

@ Est. result less that 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

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RADIAN CORPORATION

Analytical Data Summary

Santa Fe National Forest
Radian Work Order: 90-07-063

Method/Analyte	Sample Identifications		
	#5 RIVER SIDE-/UPPER SPOIL	#6 2ND MAJOR SPOIL PILE	#6 2ND MAJOR SPOIL PILE
	10	11	12
Matrix	LEACHATE	leachate	LEACHATE
	Result / Det. Limit	Result / Det. Limit	Result / Det. Limit
Selenium by SW7740			
Selenium		ND mg/L 0.010	
Sulfate by SW9038			
Sulfate	500 mg/L 25		220 mg/L 10
Zinc by SW6010			
Zinc		0.31 mg/L 0.0020	

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

RADIAN CORPORATION

Analytical Data Summary

Santa Fe National Forest
Radian Work Order: 90-07-063

Method/Analyte	Sample Identifications		
	#7 UPR UNVEGE-TATED HOT PLE	#7 UPR UNVEGE-TATED HOT PLE	#8 BANK OF S-- DRAINAGE
	13	14	15
Matrix	leachate	LEACHATE	leachate
	Result Det. Limit	Result Det. Limit	Result Det. Limit
Selenium by SW7740			
Selenium	ND mg/L 0.010		ND mg/L 0.0050
Sulfate by SW9038			
Sulfate		630 mg/L 25	
Zinc by SW6010			
Zinc	0.43 mg/L 0.0020		0.13 mg/L 0.0020

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

RADIAN CORPORATION

Analytical Data Summary

Santa Fe National Forest
Radian Work Order:.SO-07-063

Method/Analyte	Sample Identifications		
	#8 BANK OF S-- DRAINAGE	#9 RIVER SIDE-- /ACCESS ROAD	#9 RIVER SIDE- /ACCESS ROAD
	16	17	18
Matrix	LEACHATE	LEACHATE	LEACHATE
	Result Det. Limit	Result Det. Limit	Result Det. Limit
Chromium VI by SW7196			
Chromium VI	ND mg/L 0.020		ND mg/L 0.020
Silver by SW6010			
Silver		ND mg/L 0.0070	
Aluminum by SW6010			
Aluminum		0.48 mg/L 0.045	
Cadmium by SW6010			
Cadmium		ND mg/L 0.0060	
Copper by SW6010			
Copper		0.046 mg/L 0.0060	
Sulfides by SW9030			
Hydrogen sulfide	ND mg/L 1.0		ND mg/L 1.0
Mercury by SW7470			
Mercury		ND mg/L 0.0002	
Percent moisture inorganic			
Percent moisture		5.8 % MOIST.	
Nickel by SW6010			
Nickel		0.52 mg/L 0.015	
Lead by SW7421			
Lead		ND mg/L 0.0030	

ND Not detected at specified detection limit

(1) for a detailed description of flags and technical terms in this report refer to the glossary.

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RADIAN CORPORATION

Analytical Data Summary

Santa Fe National Forest
Radian Work Order:_S0-07-063

Method/Analyte	Sample Identifications		
	#8 BANK OF S-- DRAINAGE 16	#9 RIVER SIDE- /ACCESS ROAD 17	#9 RIVER SIDE- /ACCESS ROAD 18
Matrix	LEACHATE	leachate	LEACHATE
	Result Det. Limit	Result Det. Limit	Result Det. Limit
Selenium by SW7740			
Selenium		ND mg/L 0.010	
Sulfate by SW9038			
Sulfate	510 mg/L 25		510 mg/L 25
Zinc by SW6010			
Zinc		0.26 mg/L 0.0020	

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

RADIAN CORPORATION

Analytical Data Summary

Santa Fe National Forest
Radian Work Order: 90-07-063

Method/Analyte	Sample Identification						Sample Identification		
	#10 RIVER SID-E/SPOILS PILE 19			#10 RIVER SID-E/SPOILS PILE 20			#10 RIVER SID-E/SPOILS MS 21		
Matrix	LEACHATE			LEACHATE			LEACHATE		
	Result		Det. Limit	Result		Det. Limit	Result		Det. Limit
Chromium VI by SW7196									
Chromium VI				ND	mg/L	0.020			
Silver by SW6010									
Silver	ND	mg/L	0.0070				97	% RECOV.	
Aluminum by SW6010									
Aluminum	0.36	mg/L	0.045				105	% RECOV.	
Cadmium by SW6010									
Cadmium	0.005 @	mg/L	0.0040				110	% RECOV.	
Copper by SW6010									
Copper	2.0	mg/L	0.0060				91	% RECOV.	
Sulfides by SW9030									
Hydrogen sulfide				ND	mg/L	1.0			
Mercury by SW7470									
Mercury	ND	mg/L	0.0002				93	% RECOV.	
Percent moisture inorganic									
Percent moisture	6.4	% MOIST.							
Nickel by SW6010									
Nickel	0.61	mg/L	0.015				95	% RECOV.	
Lead by SW7421									
Lead	ND	mg/L	0.0030				93	% RECOV.	

ND Not detected at specified detection limit

@ Est. result less that 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

RADIAN CORPORATION

Analytical Data Summary

Santa Fe National Forest
Radian Work Order: 90-07-063

Method/Analyte	Sample Identifications		
	#10 RIVER SID-E/SPOILS PILE 19	#10 RIVER SID-E/SPOILS PILE 20	#10 RIVER SID-E/SPOILS MS 21
Matrix	leachate	LEACHATE	leachate

	Result		Det. Limit	Result		Det. Limit	Result		Det. Limit
Selenium by SW7740									
Selenium	ND	mg/L	0.010				0 Q	% RECOV.	
Sulfate by SW9038									
Sulfate				710	mg/L	25			
Zinc by SW6010									
Zinc	0.22	mg/L	0.0020				98	% RECOV.	

ND Not detected at specified detection limit

Q Outside control limits

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

RADIAN CORPORATION

Analytical Data Summary

Santa Fe National Forest
Radian Work Order: 90-07-063

Method/Analyte	Sample Identifications					
	#10 RIVER SID-E/SPOILS MS 22			#11 LAST,FLAT-.SPOILS PILE 23			#11 LAST,FLAT-.SPOILS PILE 24		
Matrix	LEACHATE			LEACHATE			LEACHATE		
	Result		Det. Limit	Result		Det. Limit	Result		Det. Limit
Chromium VI by SW7196									
Chromium VI	96	% RECOV					ND	mg/L	0.020
Silver by SW6010									
Silver				ND	mg/L	0.0070			
Aluminum by SW6010									
Aluminum				0.49	mg/L	0.045			
Cadmium by SW6010									
Cadmium				ND	mg/L	0.0040			
Copper by SW6010									
Copper				0.62	mg/L	0.0060			
Sulfides by SW9030									
Hydrogen sulfide	107	% RECOV.					ND	mg/L	1.0
Mercury by SW7470									
Mercury				ND	mg/L	0.0002			
Percent moisture inorganic									
Percent moisture				4.8	% MOIST.				
Nickel by SW6010									
Nickel				1.4	mg/L	0.015			
Lead by SW7421									
Lead				ND	mg/L	0.0030			

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

RADIAN CORPORATION

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Analytical Data Summary

Santa Fe National Forest
Radian Work Order:-S0-07-063

Method/Analyte	Sample Identifications		
	#10 RIVER SID-E/SPOILS HS	#11 LAST,FLAT-.SPOILS PILE	#11 LAST,FLAT-.SPOILS PILE
	22	23	24
Matrix	LEACHATE	leachate	LEACHATE
Selenium by SW7740			
Selenium		ND mg/L 0.010	
Sulfate by SW9038			
Sulfate	97 % RECOV.		710 mg/L 25
Zinc by SW6010			
Zinc		0.71 mg/L 0.0020	

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

RADIAN CORPORATION

Analytical Data Summary

Santa Fe National Forest
Radian Work Order:.60-07-063

Method/Analyte	Sample Identifications		
	#2	#2 (SPLIT)	#3 DEPRESSION-/SITE 30
	25	26	27
Matrix	LEACHATE	LEACHATE	LEACHATE
	Result Det. Limit	Result Det. Limit	Result Det. Limit
Cadmium by SW6010			
Cadmium	0.18 mg/L 0.0040		0.082 mg/L 0.0040
Copper by SW6010			
Copper	0.23 mg/L 0.0060		1.9 mg/L 0.0060
Sulfides by SW9030			
Hydrogen sulfide		ND mg/L 1.0	
Mercury by SW7470			
Mercury	ND mg/L 0.0002		0.0016 mg/L 0.0002
Percent moisture inorganic			
Percent moisture	15.8 % MOIST.		5.5 % MOIST.
Lead by SW7421			
Lead	0.075 mg/L 0.0060		3.3 mg/L 0.30

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

Data Source 10. Printout of La Bajada Mine History apparently provided by Bill Hatchell, Chief, Bureau of Economic Geology, Mining and Minerals Division, State of New Mexico dated June 12, 1989.

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1: 15N.7E.9.112
2: La Bajada (Lone Star)
3: NW1/4 9 T15N R7E (unsurveyed) 35°32'45"N 106°12'30"W
4: Tetilla Peak 7-1/2 Elevation 5,580 ft
5: La Bajada district
6: U, Ag, Cu, Fe, Ni, Co, Zn, Mo, Sn
7: 125-ft by 425-ft, 50-ft deep open pit (flooded), stripped over underground workings (200-ft shaft; 125 ft decline; 100-ft shaft; 150-ft adit originally)
8: 9,649 tons ore yielding 27,111 lbs U_3O_8 (0.14% U_3O_8), 42 lbs V_2O_5
9: bkgd 50 cps; high on dumps 500-1,500 cps
10: Miocene Cienequilla Lumburgite, Espinaso Formation
11: uranium associated with organic material in fault zone about 40-ft wide along with sulfide minerals
12: brannerite reported; 0.09% U_3O_8, 1.51% Cu (NMBMMR chem lab, 11/30/81, #1533); 19 ppm Th (NMBMMR XRF lab, 2/83, #1533)
13: Hydrothermal-vein
14: also produced 8 tons of 24-oz silver and 2,423 lbs copper; map and cross section by Chenoweth (1979); Lone Star Mining Corp. held claims until 1979 when USBLM suspended action on the lease renewal until a new Environmental Analysis Report could be prepared; reserves are probably present; mined 1956-1966
15: FN 5/28/81; Anderson, O.J. (1980); Green and others (1980c, #10); Chenoweth (1979); Hai-Vassilou and Kerr (1972); Elston (1967); Lustig (1958, 1959); PRR DEB-RRA-799 (1953); NMBMMR files (1979); USBM files (1957); USAEC files (1966); MILS (1981); CRIB (1976)

1: 20N.10E.7.132
2: Marion (Shaw No. 2)
3: C N1/2 7 T20N R10E 35°58'55"N 105°55'5"W
4: Cundiyo 7-1/2 Elevation 6,600 ft
5: Nambe district
6: Cu, U
7: bulldozer cuts
8: no uranium production
10: Precambrian biotite schist
13: Hydrothermal-vein
15: Anderson, O.J. (1980); U.S. Atomic Energy Commission (1970, p. 158-159); MILS (1981)

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
525 CAMINO DE LOS MARQUEZ
SANTA FE, NEW MEXICO 87501
BILL HATCHELL
CHIEF
BUREAU OF ECONOMIC GEOLOGY
MINING AND MINERALS DIVISION

Data Source 11. Radiological Survey of The La Bajada Mine, New Mexico Radiation Protection Bureau, August, 1987

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

ENVIRONMENTAL IMPROVEMENT DIVISION
RADIATION PROTECTION BUREAU
(505) 827-2957

GARREY CARRUTHERS
Governor

LARRY SCHOON
Secretary

CARLA L. MUTH
Deputy Secretary

May 29, 1987

Mr. Robert Salter, Bureau Chief
Abandoned Mine Land Program
Energy & Minerals Department
Mining and Minerals Division
525 Camino de los Marquez
Santa Fe, NM 87501

Dear Mr. Salter:

Enclosed is our report titled "Radiologic Survey of the La Bajada Mine". We have made an effort to include in this report all other analyses for radioactive constituents in either soil or water surrounding this abandoned mine. Included are reports of 1) a gamma radiation survey performed by the Radiation Protection Bureau in December 1986; 2) water analysis of the mine pit, Santa Fe river, and "spring" (infiltration gallery) sampled in 1978-79; 3) mine pit water ("pond") analysis in March 1987, performed by Groundwater Section, EID; and 4) analysis of drinking water samples collected by District I, EID. On the basis of these reports, we have made recommendations primarily for the benefit of the Espanola Ranger Station staff who plan further reclamation of the area beginning this spring or summer.

If you have further questions, please contact me at 827-2957, or Alan Hall at 827-294.

Sincerely,

J. Margo Keele

J. Margo Keele, Ph.D.
Program Manager
Surveillance and Monitoring Section

MK/mc

Enclosure 1) "Radiologic Survey of La Bajada Mine", RPB/EID
2) SLD Analytical Report: Water Samples, La Bajada Mine (GroundWater/Hazardous Waste Bureau/EID)
3) SLD Analytical Report: La Bajada/Domingo Drinking Water Samples (EID Field Office-Bernalillo)

cc: Michael F. Brown, Bureau Chief, Radiation Protection Bureau
Peter W. Karp, District Ranger, Espanola Ranger Station
Tito Madrid, District I Manager, EID

RADIOLOGICAL SURVEY OF THE LA BAJADA MINE

New Mexico Radiation Protection Bureau
May 26, 1987

The La Bajada Mine (a.k.a. The Lone Star Mine) is located in the Santa Fe River Canyon, approximately 2½ miles upstream of the small village of La Bajada. The workings consisted of a small open pit just north of the river. This pit is now flooded; the area of the resulting pond is about one acre. Dumps and other disturbed areas stretch along the river both east and west of the pit. The total disturbed area is very roughly estimated to be 15 acres.

Limited reclamation work has been done by the Forest Service, which is the land manager. Their work has consisted largely of grading selected portions of spoil and ore piles in order to bury radioactive material emitting more than 70 microroentgens (uR) per hour. These graded areas are shown on the attached sketch of the mine area (Figure 1).

The Radiation Protection Bureau performed a survey of the gamma radiation of the surface soil of the La Bajada Mine area in December 1986 at the request of Robert Salter, Abandoned Mine Land Bureau. Subsequent to that time, Mr. Toby Mora, a La Bajada resident, requested testing of the drinking water supply at La Bajada Village as well as the water in the Santa Fe River, since the latter is used for irrigation of crops. He claims to have lost a real estate sale due to the proximity of his property to the mine. We also learned of the Forest Service's interest in performing additional reclamation activities on the area. Since the Forest Service was aware that people were swimming and fishing in the "pond" at the La Bajada mine, we decided to also analyze water samples from the water in the pit.

METHODS

Gamma radiation was measured at one meter above the ground surface using Eberline PRM-7 microroentgen meters. Two meters were used; they were last calibrated on 11-17-86 and 6-10-86. Readings were taken at numerous locations, some of which are shown on Figure 1. These locations were not selected in a predetermined manner, but rather were selected because they appeared representative of portions of the mine site or because they appeared likely - due to color, texture, and so forth - to be more radioactive than surrounding locations. For example, some parts of the site are dotted with small piles of dark-colored material, each clearly being a separate load of a small dump truck. Judging from their placement and the fact they were not graded or covered, we assume they are protore, low-grade ore that was set aside with the hope that it might be economical to mill it at a later date.

As such, there is reason to expect these piles to be more radioactive than ordinary spoil, and we accordingly concentrated many of the readings at these piles. Several dozen locations were checked.

Samples of soil, spoil, and protore were taken at nine locations. They were collected with a spade to a depth of three or four inches. Each sample comprised about five pounds. The sample locations are shown on Figure 1. The one sample (LB-9) classified as "soil" was taken from an undisturbed site outside of the mine. As such, it represents a "background sample". Samples classified as "spoil" were collected from materials on the mine that had obviously been disturbed. These represent a heterogenous mixture of weathered and unweathered materials.

The soil, spoil, and protore samples were analyzed for U-238, U-234, Th-230, Ra-226, and Pb-210 by the New Mexico Scientific Laboratory Division (SLD) in Albuquerque. The samples were ground and a five gram subsample was digested in a mixture of nitric, sulfuric, and hydrofluoric acids. Following pyrosulfate fusion, the different nuclides were separated by coprecipitation with barium sulfate, chelation with EDTA, and solvent extraction. U-238, U-234, and Th-230 were measured by alpha spectroscopy, Ra-226 by radon emanation, and Pb-210 by the beta emissions of ingrown Bi-210 daughters.

On March 4, 1987, the water in the flooded pit was sampled by the EID Groundwater Bureau. These unfiltered samples were analyzed by the SLD for gross alpha, gross beta, U-234, U-235, U-238, Th-230, Ra-226, Ra-228, and Pb-210. Gross alpha and gross beta were measured by evaporating an appropriate volume of sample in a counting pan and counting in an internal proportional counter. The concentrations of the individual nuclides were determined by evaporating one liter of sample and analyzing the residue by the same procedure used for the soil, spoil, and protore samples, except that Ra-228 was determined by coprecipitating Ra-226 and Ra-228 with $BaSO_4$ and measuring the beta emissions of ingrown Ac-228 daughters.

The waters in the pit, from the infiltration gallery into the Santa Fe River (called the "Spring"), and in the Santa Fe River upstream and downstream of the mine were also collected and analyzed by the Water Pollution Control Section of EID in 1978 and 1979. Although we do not have detailed information on the methods employed, and in fact cannot locate the sampling locations with any greater precision than the descriptions shown in Table 3, the analyses have historical interest and are included in the report for that reason

In early March 1987, District I, EID, took a drinking water sample from the Domingo Trading Post at Domingo. Although the sampling site was located 5 to 10 miles from La Bajada Village, it is on the same water supply as La Bajada Village, which is the closest community water supply to the La Bajada Mine. For this reason, these drinking analyses are also included in this report.

FINDINGS

Gamma radiation measurements on the mine dumps, pit, and graded areas ranged from 20 to 300 uR/hr. The low figure (20 uR/hr) is quite close to a 15uR/hr background measurement taken at the old gate to the mine. (Background radiation in the Santa Fe area typically ranges from 12 to 15 uR/hr.) The highest reading taken in an area regraded by the Forest Service was 120 uR/hr.

Soil, spoil, and protore analyses are shown on Table 1. Concentrations of all the radonuclides in the spoil and protore samples are well above the concentrations in the soil sample.

Analyses of the water samples collected on March 4, 1987 are shown on Table 2. Two samples (0050 and 0052) exceed the state drinking water standard for gross alpha activity. Sample 0052 also exceeds the state drinking water standard for radium.

Analyses of the water samples collected in 1978 and 1979 are shown on Table 3.

Analyses of the drinking water sample taken from the La Bajada Village water supply are shown on Table 4. None of these concentrations exceed New Mexico Drinking Water Standards.

DISCUSSION AND RECOMMENDATIONS

As far as we know, there are no legal radiological standards that would apply to the gamma radiation emitted at the La Bajada Mine. However, Section 4-150 of the NM Radiation Protection Regulations states that licensees and registrants should not possess, use, or transfer sources of radioactivity in unrestricted areas in such a way that any individual would receive a whole-body dose exceeding 0.5 rem per year. If we assume a person standing upright for 24 hours a day, 365 days per year, and if we assume that the ground on which he is standing is the source of radioactivity to which he is exposed, the exposure rate from the ground corresponding to the 0.5 rem/yr dose would be approximately 57 microroentgens per hour. This figure, while admittedly somewhat arbitrary, could nevertheless serve as a goal below which to reduce gamma radiation on the mine site.

Our specific recommendations are:

1) Prior to any more reclamation attempts, a more detailed radiation survey should be performed. Completed (see Sept 4, 1987 letter).

2) Reclamation activity should refer to the final radiation survey and proceed in a fashion that would result in all

problem areas being covered so that the gamma radiation levels measured at 1 meter are less than 57 uR/hr.

3) Future reclamation activities should include measures to control erosion on the site, specifically on a 3:1 slope graded by the Forest Service located west of the pit and a large gully east of the pit.

4) The water in the pond should not be utilized as a drinking water supply.

TABLE 1

SOIL, SPOIL, AND PROTORE ANALYSES

Sample No.	U-238 (pCi/g)	U-234 (pCi/g)	Th-230 (pCi/g)	Ra-226 (pCi/g)	Pb-210 (pCi/g)
LB-1 (spoil)	5.8 ± 0.4*	5.7 ± 0.4	4.7 ± 0.3	6.2 ± 0.4	5.0 ± 0.6
LB-2 (protore)	118 ± 6	120 ± 6	205 ± 6	257 ± 14	211 ± 11
LB-3 (spoil)	24.0 ± 1.2	24.2 ± 1.2	21.0 ± 1.0	8.1 ± 0.5	19.6 ± 1.3
LB-4 (spoil)	87 ± 3	85 ± 3	119 ± 4	127 ± 7	101 ± 6
LB-5 (protore)	32.0 ± 1.4	42 ± 2	382 ± 10	970 ± 50	930 ± 50
LB-6 (spoil)	10.2 ± 0.6	10.4 ± 0.6	6.4 ± 0.4	10.8 ± 0.6	11.4 ± 1.4
LB-7 (spoil)	8.4 ± 0.5	9.7 ± 0.5	7.9 ± 0.5	13.3 ± 0.8	15.5 ± 1.7
LB-8 (spoil)	10.9 ± 0.6	10.5 ± 0.6	15.0 ± 0.7	3.80 ± 0.22	10.0 ± 1.4
LB-9 (soil) (background sample)	0.67 ± 0.12	0.40 ± 0.12	0.45 ± 0.12	0.20 ± 0.20	4.1 ± 0.7

* The second figure represents one standard deviation

TABLE 2

ANALYSES OF WATER SAMPLES COLLECTED MARCH 1987
FROM THE LA BAJADA MINE PIT

	Sample No. 0049 (Composite taken near surface around perimeter)	Sample No. 0050 (South side at 10' depth)	Sample No. 0051 (NW corner at 15' depth)
Gross alpha (Rel. to U-238) (pCi/l)	45 ± 6*	111 ± 14	42 ± 6
Gross alpha (Rel. to Am-241) (pCi/l)	32 ± 3	82 ± 8	32 ± 4
Gross alpha (less U contribution) (pCi/l)	0	54.4 ± 14	0
Gross beta (pCi/l)	19 ± 3	194 ± 14	42 ± 6
U-234 (pCi/l)	23.2 ± 1.1	28.6 ± 1.4	23.4 ± 1.2
U-235 (pCi/l)	1.04 ± 0.05	1.24 ± 0.06	1.07 ± 0.06
U-238 (pCi/l)	22.4 ± 1.0	26.8 ± 1.4	23.2 ± 1.2
Th-230 (pCi/l)	0.17 ± 0.08	3.0 ± 0.3	1.1 ± 0.2
Ra-226 (pCi/l)	0.17 ± 0.02	3.93 ± 0.23	0.98 ± 0.06
Ra-228 (pCi/l)	0.4 ± 0.2	0.9 ± 0.3	1.1 ± 0.4
Pb-210 (pCi/l)	0.4 ± 0.3	7.3 ± 1.3	2.9 ± 1.0

*The second figure represents one standard deviation

TABLE 2 CONTINUED

ANALYSES OF WATER SAMPLES COLLECTED MARCH 1987
FROM THE LA BAJADA MINE PIT

	Sample No. 0052 (NW corner at 30' to 50' depth)	New Mexico Drinking Water Standard	New Mexico Groundwater Standard
Gross alpha (Rel. to U-238) (pCi/l)	131 ± 16*	---	---
Gross alpha (Rel. to Am-241) (pCi/l)	95 ± 9	---	---
Gross alpha (less U contribution) (pCi/l)	62.0 ± 16	15 pCi/l	---
Gross beta (pCi/l)	111 ± 11	---	---
U-234 (pCi/l)	34.1 ± 1.5	---	---
U-235 (pCi/l)	1.54 ± 0.07	---	5 mg/l (=3620 pCi/l)**
U-238 (pCi/l)	33.4 ± 1.4	---	
Th-230 (pCi/l)	11.3 ± 0.8	---	
Ra-226 (pCi/l)	5.5 ± 0.3	5 pCi/l	30 pCi/l
Ra-228 (pCi/l)	1.2 ± 0.3		
Pb-210 (pCi/l)	14.3 ± 1.5	---	---

*The second figure represents one standard deviation

$U_{natural}$ (pCi/l) = $U_{natural}$ (mg/l) x 724 pCi/mg*

***Specific activity of natural uranium

TABLE 3

ANALYSES OF WATER SAMPLES COLLECTED 12-27-78 AND 1-11-79 FROM THE LA BAJADA MINE PIT AND VICINITY

	pH	U (pCi/l)	Ra-226 (pCi/l)
Santa Fe River ¼ mi. upstream of mine site			
12-27-78	7.8	3.8	0.08
1-11-79	8.0	5.1	0.51
Santa Fe River downstream of mine site (at USGS gaging station)			
12-27-78	7.8	2.9	0.31
1-11-79	8.0	3.5	2.9
La Bajada Mine Pit			
12-27-78	8.2	60.1	0.1
1-11-79	7.8	48.7	2.8
Spring 50 feet east of the pit			
12-27-78	7.8	14.5	0.3
1-11-79	7.4	13.5	0.31

$U_{natural}$ (pCi/l) = $U_{natural}$ (mg/l) x 724 pCi/mg*

*Specific activity of natural uranium

TABLE 4

ANALYSES OF A DRINKING WATER SAMPLE COLLECTED IN MARCH 1987 FROM DOMINGO

Gross alpha w/AM - 241 ref.	= 2.9 ± 0.6*	pCi/l
Gross alpha w/U - nat ref.	= 4.5 ± 1.1	pCi/l
Gross beta w/Cs - 137 ref.	= 7.6 ± 1.0	pCi/l
Gross beta w/Sr/Y - 90 ref.	= 7.6 ± 1.0	pCi/l

*The second figure represents one standard deviation.

FIGURE 1

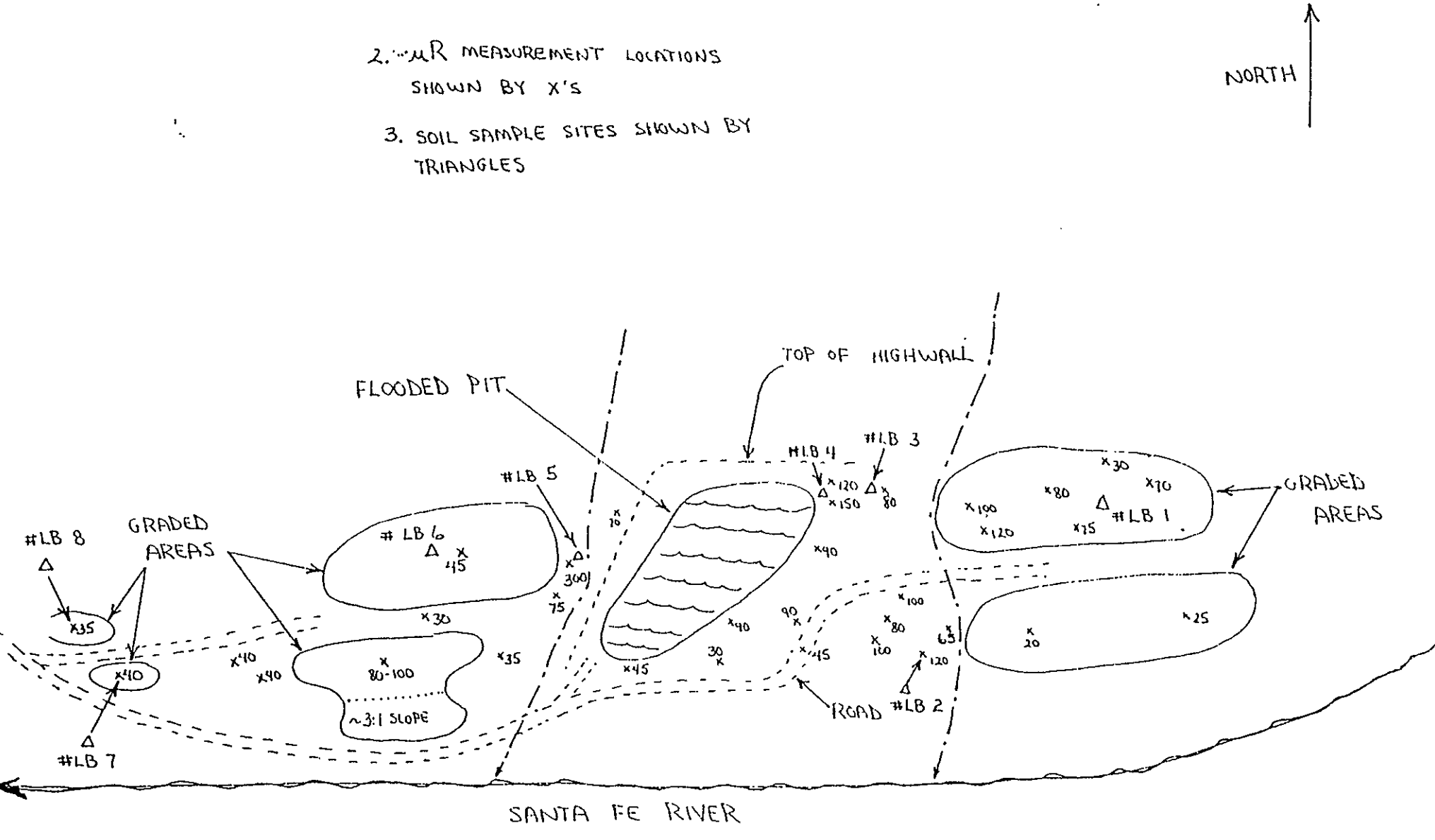
Figure 1

LA BAJADA MINE

NOTE: 1. VERY ROUGH SKETCH; NOT TO SCALE

2. ~~mR~~ μR MEASUREMENT LOCATIONS SHOWN BY X'S

3. SOIL SAMPLE SITES SHOWN BY TRIANGLES



LA BAJADA MINE VICINITY

ANALYTICAL REPORT - SOIL SAMPLES/LA BAJADA MINE
SCIENTIFIC LABORATORY DIVISION

Sample	U-238 (pCi/G)	U-234 (pCi/G)	Th 230* (pCi/G)	Ra-226 (pCi/G)	Pb 210 (pCi/G)
RC-87-0017 (LB-1)	5.8 # 0.4	5.7 # 0.4	voided (3.3 # 0.3)	6.2 # 0.4	5.0 # 0.6
RC-87-0018 (LB-2)	118. # 6.	120. # 6.	voided (117. # 4.)	257. # 14.	211. # 11.
RC-87-0019 (LB-3)	24.0 # 1.2	24.2 # 1.2	voided (9.7 # 0.5)	8.1 # 0.5	19.6 # 1.3
RC-87-0020 (LB-4)	87. # 3.	85. # 3.	voided (77. # 3.)	127. # 7.	101. # 6.
RC-87-0021 (LB 5)	32.0 # 1.4	42. # 2.	voided (215. # 6.)	970. # 50.	930. # 50.
RC-87-0022 (LB 6)	10.2 # 0.6	10.4 # 0.6	voided (7.0 # 0.4)	10.8 # 0.6	11.4 # 1.4
RC-87-0023 (LB-7)	8.4 # 0.5	9.7 # 0.5	voided (8.3 # 0.4)	13.3 # 0.8	15.5 # 1.7
RC-87-0024 (LB 8)	10.9 # 0.6	10.5 # 0.6	voided (6.4 # 0.3)	3.80 # 0.22	10.0 # 1.4
RC-87-0025 (LB-9)	0.67 # 0.12	0.40 # 0.12	voided (0.74 # 0.12)	3.43 # 0.20	4.1 # 0.7
QC-18-Feb-Kn (Target=252)	235. #13.	231. # 12.	voided (150. # 5.)	241. # 14.	241. # 10.
QC-23-Feb-Kn (Target=252)	226. # 9.	228. # 9.	voided (184. # 6.)	264. # 15.	254. # 18.
QC-26-Feb-Kn (Target=252)	232. #10.	233. # 10.	voided (178. # 6.)	271. # 16.	265. # 20.
QC-18-Feb-Bk (Target=0.0)	0.06 # 0.06	-0.09 # 0.08	voided (-0.05 # 0.06)	-0.01 # 0.02	-0.1 # 0.3
QC-23-Feb-Bk (Target=0.0)	-0.02 # 0.06	-0.12 # 0.07	voided (-0.10 # 0.05)	0.02 # 0.02	0.0 # 0.3
QC-26-Feb-Bk (Target=0.0)	0.00 # 0.06	-0.04 # 0.08	voided (-0.05 # 0.05)	-0.02 # 0.02	0.4 # 0.6

means + or - 1 standard deviation value.
* values in brackets ( ) are the results obtained on runs voided by low known results.

Analytical results for sediment samples collected from the bottom of the La Bajada Mine Pit. The locations of the three samples were not designated on the original samples. The analyses were run on a water extract at pH 5 according to RCRA procedures, SW 846 method 1310, for EPTOX metals. The Ra-226 values reported in PCi/G were determined by GeLi gamma counting of the original sediment samples.

SAMPLE NUM	ANALYSIS	SYMBOL	RESULT	UNCERTAINTY	UNITS
87.01713	AG	<	0.0500	0.0500	MG/L
87.01713	AS	<	0.0500	0.0500	MG/L
87.01713	BA		0.8000	0.5000	MG/L
87.01713	CD	<	0.0100	0.0100	MG/L
87.01713	CL		3.2000	0.6000	MG/L
87.01713	CN		0.0100	0.0100	MG/L
87.01713	CO		0.5200	0.0500	MG/L
87.01713	CR	<	0.0500	0.0500	MG/L
87.01713	CU	<	2.0000	2.0000	UG/L
87.01713	F		0.5370	0.0540	MG/L
87.01713	FE		135.0000	13.0000	MG/L
87.01713	HG	<	0.0020	0.0020	MG/L
87.01713	MN		9.7000	0.9700	MG/L
87.01713	MO		0.0020	0.0010	MG/L
87.01713	NH3-N		4.0000	0.4000	MG/L
87.01713	NH3-N		4.1200	0.4120	MG/L
87.01713	NI		1.2200	0.1200	MG/L
87.01713	NO3-N	<	0.2000	0.2000	MG/L
87.01713	P	<	0.2000	0.2000	MG/L
87.01713	PB	<	0.0500	0.0500	MG/L
87.01713	PH		4.4700	0.1000	UNITS
87.01713	RA-226		23.5000	2.3000	PCI/L
87.01713	RA-226		8.5300	1.3100	PCI/G
87.01713	SE		9.1000	1.0000	UG/L
87.01713	SO4		21.3000	2.1000	MG/L
87.01713	TDS		2518.0000	252.0000	MG/L
87.01713	TH		0.0010	0.0010	MG/L
87.01713	U		0.0080	0.0050	MG/L
87.01713	V	<	0.0100	0.0100	MG/L
87.01713	ZN		0.1870	0.0380	MG/L

SAMPLE NUM	ANALYSIS	SYMBOL	RESULT	UNCERTAINTY	UNITS
87.01714	AG	<	0.0500	0.0500	MG/L
87.01714	AS	<	0.0500	0.0500	MG/L
87.01714	BA		0.5000	0.5000	MG/L
87.01714	CD		0.2000	0.0200	MG/L
87.01714	CL		2.4000	0.4000	MG/L
87.01714	CN		0.0100	0.0100	MG/L
87.01714	CO		0.4400	0.0400	MG/L
87.01714	CR	<	0.0500	0.0500	MG/L
87.01714	CU	<	2.0000	2.0000	UG/L
87.01714	F		0.5530	0.0550	MG/L
87.01714	FE		70.0000	7.0000	MG/L
87.01714	HG	<	0.0020	0.0020	MG/L
87.01714	MN		8.9800	0.9000	MG/L

87.01709	HG	<	0.2000	0.2000	UG/L
87.01709	MN		0.1830	0.0180	MG/L
87.01709	MO	<	0.0500	0.0500	MG/L
87.01709	NH3-N		0.0000	0.0400	MG/L
87.01709	NH3-N		0.0000	0.0400	MG/L
87.01709	NI	<	0.0500	0.0500	MG/L
87.01709	NO3-N	<	0.2000	0.2000	MG/L
87.01709	P		0.3000	0.2000	MG/L
87.01709	PB	<	0.0500	0.0500	MG/L
87.01709	PH		8.1500	0.1000	UNITS
87.01709	RA-226		0.1900	0.0190	PCI/L
87.01709	SE		1.5000	1.0000	UG/L
87.01709	SE		1.5000	1.0000	UG/L
87.01709	SO4		226.0000	23.0000	MG/L
87.01709	TDS		672.0000	67.0000	MG/L
87.01709	TH	<	0.0100	0.0100	MG/L
87.01709	U		0.0860	0.0090	MG/L
87.01709	V	<	0.0500	0.0500	MG/L
87.01709	ZN		14.4000	2.0000	UG/L

SAMPLE NUM	ANALYSIS	SYMBOL	RESULT	UNCERTAINTY	UNITS
87.01716	AG	<	0.0500	0.0500	MG/L
87.01716	AL		0.3600	0.1000	MG/L
87.01716	AS	<	0.0500	0.0500	MG/L
87.01716	B		0.3000	0.1000	MG/L
87.01716	BA	<	0.5000	0.5000	MG/L
87.01716	CD	<	0.0100	0.0100	MG/L
87.01716	CL		23.6000	2.4000	MG/L
87.01716	CN		0.0000	0.0500	MG/L
87.01716	CO	<	0.0500	0.0500	MG/L
87.01716	F		2.1000	0.3000	MG/L
87.01716	HG		0.8000	0.2000	UG/L
87.01716	MO		0.3000	0.0500	MG/L
87.01716	NH3-N		6.0500	0.6050	MG/L
87.01716	NH3-N		6.5000	0.6500	MG/L
87.01716	NI		0.0600	0.0500	MG/L
87.01716	NO3-N		0.3000	0.2000	MG/L
87.01716	P	<	0.2000	0.2000	MG/L
87.01716	PB	<	0.0500	0.0500	MG/L
87.01716	PH		7.7400	0.1000	UNITS
87.01716	SO4		379.0000	38.0000	MG/L
87.01716	TDS		104.0000	10.0000	MG/L
87.01716	TH	<	0.0100	0.0100	MG/L
87.01716	U		0.1330	0.0130	MG/L
87.01716	V	<	0.0500	0.0500	MG/L

87.01714	MO		0.0020	0.0010	MG/L
87.01714	NH3-N		1.9900	0.1990	MG/L
87.01714	NH3-N		1.9800	0.1980	MG/L
87.01714	NI		1.1200	0.1100	MG/L
87.01714	NO3-N	<	0.2000	0.2000	MG/L
87.01714	P	<	0.2000	0.2000	MG/L
87.01714	PB	<	0.0500	0.0500	MG/L
87.01714	PH		4.3900	0.1000	UNITS
87.01714	RA-226		9.2000	0.9000	PCI/L
87.01714	RA-226		4.0300	0.6200	PCI/G
87.01714	SE	<	1.0000	1.0000	UG/L
87.01714	SO4		39.1000	3.9000	MG/L
87.01714	TDS		2825.0000	283.0000	MG/L
87.01714	TH		0.0010	0.0010	MG/L
87.01714	U		0.0200	0.0050	MG/L
87.01714	V		0.0170	0.0100	MG/L
87.01714	ZN		0.4250	0.0430	MG/L

SAMPLE NUM	ANALYSIS	SYMBOL	RESULT	UNCERTAINTY	UNITS
87.01715	AG	<	0.0500	0.0500	MG/L
87.01715	AS	<	0.0500	0.0500	MG/L
87.01715	BA		0.6000	0.5000	MG/L
87.01715	CD	<	0.0100	0.0100	MG/L
87.01715	CL		2.6000	0.4000	MG/L
87.01715	CN		0.0100	0.0100	MG/L
87.01715	CO		0.5500	0.0600	MG/L
87.01715	CR	<	0.0500	0.0500	MG/L
87.01715	CU		13.5000	4.0000	UG/L
87.01715	F		0.6330	0.0630	MG/L
87.01715	FE		200.0000	20.0000	MG/L
87.01715	HG	<	0.0020	0.0020	MG/L
87.01715	MN		10.7000	1.1000	MG/L
87.01715	MO		0.0020	0.0010	MG/L
87.01715	NH3-N		4.1200	0.4120	MG/L
87.01715	NH3-N		4.3700	0.4370	MG/L
87.01715	NI		1.2800	0.1300	MG/L
87.01715	NO3-N	<	0.2000	0.2000	MG/L
87.01715	P	<	0.2000	0.2000	MG/L
87.01715	PB	<	0.0500	0.0500	MG/L
87.01715	PH		4.4600	0.1000	UNITS
87.01715	RA-226		5.7400	0.8800	PCI/G
87.01715	RA-226		21.5000	2.1000	PCI/L
87.01715	SE		1.0000	1.0000	UG/L
87.01715	SO4		37.3000	3.7000	MG/L
87.01715	TDS		2685.0000	269.0000	MG/L
87.01715	TH		0.0010	0.0010	MG/L
87.01715	U		0.0090	0.0050	MG/L
87.01715	V	<	0.0100	0.0100	MG/L
87.01715	ZN		0.1930	0.0190	MG/L

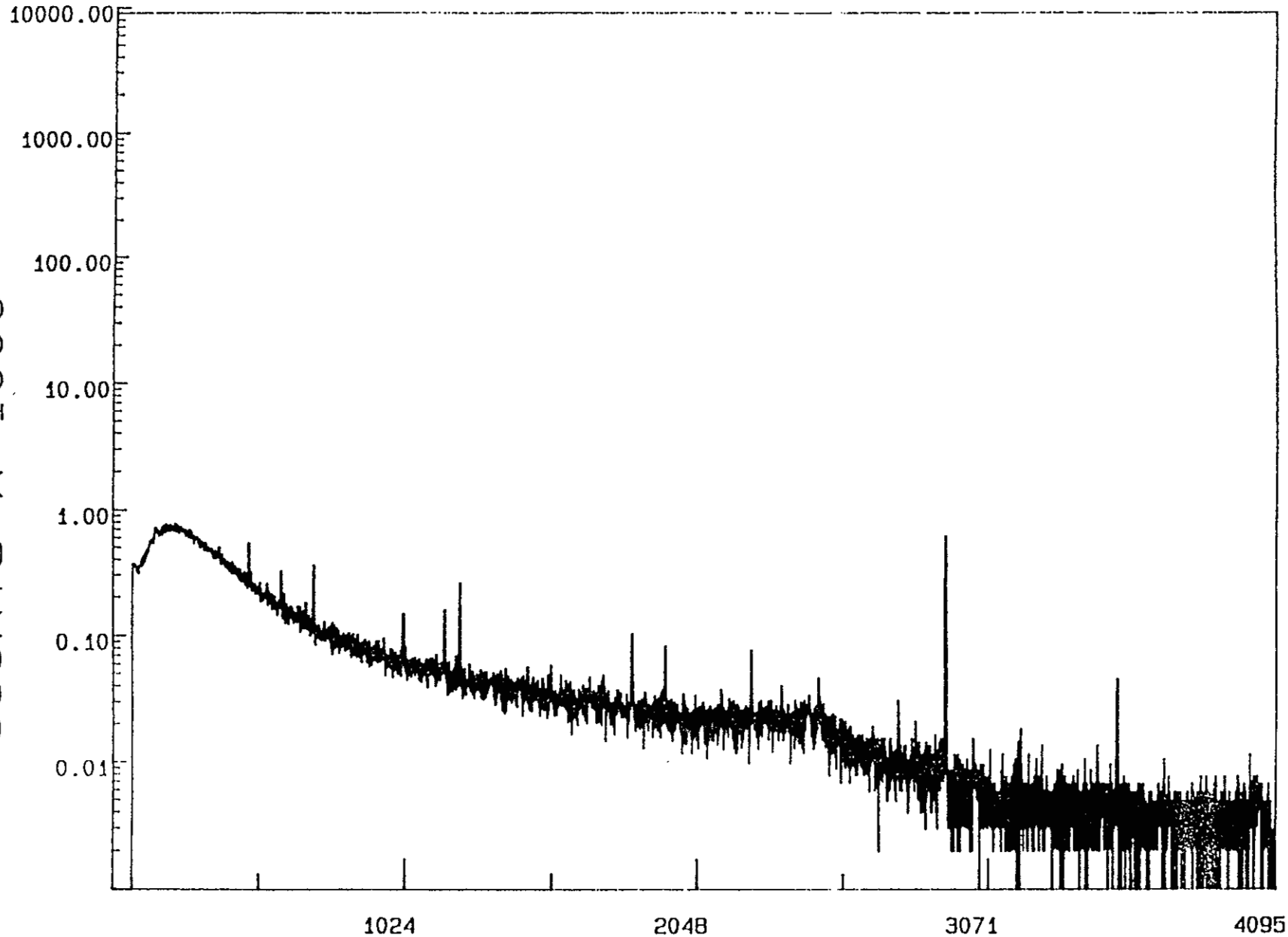
Analytical results for animal samples.

	SAMPLE NUM	ANALYSIS	SYMBOL	RESULT	UNCERTAINTY	UNITS
KANGAROO RATS	87.08317	GSCAN		0.0000	0.0000	
#42 59g	87.08317	MSCAN		no elevated metals observed		
#43 69g	87.08317	RA-226		2.8800	1.0300	PCI/G
ASH WT 6.7g	87.08317	TH		1.3980	0.1400	UG/G
	87.08317	U		1.8890	0.1890	UG/G
PEROMYSCUS	87.08318	GSCAN		0.0000	0.0000	
#9 29g	87.08318	MSCAN		no elevated metals observed		
#17 11.5g	87.08318	RA-226		4.0000	1.9700	PCI/G
#22 21g	87.08318	TH		1.6090	0.1610	UG/G
ASH WT 3.4g	87.08318	U		3.7010	0.3700	UG/G
SUNFISH	87.08319	GSCAN		0.0000	0.0000	
600g WET WT	87.08319	MSCAN		no elevated metals observed		
38g ASH WT	87.08319	RA-226		1.7700	0.4400	PCI/G
	87.08319	TH		0.2490	0.0250	UG/G
	87.08319	U		1.0260	0.1030	UG/G
BULLHEAD	87.08320	GSCAN		0.0000	0.0000	
471g WET WT	87.08320	MSCAN		No elevated metals observed		
14g ASH WT	87.08320	RA-226		2.8100	0.5500	PCI/G
	87.08320	TH		0.2300	0.0230	UG/G
	87.08320	U		5.8040	0.5800	UG/G

The samples were dry ashed at 450 deg C to constant weight, and aliquots were taken for the individual analyses from the ash. The entire animal was ashed for the rats on the assumption that anything that ate a rat would consume all of it. The heads and intestines of the fish were removed on the assumption that people might consume the fish.

The GSCAN results are attached on separate reports.

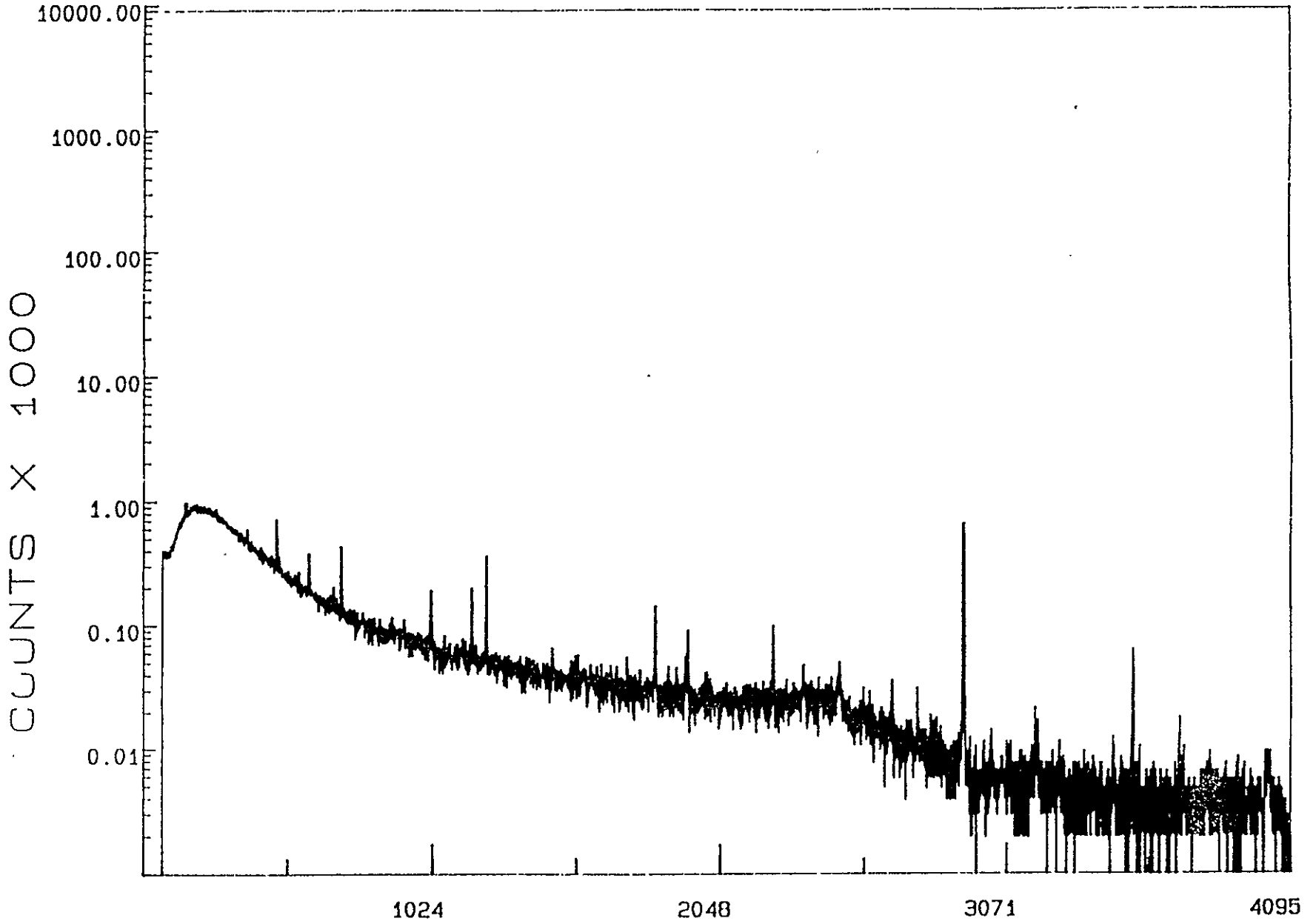
TYPE = -1 MCA # 1 SEGMENT # 1
REALTIME = 10029.96 SECONDS, LIVETIME = 10000.00 SECONDS
DATA COLLECTED AT 16:43:00 ON 30-NOV-87



8708317.CHN

CHANNEL NUMBER

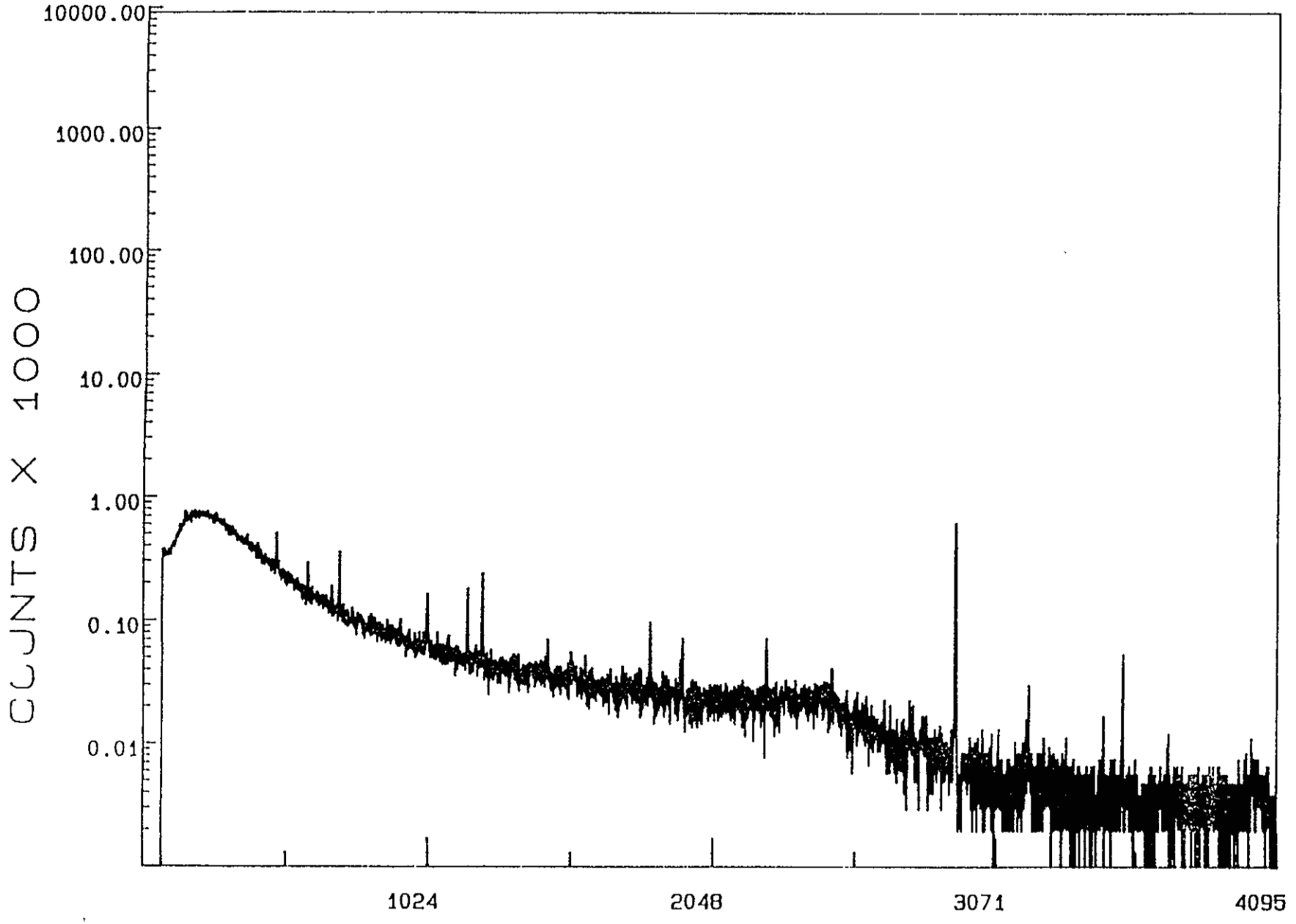
TYPE = -1 MCA # 1 SEGMENT # 2
REALTIME = 10029.96 SECONDS, LIVETIME = 10000.00 SECONDS
DATA COLLECTED AT 16:43:00 ON 30-NOV-87



8708318.CHN

CHANNEL NUMBER

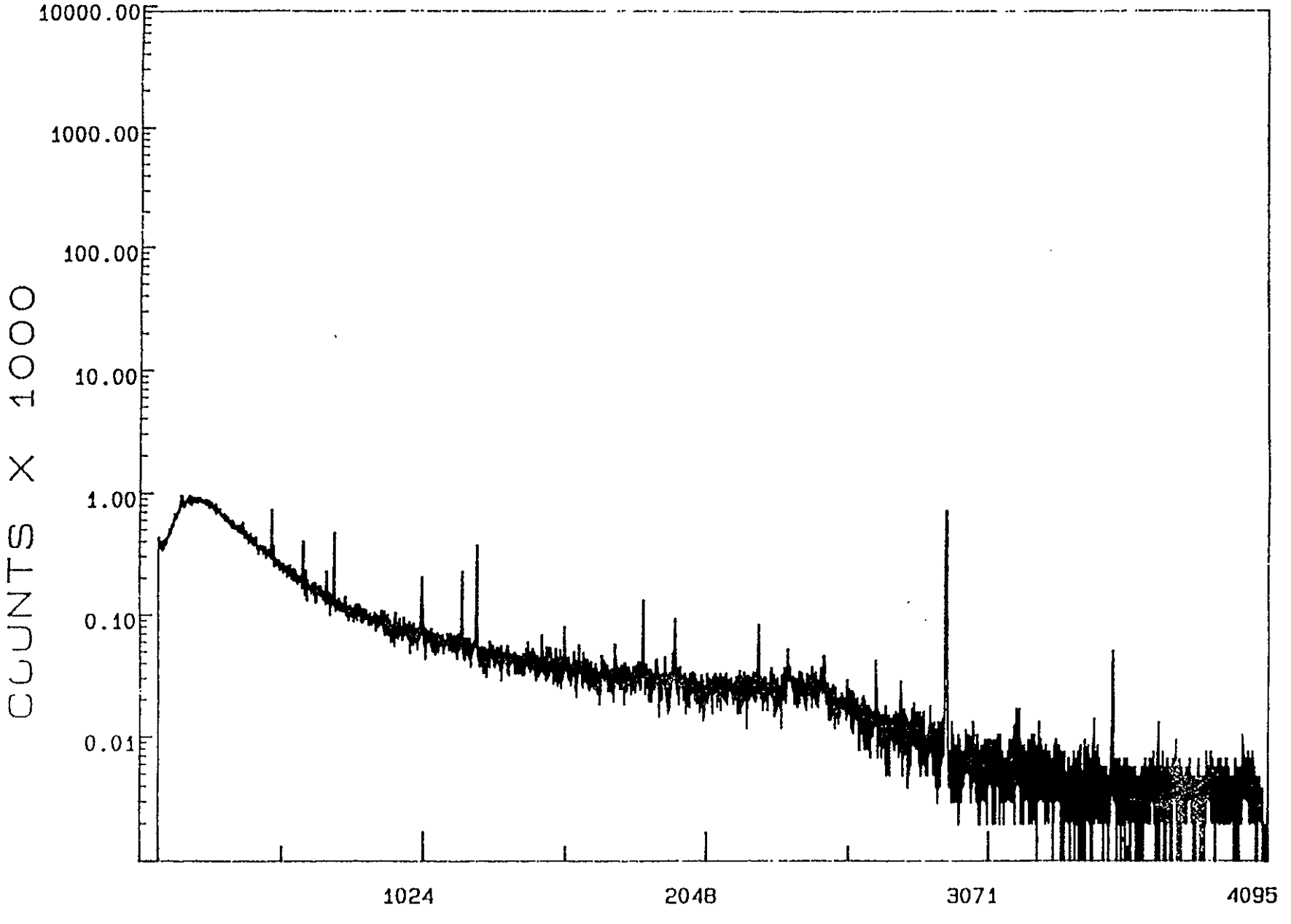
TYPE = -1 MCA # 1 SEGMENT # 1
REALTIME = 10030.24 SECONDS, LIVETIME = 10000.00 SECONDS
DATA COLLECTED AT 08:58:00 ON 01-DEC-87



8708319.CHN

CHANNEL NUMBER

TYPE = -1 MCA # 1 SEGMENT # 2
REALTIME = 10030.24 SECONDS, LIVETIME = 10000.00 SECONDS
DATA COLLECTED AT 08:58:00 ON 01-DEC-87



8708320.CHN

CHANNEL NUMBER

MCB # 1 ACQ [illegible] AT 15:43:02 RT : 10000.0 LT : 10000.0
EG&G ORTEC GEM 30185, DET # 7
[redacted] SPECIAL SAMPLE FOR WDP, 11/30/87

ROI # 1-1 RANGE : 65 = 32.74 keV to 77 = 38.74 keV
AREA : Gross = 3037 Net = 351 +/- 54
CENTROID : 67.77 = 34.12 keV
SHAPE : Fwhm = 1.46 keV Fwtm = 2.75 keV

ID : [illegible] at 33.69 keV
Corrected Net = 351.000 +/- 54.0

ROI # 1-2 RANGE : 471 = 235.62 keV to 489 = 244.62 keV
AREA : Gross = 5741 Net = 917 +/- 109
CENTROID : 476.57 = 238.41 keV
SHAPE : Fwhm = 1.04 keV Fwtm = 2.23 keV

ID : No close library match

ROI # 1-3 RANGE : 584 = 292.09 keV to 596 = 298.09 keV
AREA : Gross = [illegible] Net = 446 +/- 55
CENTROID : 590.06 = 295.12 keV
SHAPE : Fwhm = 1.24 keV Fwtm = 2.65 keV

ID : PB-214 at 295.21 keV
Corrected Net = 446.000 +/- 55.0

ROI # 1-4 RANGE : 670 = 335.07 keV to 682 = 341.[illegible] keV
AREA : Gross = 1775 Net = 130 +/- 45
CENTROID : 676.30 = 338.17 keV
SHAPE : Fwhm = 1.02 keV Fwtm = 1.75 keV

ID : [illegible] at 337.00 keV
Corrected Net = 130.000 +/- 45.0

ROI # 1-5 RANGE : 697 = 348.56 keV to 709 = 354.56 keV
AREA : Gross = 2192 Net = 714 +/- 49
CENTROID : 703.45 = 351.78 keV
SHAPE : Fwhm = 1.15 keV Fwtm = 2.37 keV

ID : PB-214 at 351.92 keV
Corrected Net = 714.000 +/- 49.0

ROI # 1-6 RANGE : 1015 = 507.47 keV to 1029 = 514.47 keV
AREA : Gross = 1426 Net = 416 +/- 44
CENTROID : 1021.75 = 510.84 keV
SHAPE : Fwhm = 6.08 keV Fwtm = 8.35 keV

ID : CO-56 at 511.00 keV
Corrected Net = 416.000 +/- 44.0

ROI # 1-7 RANGE : 1159 = 579.43 keV to 1173 = 586.48 keV
AREA : Gross = 1113 Net = 379 +/- 38
CENTROID : 1166.24 = 583.05 keV
SHAPE : Fwhm = 1.48 keV Fwtm = 2.79 keV

ID : KR-89 at 585.80 keV
Corrected Net = 379.000 +/- 38.0

ROI # 1-8 RANGE : 1213 = 605.91 keV to 1226 = 613.91 keV
AREA : Gross = 1391 Net = 649 +/- 42
CENTROID : 1218.59 = 609.21 keV
SHAPE : Fwhm = 1.32 keV Fwtm = 3.48 keV

ID : BI-214 at 609.31 keV
Corrected Net = 649.000 +/- 42.0

ROI # 1-9 RANGE : 1449 = 724.34 keV to 1463 = 731.34 keV
AREA : Gross = 584 Net = 95 +/- 29
CENTROID : 1455.25 = 727.49 keV
SHAPE : Fwhm = 2.05 keV Fwtm = 3.84 keV

ID : ZR-95 at 724.80 keV
Corrected Net = 95.000 +/- 29.0

ROI # 1-10 RANGE : 1815 = 907.34 keV to 1831 = 915.34 keV
AREA : Gross = 714 Net = 347 +/- 34
CENTROID : 1822.68 = 911.03 keV
SHAPE : Fwhm = 1.77 keV Fwtm = 3.30 keV

ID : No close library match

ROI # 1-11 RANGE : 1931 = 965.81 keV to 1947 = 973.20 keV
AREA : Gross = 598 Net = 193 +/- 31
CENTROID : 1938.58 = 968.99 keV
SHAPE : Fwhm = 1.52 keV Fwtm = 8.58 keV

ID : TB-180 at 966.18 keV
Corrected Net = 193.000 +/- 31.0

ROI # 1-12 RANGE : 2223 = 1116.12 keV to 2249 = 1124.12 keV
AREA : Gross = 537 Net = 233 +/- 28
CENTROID : 2240.93 = 1120.08 keV
SHAPE : Fwhm = 1.77 keV Fwtm = 6.41 keV

ID : BI-214 at 1120.29 keV
Corrected Net = 232.000 +/- 29.0

ROI # 1-13 RANGE : 2468 = 1233.55 keV to 2486 = 1242.55 keV
AREA : Gross = 489 Net = 89 +/- 31
CENTROID : 2476.99 = 1238.05 keV
SHAPE : Fwhm = 1.52 keV Fwtm = 3.01 keV

ID : BI-214 at 1238.11 keV
Corrected Net = 89.000 +/- 31.0

ROI # 1-14 RANGE : 2747 = 1373.97 keV to 2765 = 1381.97 keV
AREA : Gross = 532 Net = 76 +/- 20
CENTROID : 2755.41 = 1377.27 keV
SHAPE : Fwhm = 2.10 keV Fwtm = 3.13 keV

ID : BI-214 at 1377.82 keV
Corrected Net = 76.000 +/- 20.0

ROI # 1-15 RANGE : 2808 = 1403.46 keV to 2825 = 1412.45 keV
AREA : Gross = 195 Net = 85 +/- 20
CENTROID : 2816.91 = 1407.56 keV
SHAPE : Fwhm = 1.34 keV Fwtm = 1.68 keV

ID : EU-152 at 1408.01 keV
Corrected Net = 85.000 +/- 20.0

```
ROI #  1-16   RANGE : 2914 = 1456.43 keV  to 2932 = 1465.43 keV
              AREA : Gross = 2697         Net = 2585          +/- 53
              CENTROID : 2922.47 = 1460.66 keV
              SHAPE : Fwhm =   1.90 keV   Fwtm =   3.53 keV

              ID : K-40     at  1460.75 keV
              Corrected Net = 2525.000        +/- 53.0


ROI #  1-17   RANGE : 3521 = 1759.75 keV  to 3541 = 1769.75 keV
              AREA : Gross = 294          Net = 248           +/- 19
              CENTROID : 3529.69 = 1764.09 keV
              SHAPE : Fwhm =   2.37 keV   Fwtm =   4.45 keV

              ID : BI-214  at  1764.49 keV
              Corrected Net = 242.000         +/- 19.0


MCB # 1       ACQ 11-30-87  AT 16:43:02   RT : 10030.0    LT : 10000.0
              EG&G ORTEC GEM 23210, DET # 8
              [redacted], SPECIAL SAMPLE FOR WDP, 11/30/87

ROI #  2-1    RANGE :    66 =   33.02 keV  to   76 =   38.02 keV
              AREA : Gross = 2908         Net = 506           +/- 50
              CENTROID : 59.07    =   29.56 keV
              [illegible] : F[illegible] =  -6.55 keV   Fwtm =   1.41 keV

              [illegible]


[illegible]   [illegible] =   75.02 keV
              [illegible]
              [illegible]
              SHAPE : Fwhm = [illegible]

              ID : No close library match


ROI #  2-3    RANGE :  366 =  183.00 keV  to  378 =  188.94 keV
              AREA : Gross = 6542         Net = 136           +/- 87
              CENTROID : 371.72  =  185.86 keV
              SHAPE : Fwhm =   0.50 keV   Fwtm =   1.88 keV

              ID : U-235   at   185.71 keV
              Corrected Net = 136.000         +/- 87.0
```

```
PUI # 2-4     RANGE :  471 =  235.49 keV   to  489 =  244.48 keV
              AREA : Gross = 7011        Net = 966           +/- 119
              CENTROID : 477.04  =  238.50 keV
              SHAPE : Fwhm =   1.04 keV    Fwtm =   1.77 keV

              ID : No close library match


PUI # 2-5     RANGE :  584 =  291.97 keV   to  596 =  297.97 keV
              AREA : Gross = 2969        Net = 501           +/- 58
              CENTROID : 590.24  =  295.09 keV
              SHAPE : Fwhm =   1.16 keV    Fwtm =   2.48 keV

              ID : PB-214   at   295.21 keV
              Corrected Net = 501.000        +/- 58.0

PUI # 2-6     RANGE :  670 =  334.97 keV   to  682 =  340.96 keV
              AREA : Gross = 2059        Net = 147           +/- 49
              CENTROID : 676.54  =  338.24 keV
              SHAPE : Fwhm =   1.11 keV    Fwtm =   1.90 keV

              ID : AC-228M  at   338.00 keV
              Corrected Net = 147.000        +/- 49.0

[illegible]   [illegible] 686 =  342.[illegible] keV   to  710 =  354.96 keV
              [illegible]
              [illegible]
              [illegible]

              [illegible]
              [illegible]

[illegible]   [illegible]
              [illegible]
              [illegible]
              SHAPE : Fwhm =   [illegible]    Fwtm =   [illegible] keV

              ID : I-133    at   510.57 keV
              Corrected Net = 500.000        +/- 45.0
```

```
[illegible]   RANGE : 1159 =  579.42 keV  to 1172 =  58[illegible].42 keV
              AREA : Gross = 1[illegible]    Net = 440        +/- 42
              CENTROID : 1165.7[illegible] = [illegible] keV
              SHAPE : Fwhm = [illegible] keV   Fwtm = [illegible] keV

              ID : PB-214  at  [illegible] keV
              Corrected Net = 44[illegible]        [illegible]


[illegible]   RANGE : 1211 = [illegible]5.41 keV  to [illegible] = [illegible] keV
              AREA : Gross = 1[illegible]    Net = [illegible]        +/- 45
              CENTROID : 1218.05 = 608.93 keV
              SHAPE : Fwhm =  1.32 keV   Fwtm =  2.55 keV

              ID : BI-214  at  [illegible].31 keV
              Corrected Net = [illegible]        +/- [illegible]


ROI #  3-11   RANGE : 1712 =  855.84 keV  to 17[illegible] = [illegible] keV
              AREA : Gross = 557      Net = 83        +/- 31
              CENTROID : 1719.98 =  859.85 keV
              SHAPE : Fwhm =  1.43 keV   Fwtm =  2.99 keV

              ID : ZR-95  at  857.00 keV
              Corrected Net = 83.000        +/- 31.0


ROI #  3-12   RANGE : 1813 =  906.35 keV  to 1829 =  914.35 keV
              AREA : Gross = 385      Net = 357       +/- 36
              CENTROID : 1821.36 =  910.49 keV
              SHAPE : Fwhm =  1.74 keV   Fwtm =  2.94 keV

              ID : No close library match


ROI #  3-13   RANGE : 1929 =  964.34 keV  to 1945 =  972.34 keV
              AREA : Gross = 692      Net = 175       +/- 34
              CENTROID : 1936.79 =  968.23 keV
              SHAPE : Fwhm =  1.47 keV   Fwtm =  2.60 keV

              ID : TB-160  at  966.16 keV
              Corrected Net = 175.000        +/- 34.0
```

```
ROI #   E-14   RANGE : 2230 = 1114.81 keV   to 2249 = 1123.81 keV
               AREA : Gross = 736          Net = 297          +/- 35
               CENTROID : 2239.21 = 1119.42 keV
               SHAPE : Fwhm =    1.72 keV    Fwtm =    3.55 keV

               ID : Bi-214   at   1120.29 keV
               Corrected Net = 297.000        +/- 35.0


ROI #   E-13   RANGE : 2253 = 1336.87 keV   to 2271 = 1335.27 keV
               AREA : Gross = 353          Net = 54           +/- 25
               CENTROID : 2262.42 = 1330.98 keV
               SHAPE : Fwhm =    2.22 keV    Fwtm =    3.00 keV

               ID : Co-60    at   1332.50 keV
               Corrected Net = 54.000         +/- 26.0


ROI #   E-16   RANGE : 2743 = 1371.26 keV   to 2763 = 1381.26 keV
               AREA : Gross = 674          Net = 89           +/- 23
               CENTROID : 2753.18 = 1376.35 keV
               SHAPE : Fwhm =    1.37 keV    Fwtm =    4.56 keV

               ID : Bi-214   at   1377.68 keV
               Corrected Net = 89.000         +/- 23.0


ROI #   E-17   RANGE : 3910 = 1454.74 keV   to 3930 = 1464.74 keV
               AREA : Gross = 3436         Net = 3225         +/- 61
               CENTROID : 3919.43 = 1459.46 keV
               SHAPE : Fwhm =    2.82 keV    Fwtm =    3.90 keV

               ID : K-40     at   1460.75 keV
               Corrected Net = 3225.000       +/- 61.0


ROI #   E-15   RANGE : 3184 = 1521.72 keV   to 3184 = 1591.72 keV
               AREA : Gross = 206          Net = -15          +/- 23
               Could not properly fit the peak.


ROI #   E-19   RANGE : 3514 = 1756.68 keV   to 3536 = 1767.68 keV
               AREA : Gross = 367          Net = 270          +/- 22
               CENTROID : 3525.66 = 1762.51 keV
               SHAPE : Fwhm =    2.33 keV    Fwtm =    4.48 keV

               ID : Bi-214   at   1764.49 keV
               Corrected Net = 270.000        +/- 23.0
```

MCB # 1 ACQ 12-01-87 AT 08:58:20 RT : 10030.2 LT : 10000.0
EG&G ORTEC GEM 20185, DET # 7
[redacted] SPECIAL SAMPLE FOR WDP, 12/01/87

PkI # 1-1 RANGE : 65 = 32.74 keV to 77 = 38.74 keV
AREA : Gross = 3068 Net = 425 +/- 59
CENTROID : 69.48 = 34.96 keV
SHAPE : Fwhm = 1.21 keV Fwtm = 2.59 keV

ID : 88-125 at 35.50 keV
Corrected Net = 428.000 +/- 59.0

ROI # 1-2 RANGE : 471 = 235.63 keV to 483 = 241.62 keV
AREA : Gross = 4334 Net = 344 +/- 70
CENTROID : 476.56 = 238.40 keV
SHAPE : Fwhm = 1.14 keV Fwtm = 2.18 keV

ID : No close library match

ROI # 1-3 RANGE : 584 = 292.09 keV to 596 = 298.09 keV
AREA : Gross = 5440 Net = 453 +/- 56
CENTROID : 590.07 = 295.13 keV
SHAPE : Fwhm = 1.42 keV Fwtm = 3.19 keV

ID : PB-214 at 295.21 keV
Corrected Net = 452.000 +/- 53.0

ROI # 1-4 RANGE : 670 = 335.07 keV to 682 = 341.06 keV
AREA : Gross = 1899 Net = 133 +/- 47
CENTROID : 676.28 = 338.80 keV
SHAPE : Fwhm = 1.14 keV Fwtm = 2.85 keV

ID : Y-91M at 337.00 keV
Corrected Net = 133.000 +/- 47.0

ROI # 1-5 RANGE : 698 = 349.06 keV to 710 = 355.06 keV
AREA : Gross = 2191 Net = 667 +/- 49
CENTROID : 703.57 = 251.84 keV
SHAPE : Fwhm = 1.05 keV Fwtm = 2.34 keV

ID : PB-214 at 351.98 keV
Corrected Net = 667.000 +/- 49.0

ROI # 1-6 RANGE : 1015 = 507.47 keV to 1029 = 514.47 keV
AREA : Gross = 1415 Net = 414 +/- 44
CENTROID : 1022.02 = 510.98 keV
SHAPE : Fwhm = 1.63 keV Fwtm = 2.92 keV

ID : CO-56 at 511.00 keV
Corrected Net = 414.000 +/- 44.0

ROI # 1-7 RANGE : 1159 = 579.43 keV to 1173 = 586.42 keV
AREA : Gross = 1155 Net = 460 +/- 39
CENTROID : 1166.33 = 583.10 keV
SHAPE : Fwhm = 1.31 keV Fwtm = 2.63 keV

ID : No close library match

ROI # 1-8 RANGE : 1213 = 605.91 keV to 1225 = 612.91 keV
AREA : Gross = 1049 Net = 646 +/- 41
CENTROID : 1218.59 = 609.81 keV
SHAPE : Fwhm = 1.23 keV Fwtm = 2.45 keV

ID : BI-214 at 609.31 keV
Corrected Net = 646.000 +/- 41.0

ROI # 1-9 RANGE : 1447 = 723.35 keV to 1461 = 730.34 keV
AREA : Gross = 639 Net = 98 +/- 30
CENTROID : 1454.62 = 727.15 keV
SHAPE : Fwhm = 1.39 keV Fwtm = 2.42 keV

ID : No close library match

ROI # 1-10 RANGE : 1382 = 790.81 keV to 1598 = 799.60 keV
AREA : Gross = 586 Net = 29 +/- 32
CENTROID : 1589.97 = 794.79 keV
SHAPE : Fwhm = 1.19 keV Fwtm = 1.90 keV

ID : BA-133 at 795.50 keV
Corrected Net = 29.000 +/- 32.0

ROI # 1-11 RANGE : 1813 = 907.24 keV to 1831 = 915.24 keV
AREA : Gross = 748 Net = 293 +/- 54
CENTROID : 1822.68 = 911.13 keV
SHAPE : Fwhm = 1.76 keV Fwtm = 3.58 keV

ID : No close library match

ROI # 1-12 RANGE : 1931 = 965.21 keV to 1947 = 973.20 keV
AREA : Gross = 573 Net = 177 +/- 30
CENTROID : 1938.36 = 968.68 keV
SHAPE : Fwhm = 1.62 keV Fwtm = 2.68 keV

ID : 72-160 at 966.15 keV
Corrected Net = 177.000 +/- 30.0

ROI # 1-13 RANGE : 2233 = 1116.12 keV to 2249 = 1124.12 keV
AREA : Gross = 578 Net = 243 +/- 29
CENTROID : 2241.45 = 1120.35 keV
SHAPE : Fwhm = 2.42 keV Fwtm = 4.43 keV

ID : 81-314 at 1130.29 keV
Corrected Net = 243.000 +/- 29.0

ROI # 1-1- RANGE : 2914 = 1456.48 keV to 2932 = 1465.48 keV
AREA : Gross = 5919 Net = 2766 +/- 55
CENTROID : 2922.44 = 1460.64 keV
SHAPE : Fwhm = 1.98 keV Fwtm = 3.64 keV

ID : 5-40 at 1460.75 keV
Corrected Net = 2736.000 +/- 55.0

ROI # 1-15 RANGE : 3177 = 1587.85 keV to 3195 = 1596.84 keV
AREA : Gross = 182 Net = 36 +/- 19
CENTROID : 3185.76 = 1592.33 keV
SHAPE : Fwhm = 1.03 keV Fwtm = 2.18 keV

ID : No close library match

ROI # 1-16 RANGE : 3520 = 1759.25 keV to 3540 = 1769.25 keV
AREA : Gross = 298 Net = 249 +/- 19
CENTROID : 3529.95 = 1764.62 keV
SHAPE : Fwhm = 1.99 keV Fwtm = 3.90 keV

ID : BI-214 at 1764.49 keV
Corrected Net = 249.000 +/- 19.0

MCB # 1 ACQ 12-01-87 AT 08:52:20 RT : 10030.2 LT : 10000.0
3GLG CRIEC GEM 23210, DET # 8
[redacted] SPECIAL SAMPLE FOR WDP, 12/01/87

ROI # 2-1 RANGE : 66 = 33.03 keV to 76 = 38.02 keV
AREA : Gross = 2914 Net = 751 +/- 51
CENTROID : 64.50 = 32.67 keV
SHAPE : Fwhm = 0.17 keV Fwtm = 2.17 keV

ID : CS-137 at 32.19 keV
Corrected Net = 751.000 +/- 51.0

ROI # 2-2 RANGE : 144 = 72.02 keV to 156 = 78.02 keV
AREA : Gross = 11393 Net = 131 +/- 115
CENTROID : 150.34 = 75.14 keV
SHAPE : Fwhm = 0.82 keV Fwtm = 1.36 keV

ID : No close library match

ROI # 2-3 RANGE : 366 = 183.00 keV to 378 = 188.99 keV
AREA : Gross = 6586 Net = 365 +/- 87
CENTROID : 371.56 = 185.77 keV
SHAPE : Fwhm = 1.17 keV Fwtm = 1.75 keV

ID : U-235 at 185.71 keV
Corrected Net = 365.000 +/- 87.0

ROI # 2-4 RANGE : 471 = 235.49 keV to 490 = 244.98 keV
AREA : Gross = 7308 Net = 1204 +/- 124
CENTROID : 477.10 = 238.54 keV
SHAPE : Fwhm = 0.99 keV Fwtm = 1.91 keV

ID : No close library match

ROI # 6-5 RANGE : 584 = 291.97 keV to 596 = 297.97 keV
AREA : Gross = 3164 Net = 483 +/- 60
CENTROID : 590.13 = 295.03 keV
SHAPE : Fwhm = 0.91 keV Fwtm = 1.99 keV

ID : Pb-214 at 295.21 keV
Corrected Net = 483.000 +/- 60.0

ROI # 6-6 RANGE : 671 = 335.47 keV to 683 = 341.46 keV
AREA : Gross = 2096 Net = 186 +/- 49
CENTROID : 676.88 = 338.38 keV
SHAPE : Fwhm = 0.78 keV Fwtm = 1.65 keV

ID : Co-57 at 339.68 keV
Corrected Net = 186.000 +/- 49.0

ROI # 6-7 RANGE : 698 = 348.96 keV to 710 = 354.95 keV
AREA : Gross = 2595 Net = 940 +/- 54
CENTROID : 703.46 = 351.69 keV
SHAPE : Fwhm = 1.02 keV Fwtm = 2.22 keV

ID : Pb-214 at 351.92 keV
Corrected Net = 940.000 +/- 54.0

ROI # 6-8 RANGE : 1014 = 506.93 keV to 1028 = 513.93 keV
AREA : Gross = 1590 Net = 553 +/- 46
CENTROID : 1021.00 = 510.43 keV
SHAPE : Fwhm = 2.33 keV Fwtm = 4.51 keV

ID : I-133 at 510.57 keV
Corrected Net = 553.000 +/- 46.0

ROI # 6-9 RANGE : 1159 = 579.42 keV to 1175 = 586.42 keV
AREA : Gross = 1896 Net = 820 +/- 41
CENTROID : 1165.80 = 582.88 keV
SHAPE : Fwhm = 1.37 keV Fwtm = 2.62 keV

ID : Pb-214 at 580.15 keV
Corrected Net = 820.000 +/- 41.0

```
ROI #  2-10  RANGE : 1211 =  605.41 keV  to 1225 =  612.41 keV
             AREA : Gross = 1774         Net = 936          +/- 47
             CENTROID : 1218.14 =  608.95 keV
             SHAPE : Fwhm =   1.39 keV   Fwtm =   2.74 keV

             ID : BI-214  at   [illegible] keV
             Corrected Net = [illegible]          +/- [illegible]


ROI #  2-11  RANGE : [illegible] = [illegible] keV  to [illegible] = [illegible] keV
             AREA : Gross = 736          Net = 97           +/- 26
             CENTROID : 1453.89 =  726.93 keV
             SHAPE : Fwhm =   1.44 keV   Fwtm =   [illegible] keV

             ID : ZR-95   at   724.20 keV
             Corrected Net = 97.000         +/- 56.0


ROI #  2-12  RANGE : 1529 =  763.28 keV  to 1544 =  771.88 keV
             AREA : Gross = 738          Net = 90           +/- 26
             CENTROID : 1535.91 =  767.93 keV
             SHAPE : Fwhm =   0.69 keV   Fwtm =   2.11 keV

             ID : BI-214  at   768.36 keV
             Corrected Net = 90.000         +/- 36.0


ROI #  2-13  RANGE : 1813 =  906.35 keV  to 1829 =  914.35 keV
             AREA : Gross = 899          Net = 388          +/- 36
             CENTROID : 1821.36 =  910.53 keV
             SHAPE : Fwhm =   1.39 keV   Fwtm =   2.39 keV

             ID : No close library match


ROI #  2-14  RANGE : 1928 =  963.64 keV  to 1944 =  971.64 keV
             AREA : Gross = 319          Net = 189          +/- 27
             CENTROID : 1936.82 =  968.25 keV
             SHAPE : Fwhm =   1.60 keV   Fwtm =   2.87 keV

             ID : TB-160  at   966.16 keV
             Corrected Net = 189.000        +/- 37.0
```

ROI # 2-15 RANGE : 2230 = 1114.81 keV to 2248 = 1123.81 keV
AREA : Gross = 747 Net = 251 +/- 36
CENTROID : 2239.03 = 1119.32 keV
SHAPE : Fwhm = 1.83 keV Fwtm = 3.84 keV

ID : BI-214 at 1120.29 keV
Corrected Net = 251.000 +/- 36.0

ROI # 2-16 RANGE : 2652 = 1326.27 keV to 2671 = 1335.27 keV
AREA : Gross = 223 Net = 96 +/- 24
CENTROID : 2662.42 = 1330.98 keV
SHAPE : Fwhm = 1.46 keV Fwtm = 4.01 keV

ID : CO-60 at 1332.50 keV
Corrected Net = 96.000 +/- 24.0

ROI # 2-17 RANGE : 2909 = 1454.24 keV to 2929 = 1464.24 keV
AREA : Gross = 3782 Net = 3651 +/- 63
CENTROID : 2919.39 = 1459.44 keV
SHAPE : Fwhm = 2.14 keV Fwtm = 4.03 keV

ID : K-40 at 1460.75 keV
Corrected Net = 3651.000 +/- 63.0

ROI # 3-13 RANGE : 3515 = 1757.18 keV to 3537 = 1768.18 keV
AREA : Gross = 327 Net = 275 +/- 21
CENTROID : 3525.59 = 1762.38 keV
SHAPE : Fwhm = 2.34 keV Fwtm = 4.63 keV

ID : BI-214 at 1764.49 keV
Corrected Net = 275.000 +/- 21.0

ECOLOGICAL SERVICES, ALBUQUERQUE, NEW MEXICO 87.083/8

R 2 87 05

Survey Name: Labahada Mine : Lone Star mine

Sample Code No. FWS-AFO LBP 017 Rep.

Typed Sample Whole Body: Tissue & Organs

Collection Method: Sherman Live Trap

Preservation Ice

Species Peromyscus sp. Tissue Liver - Kidney

Location: T. R. Sec.

Nearest Town Labahada

Direction East

Distance 1 mile

Location of Site Adjacent to river

River Santa Fe River

Date of Collection 5/19/87

Time 9 Am

Description of Site Sand sage, grass, rabbit brush flat adjacent to river, upstream of pond and below tailing pile

Weather Cloudy - Rain - 60°F

Sample:	Length	Weight	Sex
1.	juvenile	11.5gr	
2.	Specimen - dusted in flea and		
3.	tick powder - wash first		
4.	before processing		
5.			
6.			
7.			
8.			
9.			
10.			

COLLECTOR: NAME: T. O'Brien U.S. FWS
ADDRESS: 3530 Pan American Hwy NE Suite D ALBQ NM 87107 (505) 883-7877

ECOLOGICAL SERVICES, ALBUQUERQUE, NEW MEXICO 87.083/8

R 2 87 05

Survey Name: Labahada Pond : Lone Star mine

Sample Code No. FWS-AFO LBP L9 Rep.

Typed Sample Whole Body Tissue & organs

Collection Method: Sherman Live Trap

Preservation Ice

Species Peromyscus sp. Tissue Liver - Kidney

Location: T. R. Sec.

Nearest Town Labahada

Direction East

Distance 1 mile

Location of Site adjacent to River

River Santa Fe River

Date of Collection 5/19/87

Time 9 Am

Description of Site Sand sage - grass, Rabbit brush on flat area adjacent to River - downstream of pond

Weather Cloudy - rain, 60°F

Sample:	Length	Weight	Sex
1.		29 grams	
2.	Specimen dust with flea		
3.	& Tick - Powder - wash		
4.	first before processing		
5.			
6.			
7.			
8.			
9.			
10.			

COLLECTOR: NAME: T. O'Brien, U.S Fish & Wildlife Service (505) 883 7877
ADDRESS: 5530 Pan American Highway, NE Suite D ALBQ NM 87107

R 2 87 05

Survey Name: Labahada Pond : Lonestar Mine

Sample Code No. FWS-AFO LBP U22 Rep.

Typed Sample Whole Body - Tissue & Organs

Collection Method: Sherman Live Trap

Preservation Ice

Species Peromyscus SP Tissue Liver - Kidney

Location: T. R. Sec.

Nearest Town Labahada

Direction East

Distance 1 mile

Location of Site Adjacent to River

River Santa Fe

Date of Collection 5/19/87

Time 9:AM

Description of Site sand. sage, grass, rabbit brush flat adjacent to river upstream of pond, below tailing pile

Weather Cloudy - Rain - 60°F

Sample:	Length	Weight	Sex
1.		21 grams	
2.			
3.	Specimen dusted in flea and		
4.	tick powder - wash first before		
5.	processing		
6.			
7.			
8.			
9.			
10.			

COLLECTOR: NAME: Tom O'Brien U.S. Fish and Wildlife Service
ADDRESS: 3530 Pan Americum Highway NE Suite D ALBQ NM 87107 (505) 883-7877

87.03.17

R 2 87 05

Survey Name: Lone Star Mine - Labahada Pond

Sample Code No. FWS-AFO LBP U43 Rep.

Typed Sample Whole Body Tissue and Organs

Collection Method: Sherman Live Trap

Preservation Ice

Species Kangaroo Rat Tissue Liver - Kidney

Location: T. R. Sec.

Nearest Town Labahada

Direction East

Distance 1 mile

Location of Site Adjacent to River

River Santa Fe River

Date of Collection 5/19/87

Time 9:AM

Description of Site Sand Sage, grass, Rabbit Brush flat above Pond and below tailing pile.

Weather Cloudy - Rain 60°F

Sample:	Length	Weight	Sex
1.		69 grams	
2.			
3.	Specimen dusted in flea and Tick		
4.	powder - wash first before		
5.	processing		
6.			
7.			
8.			
9.			
10.			

COLLECTOR: NAME: Tom O'Brien U.S. Fish and Wildlife Service
ADDRESS: 3530 Pan Americum Highway NE Suite D ALBQ NM 87107 (505) 883-7877

ECOLOGICAL SERVICES, ALBUQUERQUE, NEW MEXICO 87-0837

R 2 8 7 05

Survey Name: LA Bellada Pond; Lone Star Mine

Sample Code No. FWS-AFO - LBP 1 42 Rep.

Typed Sample Whole Body Tissue and ORGans

Collection Method: Live Trap - Sherman

Preservation Ice

Species Kangaroo Rat Tissue Liver - Kidney

Location: T. R. Sec.

Nearest Town Labahada

Direction East

Distance 1 mile

Location of Site Canyon - adjacent to River

River Santa Fe River Lower [redacted] trap Line downstream Pond

Date of Collection 5/19/87 Trap 42 of [redacted] 69

Time 9 Am

Description of Site: Sand sage, grass, rabbit brush flat adjacent to River

Weather Cloudy - Rain 60° F

Sample:	Length	Weight	Sex
1.		59 grams	
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

Samples dusted in Flea and Tick powder Wash first before processing

(505) 883 7877

COLLECTOR: NAME: Tom O'Brien U.S. Fish and Wildlife Service

ADDRESS: 3530 An American Highway NE Suite D Albuq NM 87107

Water sample analyses for La Bajada Mine Pit. Sample 87.01708 is a surface water sample, 87.01709 a deep water sample, and 87.01716 is the filtrate solution from the three sediment samples 87.01713-1315.

SAMPLE NUM	ANALYSIS	SYMBOL	RESULT	UNCERTAINTY	UNITS
87.01708	AG	<	0.0500	0.0500	MG/L
87.01708	AL		0.1900	0.1000	MG/L
87.01708	AS	<	0.0500	0.0500	MG/L
87.01708	B		0.2000	0.1000	MG/L
87.01708	BA	<	0.5000	0.5000	MG/L
87.01708	CD	<	0.0100	0.0100	MG/L
87.01708	CL		52.0000	5.0000	MG/L
87.01708	CN		0.0000	0.0100	MG/L
87.01708	CO	<	0.0500	0.0500	MG/L
87.01708	CR	<	1.0000	1.0000	UG/L
87.01708	CU		5.6000	0.6000	UG/L
87.01708	F		1.5000	0.3000	MG/L
87.01708	HG		0.9000	0.2000	UG/L
87.01708	MN		4.5000	2.0000	UG/L
87.01708	MO	<	0.0500	0.0500	MG/L
87.01708	NH3-N		0.0000	0.0400	MG/L
87.01708	NH3-N		0.0000	0.0400	MG/L
87.01708	NI	<	0.0500	0.0500	MG/L
87.01708	NO3-N	<	0.2000	0.2000	MG/L
87.01708	P	<	0.2000	0.2000	MG/L
87.01708	PB	<	0.0500	0.0500	MG/L
87.01708	PH		8.6300	0.1000	UNITS
87.01708	RA-226		0.2100	0.0210	PCI/L
87.01708	SE		1.7000	1.0000	UG/L
87.01708	SO4		201.0000	20.0000	MG/L
87.01708	TDS		646.0000	65.0000	MG/L
87.01708	TH	<	0.0100	0.0100	MG/L
87.01708	U		0.0120	0.0010	MG/L
87.01708	V	<	0.0500	0.0500	MG/L
87.01708	ZN		3.0000	2.0000	UG/L

SAMPLE NUM	ANALYSIS	SYMBOL	RESULT	UNCERTAINTY	UNITS
87.01709	AG	<	0.0500	0.0500	MG/L
87.01709	AL		0.3500	0.1000	MG/L
87.01709	AS	<	0.0500	0.0500	MG/L
87.01709	B		0.2000	0.1000	MG/L
87.01709	BA	<	0.5000	0.5000	MG/L
87.01709	CD	<	0.0100	0.0100	MG/L
87.01709	CL		59.0000	6.0000	MG/L
87.01709	CN		0.0000	0.0100	MG/L
87.01709	CO	<	0.0500	0.0500	MG/L
87.01709	CR	<	1.0000	1.0000	UG/L
87.01709	CU		3.0000	0.3000	UG/L
87.01709	F		1.5000	0.3000	MG/L

Data Source 12. Memorandum from John M. Andrews, Jr., Environmental Scientist, Albuquerque District Mining Office, USFS. concerning surface reclamation of site with attached water analyses.

FILE COPY
Surname

District Mining Office
500 Gold Avenue, S.W., Room 116
Albuquerque, New Mexico 87103

March 16, 1983

Memorandum

To: Tesuque District Ranger, U. S. Forest Service

From: Environmental Scientist, Albuquerque District Mining Office

Subject: Reclamation of the La Bajada Mine--BLM Mineral Leases AO 31746 and AO 36592

I have reviewed your proposal for the surface reclamation of the subject mine, and have the following comments:

1. The discussion of gamma radiation needs clarification. We measured background gamma radiation and found it to average 13 microroentgens per hour (uR/hr). The New Mexico Radiation Protection Regulations limit gamma exposure to 57 uR/hr above background, which, in this case, would result in a maximum post-reclamation gamma level of 70 uR/hr. The area should be surveyed after all dirt work is done, but before seeding. Please contact this office and we will do the survey.

2. I am enclosing a copy of the water analyses of the samples taken during the August 4, 1982 inspection. I am also enclosing copies of the Federal drinking water standards and the New Mexico ground water standards. Both samples meet the ground water standards and, for the most part, the drinking water standards. The 8.8 pH of the mine pit water does exceed the recommended drinking water standard of 8.5, however. The high pH values mean that heavy metals such as molybdenum, vanadium, and selenium, will not show up in the water (if they are present at all) since they are soluble only at a much lower pH. Previous water samples (see my inspection report dated August 11, 1982) have found similarly low concentrations of both the radioactive elements and heavy metals.

Thank you for letting me review and comment on this proposal. If I can be of further help, please contact me at FTS 474-1630.

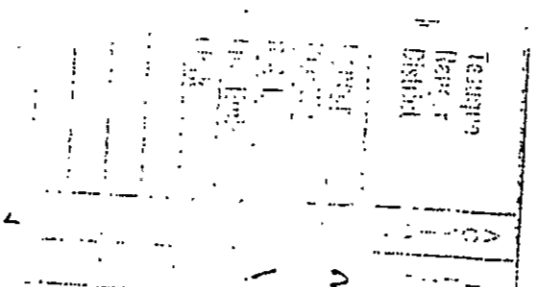
(ORIG. SGD.) JOHN M. ANDREWS, JR.

John M. Andrews, Jr.

Enclosures

cc:
Bill Dalness, BLM SO
Mine Plan File: La Bajada Mine
Chrono

JMAndrews:jes 3-16-83



MAY 04 1984

CUSTOMER Albuquerque Distri[illegible] Mining Office
ATTENTION John Andrews
ADDRESS 500 Gold Avenue SW Room 116
CITY Albuquerque, New Mexico 87102
S.O. NO 7914 (E-504)

REPORT OF ANALYSIS

Radiochemical analyses of water samples. 57530
TYPE OF ANALYSIS CUSTOMER ORDER NUMBER

SAMPLES RECEIVED 8/4/82

Customer Identification	Date Collected	Type of Analysis		umhos/cm	mg/l	pCi/l	Total Vol. (=
Santa Fe River		pH	8.2				3800
		Conductivity		610			
		* Total Uranium			0.022		
		Ra-226				0.4±0.2	
		Molybdenum			<0.01		
		Vanadium			<0.01		
		Selenium			<0.01		
La Bajada Mine Pit		pH	8.8				3800
		Conductivity		980			
		* Total Uranium			0.056		
		Ra-226				0.7±0.4	
		Molybdenum			<0.01		
		Vanadium			0.01		
		Selenium			<0.01		

* By Fluorometric method.

REPORTED VIA TELEPHONE
REPORTED VIA TWX

Eberline A DIVISION OF Thermo Electron CORPORATION
P O BOX 3874 ALBUQUERQUE, NEW MEXICO 87190
PHONE (505) 345 3461 TWX 910 985 0672

Chandrasekaran
APPROVED BY

11/9/82
DATE

CHANDRASEKARAN, E.S., MANAGER

PRIMARY DRINKING WATER PARAMETERS

PARAMETER	Maximum Concentration mg/liter (ppm)	ANALYTICAL METHOD USED
Arsenic	0.05	Atomic - Absorption, Environmental Protection Agency test procedures as tabulated in Federal Register, December 1, 1976
Barium	1.00	
Cadmium	0.010	
Chromium	0.05	
Lead	0.05	
Mercury	0.002	
Selenium	0.01	
Silver	0.05	
Nitrate (as N)	10.0	Automated Cadmium Reduction, EPA Methods 1976
Endrin	0.0002	MDQARL, EPA Cincinnati 1973
Lindane	0.004	
Methoxychlor	0.1	
Toxaphene	0.005	
2, 4-D	0.1	
2, 4, 5-TP (Silvex)	0.01	
Fluoride *Annual Ave. of Max. Air Temp.*		Electrode Method EPA Methods 1976

Degrees Fahrenheit	Degrees Celsius	
53.7 & below	12.0 & below	2.4
53.8 to 58.3	12.1 to 14.6	2.2
58.4 to 63.8	14.7 to 17.6	2.0
63.9 to 70.6	17.7 to 21.4	1.8
70.7 to 79.2	21.5 to 26.2	1.6
79.3 to 90.5	26.3 to 32.5	1.4

DEFINITIONS:

The term *Group 1 - Primary Parameter Chemical Analysis* shall mean that the following parameters will be determined: Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, and Silver. Preserve with nitric acid.

The term *Group 2 - Primary Parameter Chemical Analysis* shall mean that the following parameter will be determined: Nitrate only. Preserve with sulfuric acid.

The term *Group 3 - Primary Parameter Chemical Analysis* shall mean that the following parameter shall be determined: Fluoride only. No preservatives.

The term *complete secondary chemical analysis* shall mean that the following parameters will be determined: Sodium, Potassium, Total Hardness, Calcium, Magnesium, Iron, Manganese, Chloride, Alkalinity, pH, Bicarbonate, Carbonate, Sulfate, Total Filterable Residue, Conductance, Odor, Color, Turbidity, and Foaming Agents. No preservatives.

The term *organic chemical analysis* shall mean that the following parameters will be determined: Endrin, Lindane, Methoxychlor, Toxaphene, 2, 4-D, and 2, 4, 5 TP (Silvex). Sample should be refrigerated. Special container required; see SLS Annex L.

Radiological determinations are sequential.

The following recommended concentrations or ranges for secondary parameters are provided as a guide:

PARAMETER	mg/LITER
Alkalinity	30 - 500.0
Bicarbonate	700.0
Calcium	75 - 200.0
Carbonate	350.0
Chloride	250.0
Color	15 Units
Odor	3 Units
Conductance	1,000 Micromhos
Hardness	250
Iron	0.3
Magnesium	125.0
Manganese	0.05
pH	6.0–8.5
Potassium	1,000
Sodium	200.0
Sulfate	250.0
Turbidity (field test)	1 - 5 T.U.

3-103. STANDARDS FOR GROUND WATER OF 10,000 mg/l TDS CONCENTRATION OR LESS.--The following standards are the allowable pH range and the maximum allowable concentration in ground water for the contaminants specified unless the existing condition exceeds the standard or unless otherwise provided in Subsection 3-109D. or Section 3-110. When an existing pH or concentration of any water contaminant exceeds the standard specified in Subsection A, B or C, the existing pH or concentration shall be the allowable limit, provided that the discharge at such concentrations will not result in concentrations at any place of withdrawal for present or reasonably forseeable future use in excess of the standards in this section.

These standards shall apply to the dissolved portion of the contaminants specified with a definition of dissolved being that given in the publication "Methods for Chemical Analysis of Water and Waste of the U.S. Environmental Protection Agency," with the exception of mercury which shall be total.

A. Human Health Standards - Ground water shall meet the standards of Section A and B unless otherwise provided.

Arsenic (As)	0.1 mg/l
Barium (Ba)	1.0 mg/l
Cadmium (Cd)	0.01 mg/l
Chromium (Cr)	0.05 mg/l
Cyanide (CN)	0.2 mg/l
Fluoride (F)	1.6 mg/l
Lead (Pb)	0.05 mg/l
Total Mercury (Hg)	0.002 mg/l
Nitrate (NO_3 as N)	10.0 mg/l
Selenium (Se)	0.05 mg/l
Silver (Ag)	0.05 mg/l
Uranium (U)	5.0 mg/l
Radioactivity: Combined Radium-226 and Radium-228	30.0 pCi/l

B. Other Standards for Domestic Water Supply

Chloride (Cl)	250. mg/l
Copper (Cu)	1.0 mg/l
Iron (Fe)	1.0 mg/l
Manganese (Mn)	0.2 mg/l
Phenols	0.005 mg/l
Sulfate (SO_4)	600. mg/l
Total Dissolved Solids (TDS)	1000. mg/l
Zinc (Zn)	10.0 mg/l
pH	between 6 and 9

C. Standards for Irrigation Use - Ground water shall meet the standards of subsections A, B and C unless otherwise provided.

Aluminum (Al)	5.0 mg/l
Boron (B)	0.75 mg/l
Cobalt (Co)	0.05 mg/l
Molybdenum (Mo)	1.0 mg/l
Nickel (Ni)	0.2 mg/l

3-104. DISCHARGE PLAN REQUIRED.--Unless otherwise provided by these regulations, no person shall cause or allow effluent or leachate to discharge so that it may move directly or indirectly into ground water unless he is discharging pursuant to a discharge plan approved by the director. When a plan has been approved, discharges must be consistent with the terms and conditions of the plan.

3-105. EXEMPTIONS FROM DISCHARGE PLAN REQUIREMENT.--Sections 3-104 and 3-106 of these regulations do not apply to the following:

A. effluent or leachate which conforms to all the listed numerical standards of Section 3-103, has a total nitrogen concentration of 10 mg/l or less, and does not contain toxic pollutants. To determine conformance, samples may be taken by the agency before the effluent or leachate is discharged so that it may move directly or indirectly into ground water; provided that if the discharge is by seepage through non-natural or altered natural materials, the agency may take samples of the solution before or after seepage. If for any reason the agency does not have access to obtain the appropriate samples, this exemption shall not apply;

B. effluent which is discharged from a sewerage system used only for disposal of household and other domestic waste which receives 2,000 gallons or less of liquid waste per day;

C. water used for irrigated agriculture, for watering of lawns, trees, gardens or shrubs, or for irrigation for a period not to exceed five years for the revegetation of any disturbed land area, unless that water is received directly from any sewerage system;

D. discharges resulting from the transport or storage of water diverted, provided that the water

USDA Forest Service

___ NATIONAL FOREST
CHEMICAL, PHYSICAL, AND BACTERIOLOGICAL ANALYSIS FOR WATER SAMPLES

Stream / Lake Name La Bajada Pit STORET NUMBER

Location La Bajada mine adjacent to Santa Fe Forest S___ T___ R___

Ranger District Jemez STORET II/DEPTH

Remarks

Collection Date (Y,M,D) 81043

Collection Time (Military) 1535

Air Temperature °C P20 20.0

Water Temperature °C P10 18.0

Stage P 65

Flow P 61

Collected By B. Lang Analysis By

Date of Analysis J

Cations	mg/l	meq/l	Anions	mg/l	meq/l	Parameter	mg/l	Parameter	mg/l	Parameter	mg/l	Parameter	mg/l
P916 Calcium (as Ca)			P940 Chloride (as Cl)			P415 Alkalinity (Phth as $CaCO_3$)		P300 Oxygen, Dissolved (as O_2)	11.2	P38260 Surfactants (MBAS)			
P927 Magnesium (as Mg)			P951 Fluoride (as F)			P410 Alkalinity (total as $CaCO_3$)		P400 pH	8.9 Std Un	P71875 Hydrogen Sulfide (as H_2S)			
P74010 Iron (as Fe)			P71850 Nitrate (as NO_3)			P405 Carbon Dioxide (as CO_2)		P70300 Filterable Residue (at 180°C)		P660 Phosphate, Ortho (as PO_4)			
P1055 * Manganese (as Mn)			P440 Bicarbonate (as HCO_3)			P910 Hardness, Calcium (as $CaCO_3$)		P76 Turbidity	FTU	P655 Phosphate, Poly (as PO_4)			
P1042 * Copper (as Cu)			P445 Carbonate (as CO_3)			P900 Hardness, Total (as $CaCO_3$)		P95 Conductance (at 25°C)	8.93 µmhos/cm	P31501 Coliform, Total	#/100ml		
Sodium (Calculated as Na)			P945 Sulfate (as SO_4)			P901 Hardness, Carbonate (as $CaCO_3$)		P50060 Chlorine, Total		P 31616 Coliform, Fecal	#/100ml		
			P650 Phosphate, Total (as PO_4)			P902 Hardness, Non-Carbonate (as $CaCO_3$)		P1032 Chromium, Hexavalent (as Cr)	µg/l	P 31679 Streptococci, Fecal	#/100ml		
Total			Total										

* Comments
- J - Value not accurate.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.

*Manganese and Copper are stored in STORET in µg/l.

CONVERSION TABLE

Milligrams per liter XC = Milliequivalents per liter

	C		C
Bicarbonate (HCO_3^-)	01639	Iron (Fe^{+3})	.05370
Calcium (Ca^{+2})	04990	Magnesium (Mg^{+2})	08224
Carbonate (CO_3^{-2})	03333	Manganese (Mn^{+2})	.03640
Chloride (Cl^-)	.02821	Nitrate (No_3^-)	.01613
Chromium (Cr^{+6})	.11534	Phosphate (PO_4^{-3})	.03159
Copper (Cu^{+2})	.03148	Sodium (Na^+)	.04350
Fluoride (F^-)	.05264	Sulfate (SO_4^{-2})	.02082
Iron (Fe^{+2})	.03582		

Pressure = 24.8, saturation = 7.9

°C standard = 119, [illegible] = 16.7

∴ correction factor = .89

1000 → 893

pH - 8.9

92+9.0

R 3 2300-2
(6/77)

State of New Mexico
HEALTH and ENVIRONMENT DEPARTMENT
SCIENTIFIC
LABORATORY DIVISION

CHEMICAL and PHYSICAL ANALYSES for WATER SAMPLES

Date received: 5/13/81 | Lab No.: HM-982 | SLD user code No.: 82176

CONSULT SLD Lab Annex L for proper presentation of sample(s). TYPE or PRINT with Ball Point Pen

CHEMICAL ANALYSES: *Check individual items for analysis (Mark appropriate box(es))*
INTERIM PRIMARY PARAMETER GROUP: [ ] 1 [ ] 2 [ ] 3
TYPE of CHEMICAL ANALYSIS: [ ] Complete Secondary [ ] Organic [ ] Radiological

Water Supply System Name: La Bajada Mine Pit
Water Supply System Code No.:
City or Location:
County:
Check one: [ ] TREATED WATER [ ] RAW WATER

Collection Date: 4/23/81
Collection Time: 1245
Collection Point: south side of pit lake
Collected By: B. Long, W. Lucas
Owner:
Collector's remarks:

Report to: Forest Hydrologist
Address: Santa Fe National Forest
P.O. Box 1689
Santa Fe, New Mexico 87501

TYPE of SYSTEM (Check one)
[ ] PRIVATE PUBLIC: [ ] Community [ ] Non-community

SOURCE: [ ] Spring [X] Lake [ ] Well-Depth ____ [ ] Drain [ ] Stream [ ] Pool [ ] Other (specify) ____
LAT. ° ' "
LONG ° ' "

CATIONS	mg/l	ANIONS	mg/l	PHYSICAL		HEAVY METALS	mg/l	PARAMETER		ORGANIC	mg/l
00930 Sodium (as Na)		00940 Chloride (as Cl)		70300 Total Filterable Residue	mg/l	X 01000 Arsenic	0.011	X Copper	0.010	39390 Endrin	
00935 Potassium (as K)		00950 Fluoride (as F)		38260 Foaming Agents (as Las)		01005 Barium		X Zinc	<0.03	39732 Lindane	
00900 Tot. Hardness (as $CaCO_3$)		00620 Nitrate (as N)		00095 Conductance Micromho @ 25°C		X 01025 Cadmium	<0.001			38270 Methoxychlor	
00915 Calcium (as Ca)		00430 Alkalinity (as $CaCO_3$)		00400 pH		01030 Chromium		RADIOLOGICAL pCi/l		39400 Toxaphene	
00925 Magnesium (as Mg)		00440 Bicarbonate (as HCO_3)		01330 Odor		X 01049 Lead	<0.005	01501 Gross Alpha		39730 2, 4-D	
01045 Iron-Total (as Fe)		00445 Carbonate (as CO_3)		00080 Color	mg/l	X 07180 Mercury	<0.0005	03501 Gross Beta	pCi/l	39740 2, 4, 5-TP (Silvex)	
01056 Manganese (as Mn)		00945 Sulfate (as SO_4)		00070 Turbidity		01145 Selenium		09501 Radium-226	pCi/l		
						01075 Silver		11501 Radium-228	pCi/l		

LABORATORY REMARKS:
RA = Raw Acidified w/ 3ml Nitric Acid

Reviewed by: [illegible]
Date reported: 6/21/81

248

SLD 702 Form Revised 4/78

DISTRIBUTION: White - Water Supply Regulation, SI • Canary - WS System • Pink - EIA Regional Office • Goldenrod - SLD Lab

State of New Mexico
HEALTH and ENVIRONMENT DEPARTMENT
SCIENTIFIC
LABORATORY DIVISION

CHEMICAL and PHYSICAL ANALYSES for WATER SAMPLES

Date received	Lab No.	SLD user code No.
5/12/81	WR-3613	8217

CONSULT SLD Lab Annex L for proper presentation of sample(s). TYPE or PRINT with Ball Point Pen

CHEMICAL ANALYSES: *Check individual items for analysis [Mark appropriate box(es)]*

INTERIM PRIMARY PARAMETER GROUP ☐ 1 ☐ 2 ☐ 3

TYPE of CHEMICAL ANALYSIS ☐ Complete Secondary ☐ Organic ☐ Radiological

Water Supply System Name	Water Supply System Code No.	City or Location / County	Check one:
La Bajada Mine Pit			☐ TREATED WATER ☐ RAW WATER

Collection Date	Collection Time	Collection Point	Collector's remarks	Report to
4/23/81	1245	south side of pit lake		Forest Hydrologist

Collected By	Owner	Address
D. Long, W. Lucas		Santa Fe National Forest P.O. Box 1689 Santa Fe, New Mexico 87501

TYPE of SYSTEM *(Check one)*: ☐ PRIVATE PUBLIC: ☐ Community ☐ Non-community

SOURCE: ☐ Spring ☒ Lake ☐ Well-Depth ☐ Drain ☐ Stream ☐ Pool ☐ Other *(specify)*

LAT. ° ' "
LONG ° ' "

CATIONS	mg/l	ANIONS	mg/l	PHYSICAL		HEAVY METALS	mg/l	PARAMETER		ORGANIC	mg/l
☐ 00930 Sodium (as Na)		☒ 00940 Chloride (as Cl)	464	☐ 70300 Total Filterable Residue	mg/l	☐ 01000 Arsenic				☐ 39390 Endrin	
☐ 00935 Potassium (as K)		☐ 00950 Fluoride (as F)		☐ 38260 Foaming Agents (as Las)		☐ 01005 Barium				☐ 39732 Lindane	
☒ 00900 Tot.Hardness (as $CaCO_3$)	286	☐ 00620 Nitrate (as N)		☐ 00095 Conductance Micromhos 25°C		☐ 01025 Cadmium				☐ 38270 Methoxychlor	
☐ 00915 Calcium (as Ca)		☐ 00430 Alkalinity (as $CaCO_3$)		☐ 00400 pH		☐ 01030 Chromium		RADIOLOGICAL pCi/l ☐ 01501 Gross Alpha		☐ 39400 Toxaphene	
☐ 00925 Magnesium (as Mg)		☐ 00440 Bicarbonate (as HCO_3)		☐ 01330 Odor		☐ 01049 Lead		☐ 03501 Gross Beta	pCi/l	☐ 39730 2, 4-D	
☐ 01045 Iron-Total (as Fe)		☐ 00445 Carbonate (as CO_3)		☐ 00080 Color	mg/l	☐ 07180 Mercury		☐ 09501 Radium-226	pCi/l	☐ 39740 2, 4, 5-TP (Silvex)	
☐ 01056 Manganese (as Mn)		☒ 00945 Sulfate (as SO_4)	1672	☐ 00070 Turbidity		☐ 01145 Selenium		☐ 11501 Radium-228	pCi/l		
						☐ 01075 Silver					

LABORATORY REMARKS:

Rid = Raw Untreated

Reviewed by

Date reported 5/19/81

SLD 702 Form Revised 4/78

DISTRIBUTION White - Water Supply Regulation, SI • Canary - WS System • Pink - EIA Regional Office • Goldenrod - SLD Lab

State of New Mexico
HEALTH and ENVIRONMENT DEPARTMENT
SCIENTIFIC
LABORATORY DIVISION

CHEMICAL and PHYSICAL ANALYSES for WATER SAMPLES

Date received	Lab No.	SLD user code No.
5/12/81 RU	09- 490	82176

CONSULT SLD Lab Annex L for proper presentation of sample(s) TYPE or PRINT with Ball Point Pen

CHEMICAL ANALYSES: *Check individual items for analysis [Mark appropriate box(es)]*

INTERIM PRIMARY PARAMETER GROUP ☐ 1 ☐ 2 ☐ 3

TYPE of CHEMICAL ANALYSIS ☐ Complete Secondary ☐ Organic ☐ Radiological

Water Supply System Name: La Bajada Mine Pit
Water Supply System Code No.:
City or Location:
County:
Check one: ☐ TREATED WATER ☐ RAW WATER

Collection Date: 4/23/81
Collection Time: 12:15
Collection Point: south side of pit lake
Collector's remarks:
Report to: Forest Hydrologist
Address: Santa Fe National Forest, P.O. Box 1689, Santa Fe, New Mexico 8750[illegible]

Collected By: B. Long, W. Lucas
Owner:

TYPE of SYSTEM (Check one): ☐ PRIVATE PUBLIC: ☐ Community ☐ Non-community

SOURCE: ☐ Spring ☒ Lake ☐ Well-Depth ☐ Drain ☐ Stream ☐ Pool ☐ Other (specify)
LAT. LONG.

CATIONS	mg/l	ANIONS	mg/l	PHYSICAL		HEAVY METALS	mg/l	PARAMETER		ORGANIC	mg/l
00930 Sodium (as Na)		00940 Chloride (as Cl)		70300 Total Filterable Residue	mg/l	01000 Arsenic				39390 Endrin	
00935 Potassium (as K)		00950 Fluoride (as F)		38260 Foaming Agents (as Las)		01005 Barium				39732 Lindane	
00900 Tot.Hardness (as $CaCO_3$)		00620 Nitrate (as N)		00095 Conductance Micromhos 25°C		01025 Cadmium				38270 Methoxychlor	
00915 Calcium (as Ca)		00430 Alkalinity (as $CaCO_3$)		00400 pH		01030 Chromium		☒ RADIOLOGICAL pCi/l 01501 Gross Alpha	44.8 ± 6.0 @ 1σ (RU)	39400 Toxaphene	
00925 Magnesium (as Mg)		00440 Bicarbonate (as HCO_3)		01330 Odor		01049 Lead		03501 Gross Beta	pCi/l	39730 2, 4-D	
01045 Iron-Total (as Fe)		00445 Carbonate (as CO_3)		00080 Color	mg/l	07180 Mercury		09501 Radium-226	pCi/l	39740 2, 4, 5-TP (Silvex)	
01056 Manganese (as Mn)		00945 Sulfate (as SO_4)		00070 Turbidity		01145 Selenium		11501 Radium-228	pCi/l		
						01075 Silver					

LABORATORY REMARKS:
RU = Raw Untreated

Reviewed by: [illegible signature]
Date reported: 6/11/81

SLD 702 Form Revised 4/78

DISTRIBUTION White - Water Supply Regulation, SF • Canary - WS System • Pink - HA Regional Office • Goldenrod - SLD Lab

______________ NATIONAL FOREST
CHEMICAL, PHYSICAL, AND BACTERIOLOGICAL ANALYSIS FOR WATER SAMPLES

Stream / Lake Name *Santa River below La Bajada west arroya* STORET NUMBER ☐☐☐☐☐☐

Location ______ S ____ T ____ R ____

Ranger District *Tesuque* STORET II/DEPTH ☐☐☐

Collection Date (Y, M, D)		8 1 0 9 2 3
Collection Time (Military)		1 4 0 0
Air Temperature °C	P20	2 2 . 0
Water Temperature °C	P10	2 3 . 0

Stage P65 ☐☐☐☐

Flow P61 *91*

U.S.G.S gage 1mi downstream

Remarks *Streambed substrate was disturbed by kicking to release bed sediment possibly containing heavy metals or radioactive materials.*

Collected By *E. Long, A. Sweet* Analysis By ______

Date of Analysis ______

Cations	mg/l	meq/l	Anions	mg/l	meq/l	Parameter	mg/l	Parameter	mg/l	Parameter	mg/l	Parameter	mg/l
P916 Calcium (as Ca)			P940 Chloride (as Cl)			P415 Alkalinity (PHT) (as CaCO$_3$)		P300 Oxygen, Dissolved (as O_2)		P38260 Surfactants (MBAS)			
P927 Magnesium (as Mg)			P951 Flouride (as F)			P410 Alkalinity (total as CaCO$_3$)		P400 pH	Std Un 8.7	P71875 Hydrogen Sulfide (as H_2S)			
P74010 Iron (as Fe)			P71850 Nitrate (as NO$_3$)			P405 Carbon Dioxide (as CO$_2$)		P70300 Filterable Residue (at 180°C)		P660 Phosphate, Ortho (as PO$_4$)			
P1055 Manganese (as Mn) *			P440 Bicarbonate (as HCO$_3$)			P910 Hardness, Calcium (as CaCO$_3$)		P76 Turbidity	FTU	P655 Phosphate, Poly (as PO$_4$)			
P1042 Copper (as Cu) *			P445 Carbonate (as CO$_3$)			P900 Hardness, Total (as CaCO$_3$)		P95 Conductance (at 25°C)	umhos/cm 714	P31501 Coliform, Total	#/100ml		
Sodium (Calculated as Na)			P945 Sulfate (as SO$_4$)			P901 Hardness, Carbonate (as CaCO$_3$)		P50060 Chlorine, Total		P31616 Coliform, Fecal	#/100ml		
			P650 Phosphate, Total (as PO$_4$)			P902 Hardness, Non-Carbonate (as CaCO$_3$)		P1032 Chromium, Hexavalent (as Cr)	µg/l	P31679 Streptococci, Fecal	#/100ml		
Total			Total										

• Comments

J – Value not accurate.
K – Actual value is known to be less than value given.
L – Actual value is known to be greater than value given.

*Manganese and Copper are stored in STORET in µg/l.

CONVERSION TABLE

Milligrams per liter X C = Milliequivalents per liter

	C		C
Bicarbonate (HCO_3^-)	.01639	Iron (Fe^{+3})	.05370
Calcium (Ca^{+2})	.04990	Magnesium (Mg^{+2})	.08224
Carbonate (CO_3^{-2})	.03333	Manganese (Mn^{+2})	.03640
Chloride (Cl^-)	.02821	Nitrate (NO_3^-)	.01613
Chromium (Cr^{+6})	.11534	Phosphate (PO_4^{-3})	.03159
Copper (Cu^{+2})	.03148	Sodium (Na^+)	.04350
Fluoride (F^-)	.05264	Sulfate (SO_4^{-2})	.02082
Iron (Fe^{+2})	.03582		

Press = 24.9 Sal = 7.2 T 23
Cond std 149, Read (165) – [illegible] 800
∴ correction factor = .89

pH = C.P. 8.0, Brom Thymol, 7.8, 8.1

R-3 2300-2 (6/77)

State of New Mexico
HEALTH and ENVIRONMENT DEPARTMENT
SCIENTIFIC
LABORATORY DIVISION

CHEMICAL and PHYSICAL ANALYSES for WATER SAMPLES

Date received	Lab No.	SLD user code No.
5/4/81	LL2-3132	82176

CONSULT SLD Lab Annex L for proper presentation of sample(s) TYPE or PRINT with Ball Point Pen

CHEMICAL ANALYSES: *Check individual items for analysis [Mark appropriate box(es)]*

INTERIM PRIMARY PARAMETER GROUP: ☐ 1 ☐ 2 ☐ 3

TYPE of CHEMICAL ANALYSIS: ☐ Complete Secondary ☐ Organic ☐ Radiological

Water Supply System Name	Water Supply System Code No.	City or Location	County	Check one:
Santa Fe River			Santa Fe	☐ TREATED WATER ☐ RAW WATER

Collection Date	Collection Time	Collection Point	Collector's remarks	Report to
4/23/81	1400	below channel draining La Bajada Mine		Forest Hydrologist

Collected By: B. Long, A. Smart
Owner:
Address: Santa Fe National Forest, P.O. Box 1629, Santa Fe, New Mexico 87501

TYPE of SYSTEM (Check one): ☐ PRIVATE PUBLIC: ☐ Community ☐ Non-community

SOURCE: ☐ Spring ☐ Lake ☐ Well-Depth ☐ Drain ☒ Stream ☐ Pool ☐ Other (specify)

LAT. ° ' "
LONG ° ' "

CATIONS	mg/l	ANIONS	mg/l	PHYSICAL		HEAVY METALS	mg/l	PARAMETER		ORGANIC	mg/l
☐ 00930 Sodium (as Na)		☒ 00940 Chloride (as Cl)	339	☐ 70300 Total Filterable Residue	mg/l	☐ 01000 Arsenic				☐ 39390 Endrin	
☐ 00935 Potassium (as K)		☐ 00950 Fluoride (as F)		☐ 38260 Foaming Agents (as Las)		☐ 01005 Barium				☐ 39732 Lindane	
☒ 00900 Tot. Hardness (as $CaCO_3$)	151	☐ 00620 Nitrate (as N)		☐ 00095 Conductance Micromhos 25°C		☐ 01025 Cadmium				☐ 38270 Methoxychlor	
☐ 00915 Calcium (as Ca)		☐ 00430 Alkalinity (as $CaCO_3$)		☐ 00400 pH		☐ 01030 Chromium		RADIOLOGICAL pCi/l ☐ 01501 Gross Alpha		☐ 39400 Toxaphene	
☐ 00925 Magnesium (as Mg)		☐ 00440 Bicarbonate (as HCO_3)		☐ 01330 Odor		☐ 01049 Lead		☐ 03501 Gross Beta	pCi/l	☐ 39730 2, 4-D	
☐ 01045 Iron-Total (as Fe)		☐ 00445 Carbonate (as CO_3)		☐ 00080 Color	mg/l	☐ 07186 Mercury		☐ 09501 Radium-226	pCi/l	☐ 39740 2, 4, 5-TP (Silvex)	
☐ 01056 Manganese (as Mn)		☒ 00945 Sulfate (as SO_4)	434	☐ 00070 Turbidity		☐ 01145 Selenium		☐ 11501 Radium-228	pCi/l		
						☐ 01075 Silver					

LABORATORY REMARKS:
RU = Raw Untreated

Reviewed by: [signature]
Date reported: 5/21/81

257

SLD 702 Form Revised 4/78

DISTRIBUTION White - Water Supply Regulation, SI • Canary - WS System • Pink - EIA Regional Office • Goldenrod - SLD Lab

State of New Mexico
HEALTH and ENVIRONMENT DEPARTMENT
SCIENTIFIC
LABORATORY DIVISION

CHEMICAL and PHYSICAL ANALYSES for WATER SAMPLES

Date received	Lab No.	SLD user code No.
5/14/81	HM-984	82176

CONSULT SLD Lab Annex I. for proper presentation of sample(s) TYPE or PRINT with Ball Point Pen

CHEMICAL ANALYSES: *Check individual items for analysis [Mark appropriate box(es)]*

INTERIM PRIMARY PARAMETER GROUP: ☐ 1 ☐ 2 ☐ 3

TYPE of CHEMICAL ANALYSIS: ☐ Complete Secondary ☐ Organic ☐ Radiological

Water Supply System Name	Water Supply System Code No.	City or Location	County	Check one:
Santa Fe River				☐ TREATED WATER ☐ RAW WATER

Collection Date	Collection Time	Collection Point	Collector's remarks	Report to
4/23/81	1400	below channel draining La Bajada Mine		Forest Hydrologist
Collected By: B. Long, A. Smart		Owner		Address: Santa Fe National Forest, P.O. Box 1689, Santa Fe, New Mexico 87501

TYPE of SYSTEM (Check one): ☐ PRIVATE PUBLIC: ☐ Community ☐ Non-community

SOURCE: ☐ Spring ☐ Lake ☐ Well-Depth ☐ Drain ☒ Stream ☐ Pool ☐ Other (specify)

LAT. ° ' "
LONG ° ' "

CATIONS	mg/l	ANIONS	mg/l	PHYSICAL	mg/l	HEAVY METALS	mg/l	PARAMETER		ORGANIC	mg/l
☐ 00930 Sodium (as Na)		☐ 00940 Chloride (as Cl)		☐ 70300 Total Filterable Residue		☒ 01000 Arsenic	<0.005	☒ Copper	0.021	☐ 39390 Endrin	
☐ 00935 Potassium (as K)		☐ 00950 Fluoride (as F)		☐ 38260 Foaming Agents (as Las)		☐ 01005 Barium		☒ Zinc	<0.03	☐ 39732 Lindane	
☐ 00900 Tot. Hardness (as $CaCO_3$)		☐ 00620 Nitrate (as N)		☐ 00095 Conductance Micromhos 25°C		☒ 01025 Cadmium	<0.001	☐		☐ 38270 Methoxychlor	
☐ 00915 Calcium (as Ca)		☐ 00430 Alkalinity (as $CaCO_3$)		☐ 00400 pH		☐ 01030 Chromium		☐ RADIOLOGICAL pCi/l 01501 Gross Alpha		☐ 39400 Toxaphene	
☐ 00925 Magnesium (as Mg)		☐ 00440 Bicarbonate (as HCO_3)		☐ 01330 Odor		☒ 01049 Lead	<0.005	☐ 03501 Gross Beta	pCi/l	☐ 39730 2, 4-D	
☐ 01045 Iron-Total (as Fe)		☐ 00445 Carbonate (as CO_3)		☐ 00080 Color	mg/l	☒ 07180 Mercury	<0.0005	☐ 09501 Radium-226	pCi/l	☐ 39740 2, 4, 5-TP (Silvex)	
☐ 01056 Manganese (as Mn)		☐ 00945 Sulfate (as SO_4)		☐ 00070 Turbidity		☐ 01145 Selenium		☐ 11501 Radium-228	pCi/l		
						☐ 01075 Silver					

LABORATORY REMARKS:

RA = Raw Acidified w/ 3 ml Nitric Acid

Reviewed by: [signature]

Date reported: 6/2/81

SLD 702 Form Revised 4/78

DISTRIBUTION: White - Water Supply Regulation Sec. • Canary - WS System • Pink - EIA Regional Office • Goldenrod - SLD Lab

State of New Mexico
HEALTH and ENVIRONMENT DEPARTMENT
SCIENTIFIC LABORATORY DIVISION

CHEMICAL and PHYSICAL ANALYSES for WATER SAMPLES

Date received	Lab No.	SLD user code No
[illegible]	[illegible]	[illegible]

CONSULT SLD Lab Annex L for proper presentation of sample(s). TYPE or PRINT with Ball Point Pen

CHEMICAL ANALYSES: *Check individual items for analysis [Mark appropriate box(es)]*

INTERIM PRIMARY PARAMETER GROUP: [ ] 1 [ ] 2 [ ] 3

TYPE of CHEMICAL ANALYSIS: [ ] Complete Secondary [ ] Organic [ ] Radiological

Water Supply System Name: Santa Fe River
Water Supply System Code No.:
City or Location:
County:
Check one: [ ] TREATED WATER [ ] RAW WATER

Collection Date: 11/23/81
Collection Time: 1400
Collection Point: below channel draining La Bajada Mine
Collector's remarks:
Report to: Forest Hydrologist
Address: Santa Fe National Forest, P.O. Box 1689, Santa Fe, New Mexico 87501

Collected By: B. Long, A. Smart
Owner:

TYPE of SYSTEM (Check one): [ ] PRIVATE PUBLIC: [ ] Community [ ] Non-community

SOURCE: [ ] Spring [ ] Lake [ ] Well-Depth ______ [ ] Drain [✓] Stream [ ] Pool [ ] Other (specify) ______

LAT. ° ' "
LONG ° ' "

CATIONS	mg/l	ANIONS	mg/l	PHYSICAL		HEAVY METALS	mg/l	PARAMETER		ORGANIC	mg/l
00930 Sodium (as Na)		00940 Chloride (as Cl)		70300 Total Filterable Residue	mg/l	01000 Arsenic				39390 Endrin	
00935 Potassium (as K)		00950 Fluoride (as F)		38260 Foaming Agents (as Las)		01005 Barium				39732 Lindane	
00900 Tot. Hardness (as $CaCO_3$)		00620 Nitrate (as N)		00095 Conductance Micromhos 25°C		01025 Cadmium				38270 Methoxychlor	
00915 Calcium (as Ca)		00430 Alkalinity (as $CaCO_3$)		00400 pH		01030 Chromium		[X] RADIOLOGICAL pCi/l 01501 Gross Alpha Ref: Uranium	28.1 ±3.8 @ [illegible]	39400 Toxaphene	[illegible]
00925 Magnesium (as Mg)		00440 Bicarbonate (as HCO_3)		01330 Odor		01049 Lead		03501 Gross Beta	pCi/l	39730 2,4-D	
01045 Iron-Total (as Fe)		00445 Carbonate (as CO_3)		00080 Color	mg/l	07180 Mercury		09501 Radium-226	pCi/l	39740 2,4,5-TP (Silvex)	
01056 Manganese (as Mn)		00945 Sulfate (as SO_4)		00070 Turbidity		01145 Selenium		11501 Radium-228	pCi/l		
						01075 Silver					

LABORATORY REMARKS:
RU = Raw Untreated
Relative to Nat. 241
Gross α = 20.0 ± 2.4 pCi/L

Reviewed by: [illegible signature]
Date reported: 12/17/81

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SLD 702

DISTRIBUTION: White - Water Supply Regulation SE • Canary - WS System • Pink - EIA Regional Office • Goldenrod - SLD Lab

Data Source 13. La Bajada Quarry Fishery Investigation by Donald A. Duff, Wildlife Management Biologist and L. Eric Silvers, Hydrologist dated March 19, 1970, USFS.

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

Santa Fe NF

REPLY TO: 2620 PLANNING
2540 WATER USES

March 19, 1970

SUBJECT: La Bajada Quarry Fishery Investigation

TO: Forest Supervisor and
Tesuque District Ranger

At your request subject investigation was conducted on February 20, 1970, with the assistance of Bob Wagenfehr, Tesuque District. The survey was made to determine the feasibility of utilizing the quarry as a recreational fishery site.

La Bajada Quarry, an old uranium mine, is located approximately 2 miles upstream on the Santa Fe River from Forest Road No. 22 crossing of the river at La Bajada Hill. The quarry is situated on the north bank about 100 feet from the Santa Fe River. The water level of the quarry is approximately 10 feet below the ground water level of the river, which probably explains the existence of a permanent body of water in the quarry of about 1½ acres. There has been no active mining work at the site since 1967.

A depth profile of the quarry revealed a maximum depth of 44 feet, with an average depth of about 25 feet. On all sides of the quarry the bank walls drop vertically quite rapidly to maximum depth levels.

SCUBA diving gear was used to observe underwater ecologic conditions and to gather bottom sample and water quality samples.

The general appearance of the surface water was a dull greenish color, with algae deposits growing along the sides of the banks. Surface water temperature was 45°F. while at 44 feet depth the temperature was 40°F. Underwater visibility was limited to 3-5 feet. No fish were observed during the underwater survey, however, "waterdogs", the tiger salamander, Ambystoma tigrinum, were observed in moderate abundance in sizes up to 10 inches in length.

No underwater vegetation was present on the quarry bottom which consisted of thick muck 1-2 feet in depth. Analysis of bottom samples revealed no abundant aquatic organisms necessary to sustain fish. Diptera larvae were the only Order present, consisting of Tendipedidiae (midges) and Culicidae (mosquitos).

Analysis of the water quality samples indicated high levels of total dissolved solids, nitrates, sulfates, phosphates, and dissolved oxygen. Fish could survive in waters with these levels but would not develop into a permanent fishery unless stocked regularly on a put-and-take basis.

The sulfate reading of 298 ppm would be a limiting factor in the successful establishment and growth of aquatic organisms necessary for fish food.

The phosphate reading of 0.25 ppm, the observed greenish color of the water and algae growths, and the high dissolved oxygen level 14 ppm indicates a high rate of organic decomposition and photosynthesis going on. This indicates the presences of plankton organisms which would be a limiting factor during summer periods when excessive plankton blooms could cause a total fish kill.

The high total dissolved solid (TDS) level of 570 ppm is within the limits tolerable to fish but indicate a high concentration of salts. Since the quarry is a closed basin, with no outlet or inlet, the possibility exists that with the passage of time the water may become higher in TDS due to evaporation.

Trout or warm water fish species could be stocked in the quarry on a put-and-take basis, but since the quarry is of small size, state or federal stocking rates for this size impoundment would not be sufficient to maintain a catchable fishery to meet the fishing pressure. Since the quarry is readily accessible to the public considerable pressure could be realized and a stocking program would be needed constantly.

Since the impoundment is a quarry site, a considerable amount of improvements would probably be necessary to maintain public safety, since steep sided, sloughing, bank are present. The sharp drop off from shallow to deep water would also provide a hazard for drowning for wading people.

Before any type recreational activity is designated for this area, a complete survey for radioactivity should be accomplished from surrounding surface and bottom soils. Radio-activity could be a possible safety hazard at this site, since it was originally a uranium mine.

On July 28, 1968, a substantial flood occurred on the Santa Fe River, with the record flows of 6110 cfs within the city limits of Santa Fe. An estimated 50% of this flow or 3000 cfs, reached the La Bajada Quarry site. Flows of this magnitude and greater can be expected commonly on the lower reaches of the Santa Fe River. Such flows would seriously damage the quarry site, debris and sediment deposition and cutting action around the quarry walls. Before any recreation improvements are considered the possibility of flood damages must be evaluated.

A sample of water was also taken at the new U.S.G.S. gaging station site located on private land in Sec. 9, T15N, R7E. The analysis indicates the flow is strongly affected by sewage effluent from the city of Santa Fe's treatment plant, which is located approximately 12 miles upstream. High chloride, detergents, nitrate, ortho phosphates, coliform colonies and fecal coliform readings are key indicators of this influence.

Photographs of the area, along with copies of an area map, and water quality and bacteriologic data sheets are attached for your information.

DONALD A. DUFF
Wildlife Management Biologist

L. ERIC SIVERTS
Hydrologist

Date Collected ____ Collected By ____ Employee No ____

Location No ____ Chlorinated Yes ☐ No ☒ Residual ____

Owner Of System USFS pH ____

Collection Point Pt. near USGS gage Station on La Bajada Grant

Public ☐ Semi-Public ☐ Private ☐ Swimming Pool ☐ W. P. C. ☐

Stream/Lake Name Santa Fe River

Sewage/Industrial Plant Name ____

River Basin: Rio Grande ☒ Pecos ☐ San Juan ☐ Gila ☐ Canadian ☐

Little Colorado ☐ Other ____

HAS SANITARY SURVEY BEEN MADE: Yes ☐ No ☒

CHECK TEST REQUIRED: Potability, Coliform Group, Membrane Filter ☒

Standard Plate Count ☐ Fecal Coliform ☒ Fecal Streptococci ☒

Re-Sample No. ____ Other ____

SEND REPORT TO THE FOLLOWING (NAME & ADDRESS)

2540
Santa Fe National Forest
P. O. Box 1689
Santa Fe, New Mexico 87501

HL-MICRO-17
Revised 7-1-69

RESULTS OF TESTS FOR COLIFORM GROUP

Volume	Presumption 24 Hours	Presumption 48 Hours	Confirmed 24 Hours	Confirmed 48 Hours	Completed
10 ml.					
10 ml.					
10 ml.					
10 ml.					
10 ml.					

CONFORMS ☐ DOES NOT CONFORM ☒

WITH BACTERIOLOGIC POTABILITY STANDARDS

Coliform Colonies (MF) 10,500 /100 ML.

Standard Plate Count, 35°c ____ /ML.

Fecal Coliform (MF) 5320 /100 ML.

Fecal Streptococci (MF) 120 /100 ML.

Other ____

Date Reported 2-24-70 By LLebt

STATE OF NEW MEXICO
HEALTH LABORATORY
305 Terrace St., N.E.
Albuquerque, New Mexico
87106

HEALTH SOCIAL SERVICES

BACTERIOLOGIC WATER REPORT

Town Santa Fe, N.M. County Santa Fe

Date Collected 2-20-70 Collected By Sievers Employee No ____

Location No. ____ Chlorinated Yes ☐ No ☒ Residual ____

Owner Of System USFS pH ____

Collection Point La Bajada Quarry

Public ☒ Semi-Public ☐ Private ☐ Swimming Pool ☐ W. P. C. ☐

Stream (Lake) Name La Bajada Quarry

Sewage/Industrial Plant Name ____

River Basin: Rio Grande ☒ Pecos ☐ San Juan ☐ Gila ☐ Canadian ☐

Little Colorado ☐ Other ____

HAS SANITARY SURVEY BEEN MADE: Yes ☐ No ☒

CHECK TEST REQUIRED: Potability; Coliform Group, Membrane Filter ☒

Standard Plate Count ☐ Fecal Coliform ☒ Fecal Streptococci ☒

Re Sample No ____ Other ____

SEND REPORT TO THE FOLLOWING (NAME & ADDRESS)

2540
Santa Fe National Forest
P. O. Box 1689
Santa Fe, New Mexico 87501

HL-MICRO-17
Revised 7-1-69

Feb 21 70 393201
Date Received Lab No.

RESULTS OF TESTS FOR COLIFORM GROUP

Volume	Presumption 24 Hours	Presumption 48 Hours	Confirmed 24 Hours	Confirmed 48 Hours	Completed
10 ml.					
10 ml.					
10 ml.					
10 ml.					
10 ml.					

CONFORMS ☒ DOES NOT CONFORM ☐

WITH BACTERIOLOGIC POTABILITY STANDARDS

Coliform Colonies (MF) <100 /100 ML.

Standard Plate Count, 35°c ____ /ML

Fecal Coliform (MF) <10 /100 ML.

Fecal Streptococci (MF) <10 /100 ML.

Other ____

Date Reported 2-24-70, LLebt

STATE OF NEW MEXICO
HEALTH LABORATORY
305 Terrace St., N.E.
Albuquerque, New Mexico

HEALTH SOCIAL SERVICES

CHEMICAL-PHYSICAL

R-3 USFS

FOREST Santa Fe
Dist - Tesuque

WATER QUALITY MONITORING
(Field Analysis)

Stream/(Lake) La Bajada Quarry

Watershed Planning Unit Caja Del Rio Unit No. #9

Location At Quarry T.____ R.____ Sec.____

Collection Date	2-20-70	Temp., Air	112 °F
Collection Time	11:00	Temp., Water	45 surface °F 40°F bottom
Analysis Date	2-20-70	Temp. Range (Min.)	(Max)
Sample Number		Dates of Temp. Range	To

(Parts Per Million Unless Indicated Otherwise)

*1. Alkalinity (PHTH)	0	*14. Iron	0
(M.O.)	230	*15. Manganese	0
*2. Carbon Dioxide	40	16. Nitrate (7.0)	Nitrite 0
*3. Chloride	27.5	*17. Oxygen, Dissolved	14.0
4. Chlorine	0.0	*18. pH	8.5
5. Chromate	0.03	19. Phosphate, Ortho	0.0
*6. Copper	0.21	Poly	0.25
7.		*20. Sulfate	310 (298) Check w/ alkalinity
8. Detergents	0	*21. Total Dissolved Solids	570
9. Flouride	0.9	*22. Turbidity	0 Units.
*10. Hardness, Calcium	260	*23. Flow	N/A
Total	310	24. Weather	
11. Hydrogen Sulfide	<0.1	25.	Σ alkalinity Cl SO₄
12.		26.	556 mg/l
13.		27.	TDS = 570

-Over-

WORK SHEET

Revised 4/58

R-3 USFS

FOREST Santa Fe
Dist - Tesuque

WATER QUALITY MONITORING
(Field Analysis)

Stream Santa Fe River

Watershed Planning Unit Cano Del Rio Unit No. 9

Location At new USGS Gage Station on La Majada Grant T.____ R.____ Sec.____

Collection Date	2-20-70	Temp., Air	38 @ 0945 °F
Collection Time	1315	Temp., Water	33° " °F
Analysis Date	2-20-70	Temp. Range (Min.) ____ (Max) ____	
Sample Number		Dates of Temp. Range ____ To ____	

(Parts Per Million Unless Indicated Otherwise)

*1.	Alkalinity (PHTH)	0	*14.	Iron	0.05
	(M.O.)	180	*15.	Manganese	0
*2.	Carbon Dioxide	6.0	16.	Nitrate	5.0
*3.	Chloride	25.0	*17.	Oxygen, Dissolved	9.6
4.	Chlorine	0.0	*18.	pH	7.5
5.	Chromate	0.03	19.	Phosphate, Ortho	
*6.	Copper	0.15		Poly	(0.7)
7.			*20.	Sulfate	38
8.	Detergents	0.3	*21.	Total Dissolved Solids	300
9.	Flouride	0.95	*22.	Turbidity	0.0 Units.
*10.	Hardness, Calcium	70	*23.	Flow	Est 5 cfs
	Total	90	24.	Weather	
11.	Hydrogen Sulfide	1.0	25.		
12.			26.		Σ of Alkalinity, Cl, SO₄, NO₃ 252 mg/l
13.			27.		TDS = 300

-Over-

WORK SHEET

Revised 4/68

R-3 USFS

FOREST Santa Fe — Biological

WATER QUALITY MONITORING (Field Analysis)

Stream/Lake [illegible]

Watershed Planning Unit [illegible] Unit No. 9

Location at [illegible]

Collection Date 7-20-70 Temp., (water) 45 (top) 42 (bottom) °F

Width of Stream (sampling stat.) — ft. Depth of Stream (sampling stat. — in.

Substrate: Mucky ✓ Sand ___ Gravel ___

Rock ___ Boulder ___ Rubble ___

Shade (percent) 5 Time 1100 AM ~~PM~~

SQUARE FOOT BOTTOM SAMPLE (2 samples per station)

Combine both samples as one bottom fauna measurement per station. Count only the larger organisms (identified with naked eye) and record number of each group.

1. TRICHOPTERA (caddisfly) ___
2. EPHEMEROPTERA (mayfly) ___
3. DIPTERA (trueflies):
   - Tipulidae (cranefly) ___
   - Culicidae (mosquitoes) 4 (Chaoborus) < 0.05 gms
   - Simulidae (blackflies) ___
   - Tendipedidae (midges) 90 < 0.05 gms
   - Other ___
4. PLECOPTERA (stonefly) ___
5. HEMIPTERA (bugs):
   - Hydrometridae (treaders) ___
   - Gerridae (striders) ___
   - Notonectidae (back swimmers ___
   - Belostomatidae (giant water bug ___
   - Corixidae (boatman) ___
6. ODONATA
   - Anisoptera (dragonfly) ___
   - Zygoptera (damselfly) ___
7. OLIGOCHAETA (aquatic earthworm) ___
8. GASTROPODA (snails) ___
9. PELECYPODA (clams) ___
10. DECAPODA (crayfish) ___
11. COLEOPTERA (beetles):
    - Dytiscidae (pred. diving beetles) ___
    - Hydrophilidae (water scavengers) ___
    - Gyrinidae (whirligigs) ___
    - Other ___

REMARKS: stagnant body of water closed system, no fish present

BY: Don D. [illegible]

Total production < 0.1 gms / 1.5 sq. ft.

WORK SHEET

Sizer & Wagenfeld

La Bajada Quarry

Air Temp. 42°

H_2O Temp. 45° @ 10:20
Surface Bottom 40°

pH - 8.0

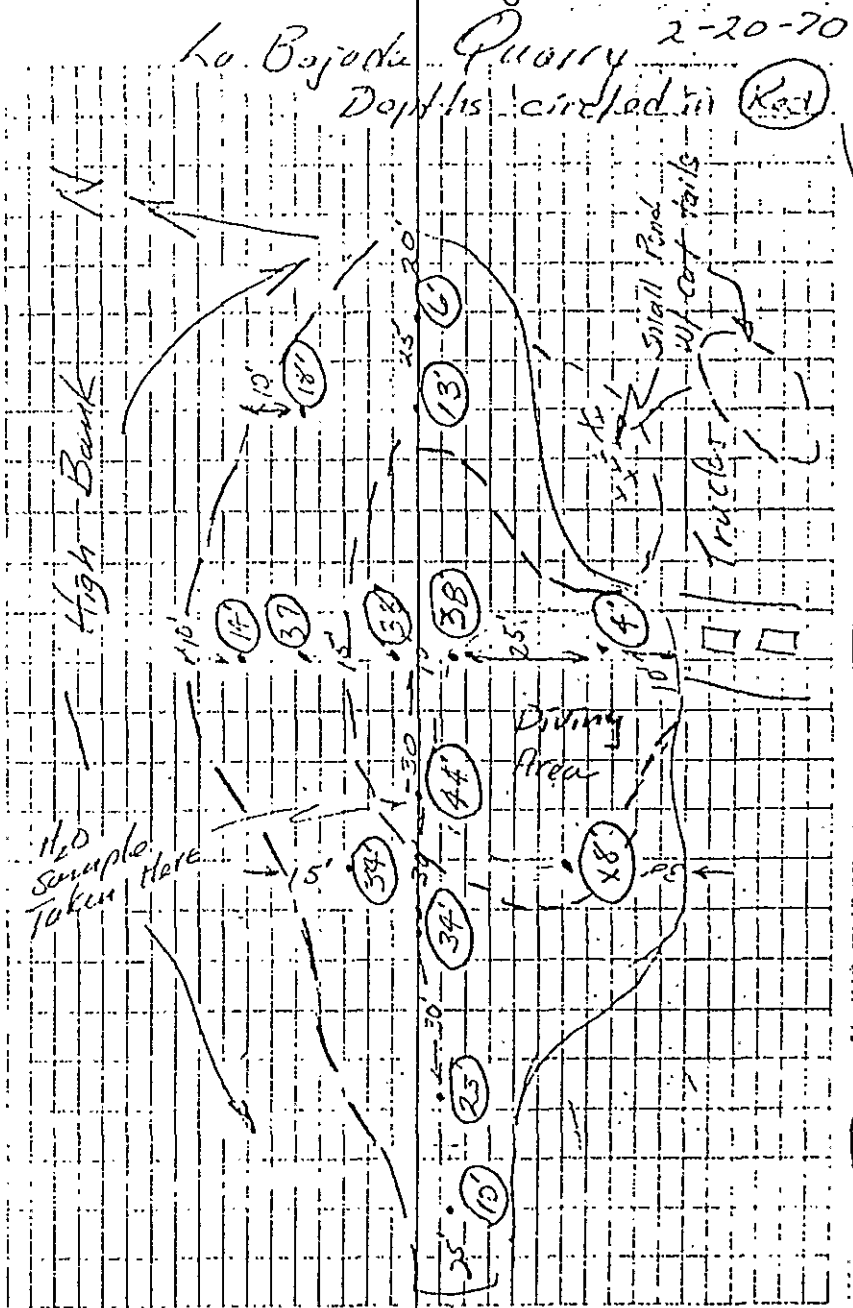
TDS - 590 ppm

DO surface 11.0

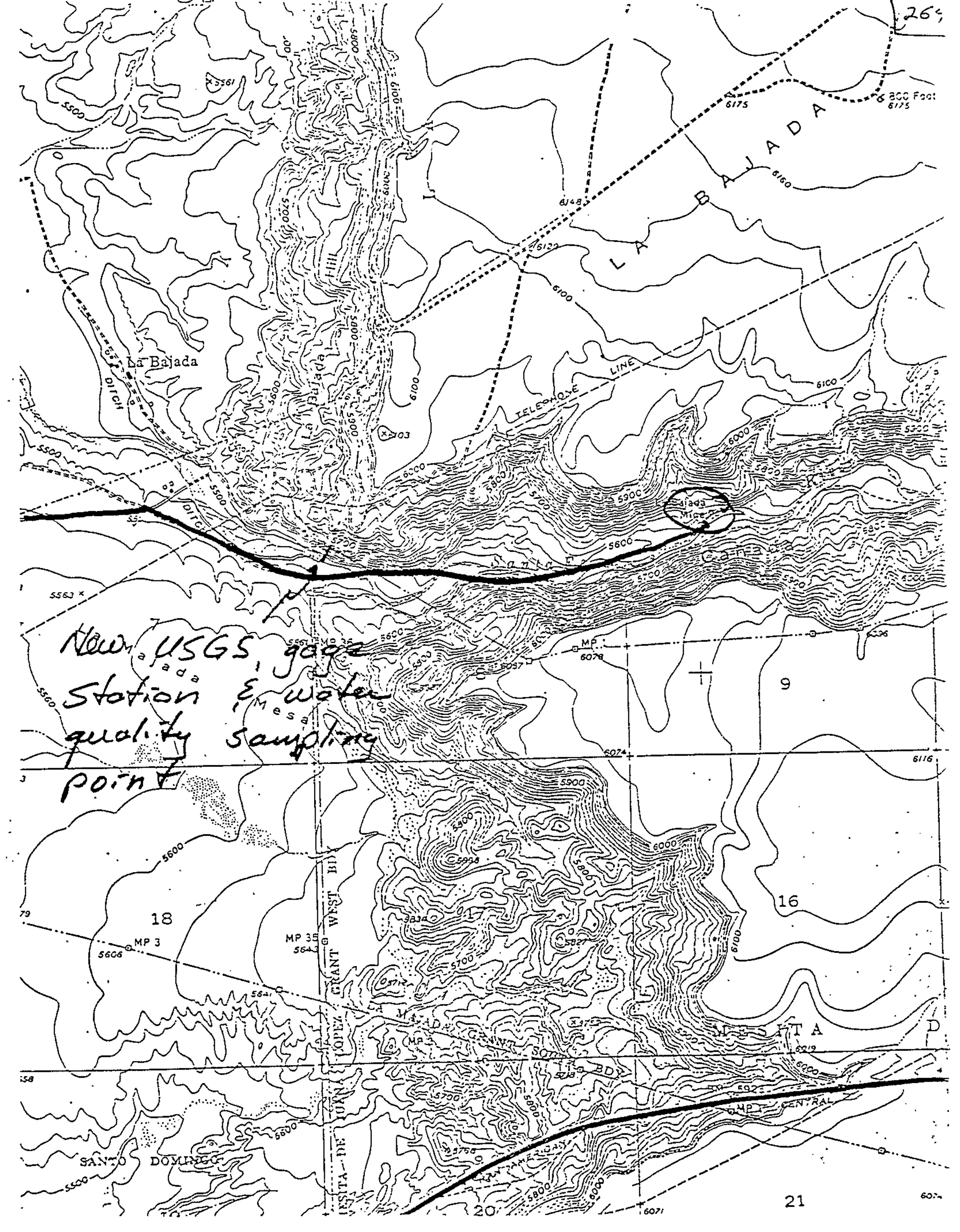
Bottom

La Bajada Quarry 2-20-70

Depths indicated in (Red)



Santa Fe River



La Bajada
DITCH
LA BAJADA
TELEPHONE LINE
Bajada Mine
New USGS gage station & water quality sampling point
Mesa
GRANT WEST BDY
MESITA
CENTRAL
SANTO DOMINGO
LA MAJADA GRANT SOUTH BDY
800 Foot
18
17
16
9
20
21
MP 3
MP 35
5606
5641
6175
6148
6122
6100
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6078
6074
6116
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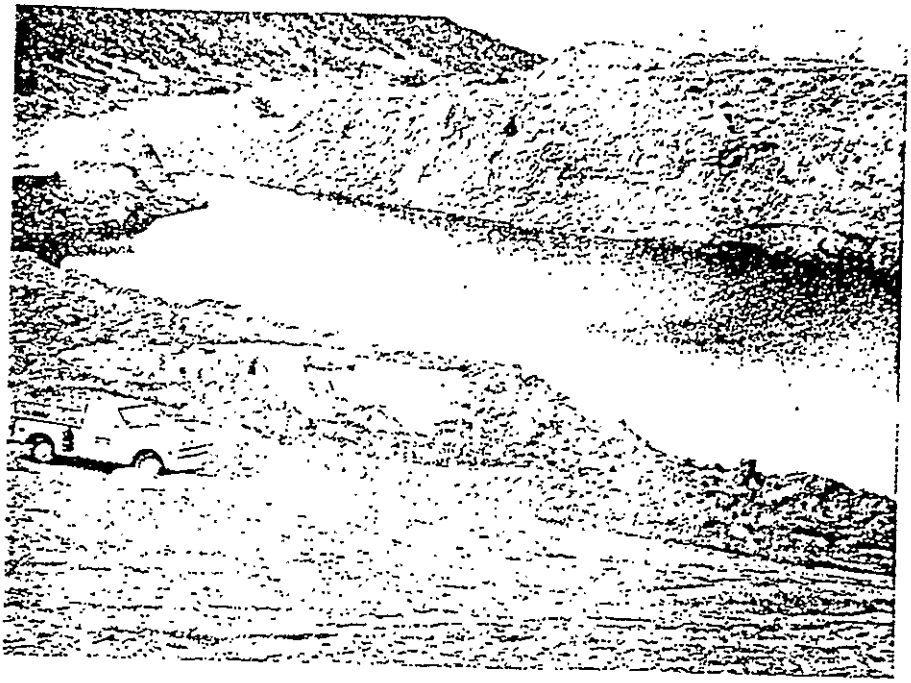
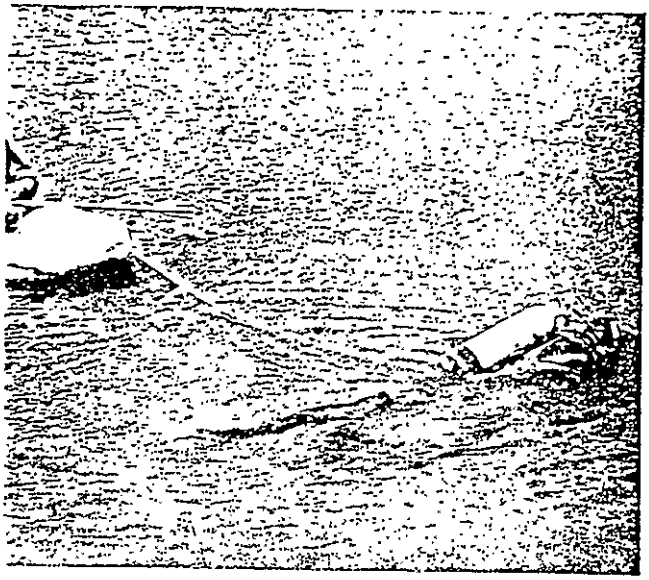
5700
5800
5900
6000
6100

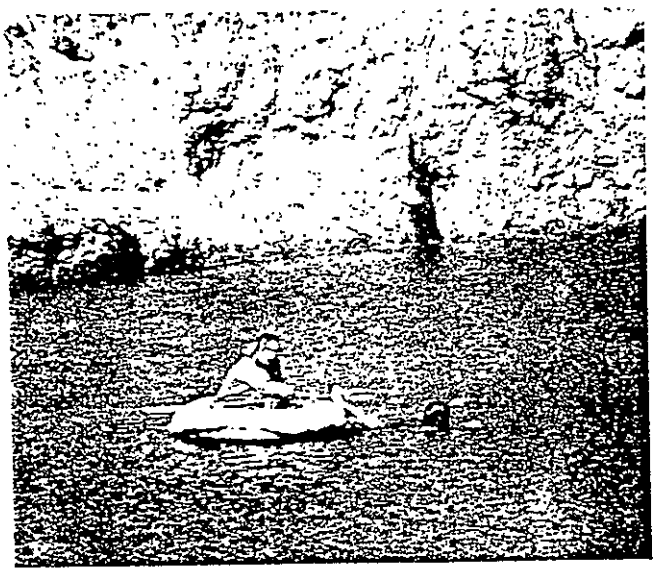


1. La Bajada Quarry - view towards the south approximately one and a half surface acres of permanent water with depths up to 22 feet.

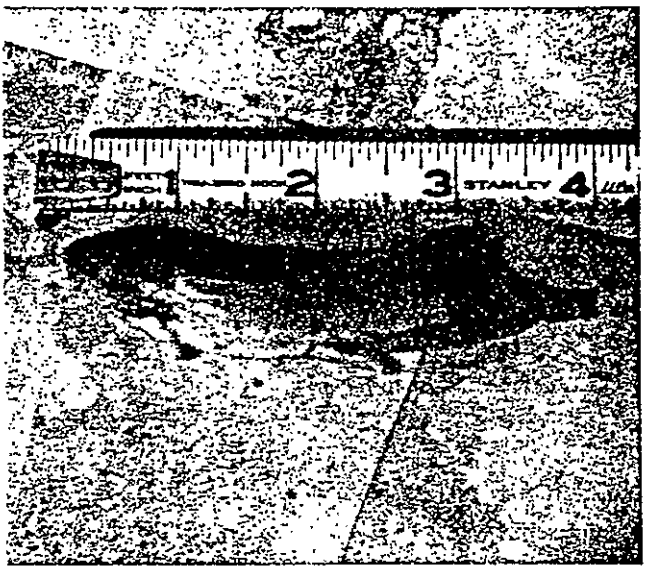
2. SCUBA diving gear was used in quarry survey to obtain water and bottom samples, and observations of aquatic organisms.



3. Surface tender and safety life line were employed during use of SCUBA diving to insure safety of diver.



4. Aquatic bottom samples and water samples were taken in the center of the quarry and transmitted to the surface tender.



5. Tiger salamander, Ambystoma tigrinum commonly known as a "waterdog" were observed in the quarry in sizes up to 10 inches.