STATE OF NEW MEXICO
HEALTH
ENVIRONMENT

MEMORANDUM

DATE: October 12, 1984

TO: Mike Brown, Santa Fe

FROM: T. G. Brough, Milan
Sam Simpson, Santa Fe

SUBJECT: Soil Samples

Soil samples were taken by Sam Simpson and myself at Grace Site #3 on April 18, 1984 in the following manner:

1 Samples were taken with the soil cookie cutter (4" diameter by 2" depth) by placing the cutter over the sample location, pushing it into the ground, and lifting the cutter with the sample (or if not able to lift, sliding the flat metal plate under the cutter lifting and removing the excess soil around the outside of the cutter). The sample was then placed in a plastic bag and marked. The field notes located the sample by number.

2 Since each sample was approximately 600g, and 1000 g was needed in a sample, a second sample was taken immediately adjacent to the first. This sample was added to the plastic bag with the first.

3 This procedure was followed for each of the five sample locations. At the point cf sampling a μr/hr reading at waist height (1 meter) was made and recorded using the μr/hr scintillation counter. These were recorded on the map.

4 The Soil Samples were taken at the following locations:

1) At the lip of a drainage overflow, on the East side of a shallow pit from which effluent had flowed when the pit was full of water (100 μr/hr).

2) At the center of a 10' X 15' contaminated area (light colored material) located 100 feet south of the explosive shack (200 μr/hr).

3) At the center of a 10' X 10' contaminated area (light colored material) 150 feet to the Southeast of sample area 2), above (220 μr/hr).

4) At the center and lowest point of a 50' semi-circular (or near-circular) pit immediately east of the explosives shack (14 μr/hr).

5) At the center of the stream about 150' immediately to the east of a 12' X 12' concrete pad near the stream edge to the east of the site. (considered a background location: 17 μr/hr at 1 meter)

The gamma readings indicated on the map were taken using the following rationale:

1) A power pole stub is in the center of the heap leach depression area.

2) We paced off 100 feet in the four ordinal directions(NE, SE, SW, NW) and took readings at 50 feet and at 100 feet.

3) In the west direction, we took readings at 20, 35, 50 and 65 feet from the stub.

4) At the eastern side, we took readings at 25, 50 and 100 feet.

5) Other intermediate readings were taken to fill in intermediate spaces as shown on the map

6) A small pit which seemed to be for storing water pumped from the well and later possibly used as a source of water for washing down the hillside to the west was also located, and readings made in the pit.

7) Two areas of high contamination were located by monitoring. These areas had material of a lighter color. The edges of these areas were surveyed.

8) A concrete pad, near the edge of the stream was located and surveyed.

When the laboratory analysis for these samples are received, the location of the samples will be indicated on the map accompanying the memo.

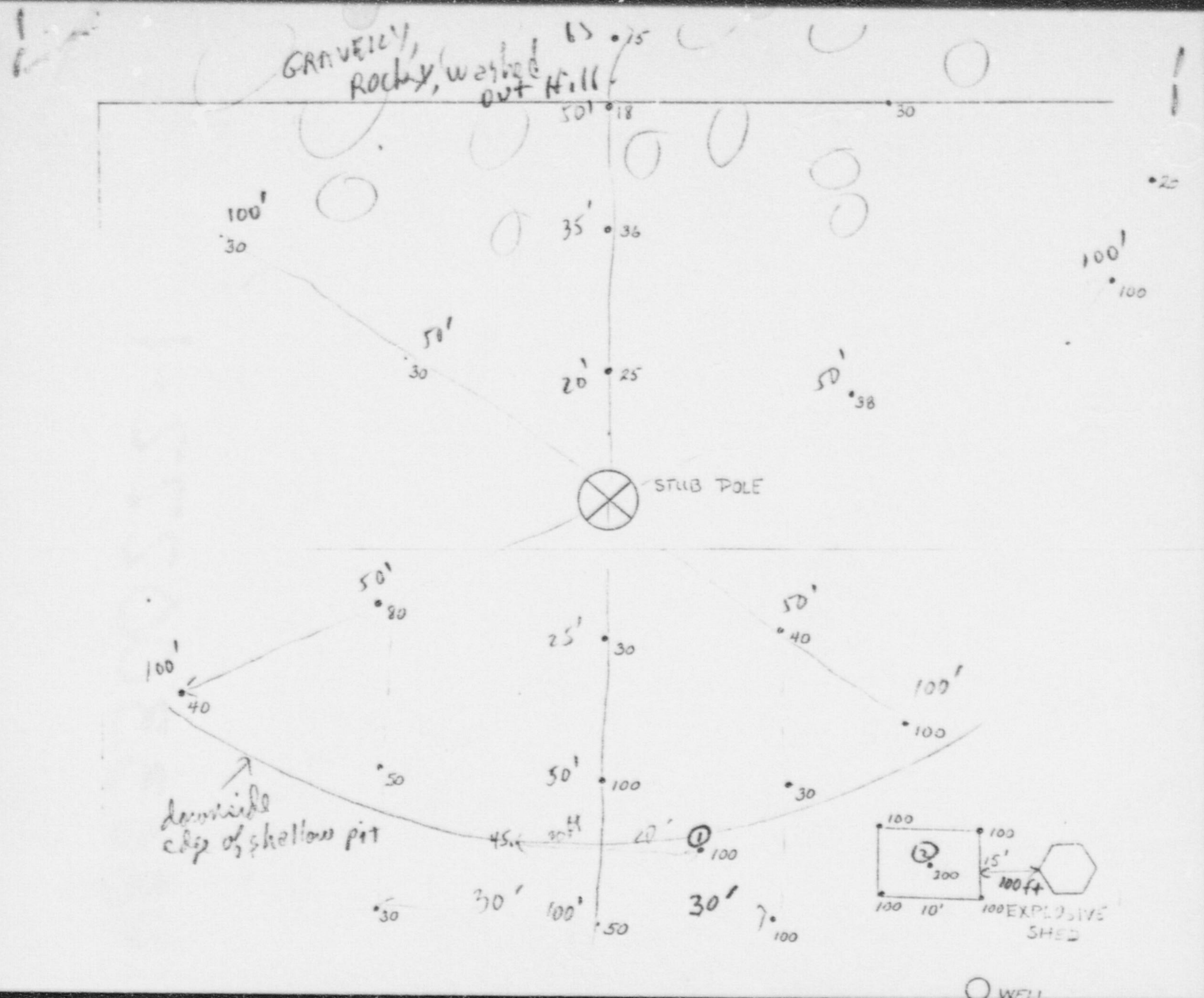
In my opinion these locations should be easily recognized and a second set of samples retrieved, if necessary. The site locations were identified as in the center or at the edge of easily located pits, depressions, or mounds of material of distinct color or of regions of high ur/hr readings (100 µr/hr or above). The map accompanying the memo locates prominent features and the field notes have the dimensions and distances as paced off at the site.

TGB/hcg

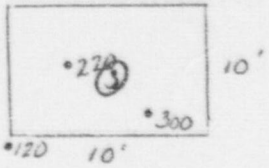
Theodore G. Brough

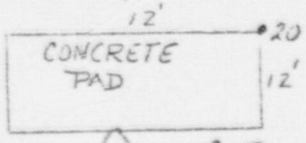
Theodore G. Brough
Environmental Scientist

Sam Simpson
Environmental Scientist



GRAVELLY, Rocky, washed out Hill
STUB POLE
downside edge of shallow pit
EXPLOSIVE SHED
100 ft
WELL





• PRM-7 MF. R READINGS (GAMMA IN AIR @ 1M ABOVE SURFACE)

NOTE: NOT TO SCALE

① + ⑤ = soil sample locations

HEALTH ENVIRONMENT department

TONEY ANAYA
GOVERNOR

STATE OF NEW MEXICO
ENVIRONMENTAL IMPROVEMENT DIVISION
P.O. Box 968, Santa Fe, New Mexico 87504-0968
(505) 984-0020
Denise Fort, Director

September 26, 1984

Mr. J. C. Frostenson
Los Alamos Technical Associates, Inc.
P. O. Box 410
1650 Trinity Drive
Los Alamos, New Mexico 87544

Re: Radiation Protection Bureau letter of December 6, 1983.

Dear Mr. Frostenson:

Subject: Reclamation of Grace Energy Heap Leach Site #3, Section 13, T1N., R6W, Socorro County, New Mexico

Pursuant to court order number SCV. 83-08, pertaining to site entry rights, issued by the Thirteenth Judicial District Court, County of Sandoval, a radiological survey of Site #3 was conducted by personnel from the Radiation Protection Bureau on April 18, 1984.

Uranium ore was extracted at the base of a small hill where a heap leach operation was conducted prior to site abandonment. The radiological survey revealed ~~highly~~ elevated levels of residual radioactivity at three hot spot areas. One sector approximately 50'x50' was located an estimated 25' south of a power stub pole. Direct gamma in air @1M ~~reading~~ ranged from 60-200 uR/h. One site approximately 100' (with demensions of 10'x 15') located south of an abandoned explosive storage shed revealed gamma in air readings of 200-400 uR/h. The last hot spot was located an estimated 100' northwest of a small (10'x16') concrete-floored leaching pad. This site size was approximately 10'x10' with gamma measurements ranging from 240-440 uR/h. Throughout the general area, gamma in air measurements, excluding the above mentioned hot spots, ranged from 18 uR/h to 100 uR/h which is well above background levels of 8-15 uR/h. Reference enclosure 1.

A wooden shed, placarded with an "explosives keep out" sign, was located on the property. The roof of the shed had caved-in precluding a determination of the actual presence of explosives. Additional debris was observed through-out the site.

One shallow pit was noted adjacent to an uncapped well. This pit apparently had been employed as a water reservoir in support of the heap leach operation. The radiological survey measurements taken at the

bottom of the pit supports this conclusion, since essentially background gamma in air levels were observed.

This paragraph specifies appropriate reclamation actions to be undertaken as relates to this site.

a. The entire land surface disturbed by this operation will be returned as nearly as possible to its previous condition with the one remaining pit on the site filled to preclude accumulation of surface water in unnatural ponds. Reference enclosure 2, previous compartments of Ms. Liela Rodgers.

A ~~careful~~ survey of the wooden storage shed, designated as a storage facility for explosives, must be made by qualified personnel to determine if explosives are still present on the site. Handling and disposal of explosives, if required, must be conducted in accordance with applicable State and Federal regulations. The shed when emptied should be removed from the site.

The entire site must be ~~scanned~~ surveyed with ~~suitable~~ appropriate radiological ~~survey~~ instruments to ~~isolate all~~ areas ~~containing~~ residual radioactivity and where approprite the land must be decontaminated by soil removal to return the surface to essentially background levels (8-15 uR/h). The site should be restored to the original grade and shall be reseeded with grasses or plant species native to that region. Every effort should be made to have the contaminated soil disposed of at an approved uranium mill tailings impoundment facility to avoid proliferation in accordance with procedures contained in Section 3-300N, New Mexico Radiation Protection Regulations (NMRPR). The application of alternative standards and disposition of additional hot spots which may exceed the standards after extensive effects to lower the levels will be determined on a case by case basis pursuant to 4-150B, NMRPR.

d. All debris, including the concrete pad, must be removed and material surveyed and decontaminated, if required, prior to release to unrestricted areas. Basic guidance for acceptable procedures are provided in Regulatory Guide 8.30, "Health Physics Surveys in Uranium Mills." Although this guide provides you with an upper limit for decontamination of materials, your procedure should be based on the ALARA Concept of Part 4 of the New Mexico Radiation Protection

Regulations, i.e. that every reasonable effort be made to maintain radiation exposures and releases of radioactive materials to levels "As Low As Is Reasonably Achievable".

It is our intent that above reclamation actions be completed in a timely manner. This criterion coupled with the guidance provided in our December 6, 1983 letter to LATA completes the final radiological decontamination and reclamation actions necessary for all three Grace Energy Sites. After LATA accomplishes the reclamation activities at Sites #1, #2, and #3, request you notify the Radiation Protection Bureau (RPB) and provide us with a final termination report. A land survey plot showing surface contours should be included along with photos of the reclaimed sites. Personnel from the Radiation Protection Bureau will then conduct final verification surveys of all three sites. After demonstration of successful completion of a restoration efforts at the three sites, action will be implemented to terminate the Michael P. Grace Radioactive Material License, NM-GRA-UL-00. Groundwater and well restoration criteria, will be provided by separate correspondence from the EID Ground Water Quality and Hazardous Waste Bureau. Should you have any further questions or require additional assistance, please do not hesitate to contact us.

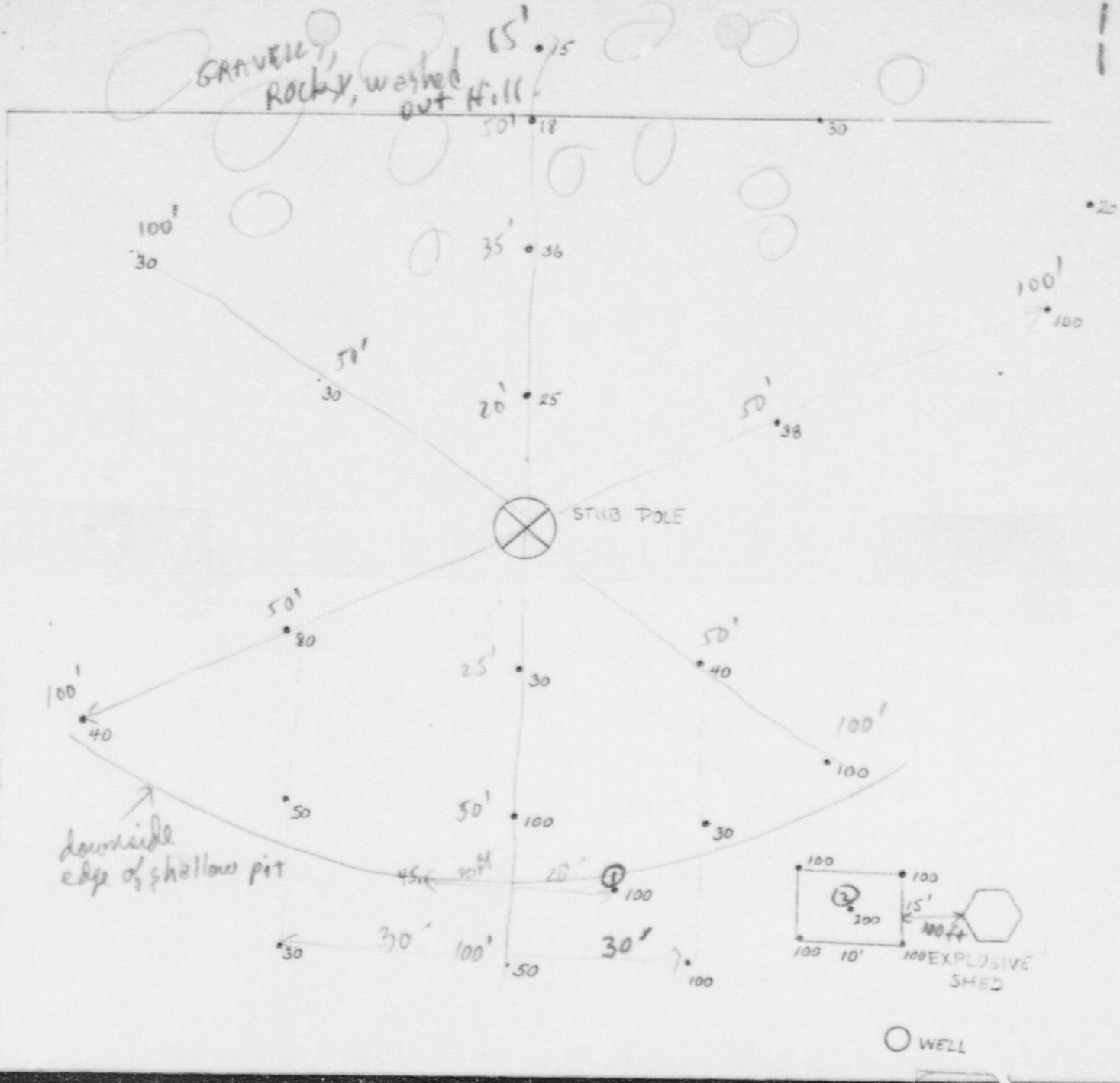
Sincerely,

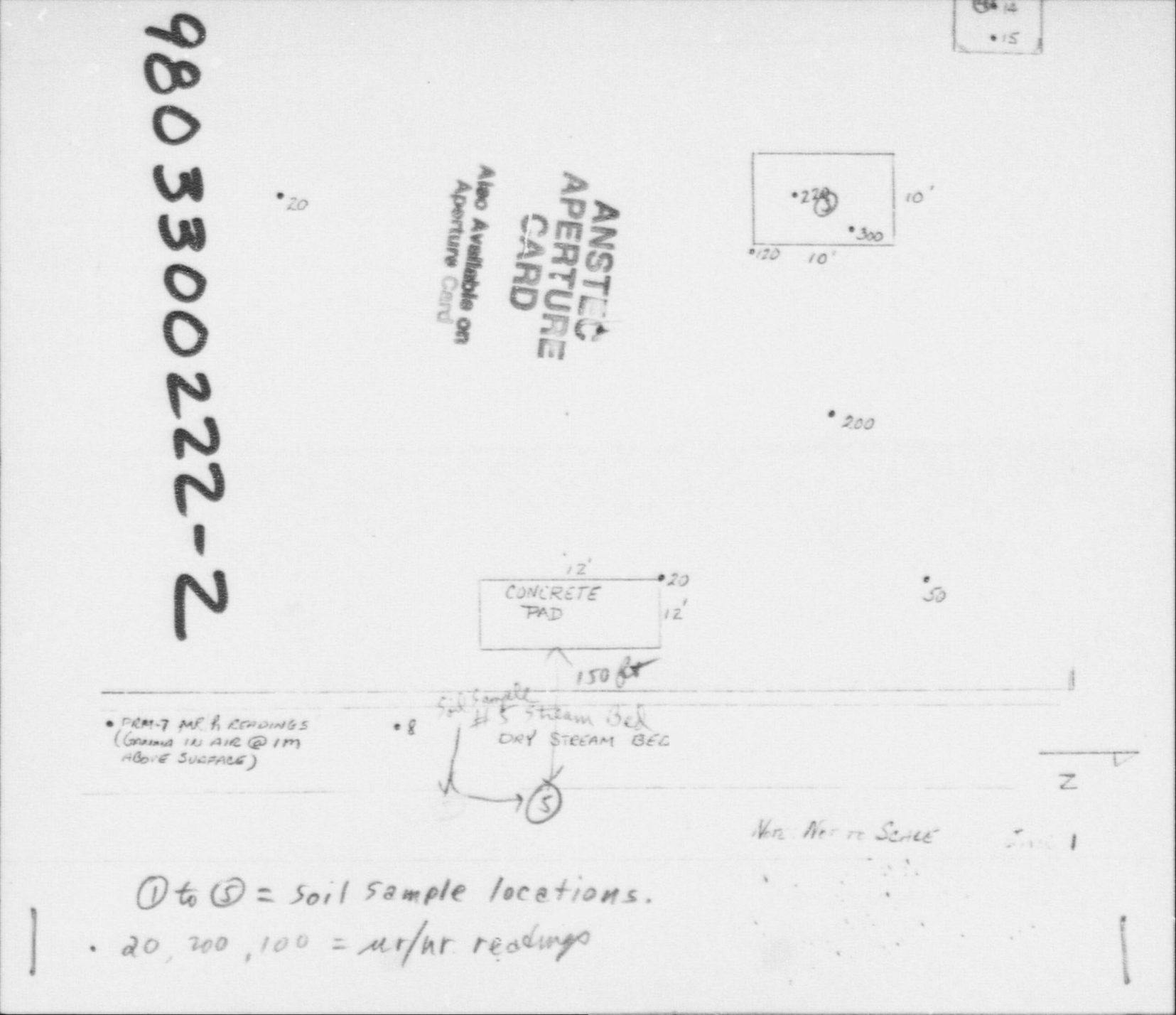
Samuel Simpson
Uranium Licensing Section

SS/mp

Enclosures

cc: Dave Boyer, Ground Water Quality and Hazardous Waste Bureau
Richard Mitzelfelt, EID District I, Manager
Ray Madson, EID - Milan Field Office
Ted Brough, EID - Milan Field Office


GRAVELLY, ROCKY, washed out Hill
15'
15
30'
18
30
100'
30
35'
36
20
100'
100
50'
30
20'
25
50'
38
STUB POLE
50'
80
25'
30
50'
40
100'
40
100'
100
50
50'
100
30
Downside edge of shallow pit
45ft
20ft
100
30'
100'
30'
50
100
100
100
100
15'
100ft
100
10'
100
EXPLOSIVE SHED
WELL



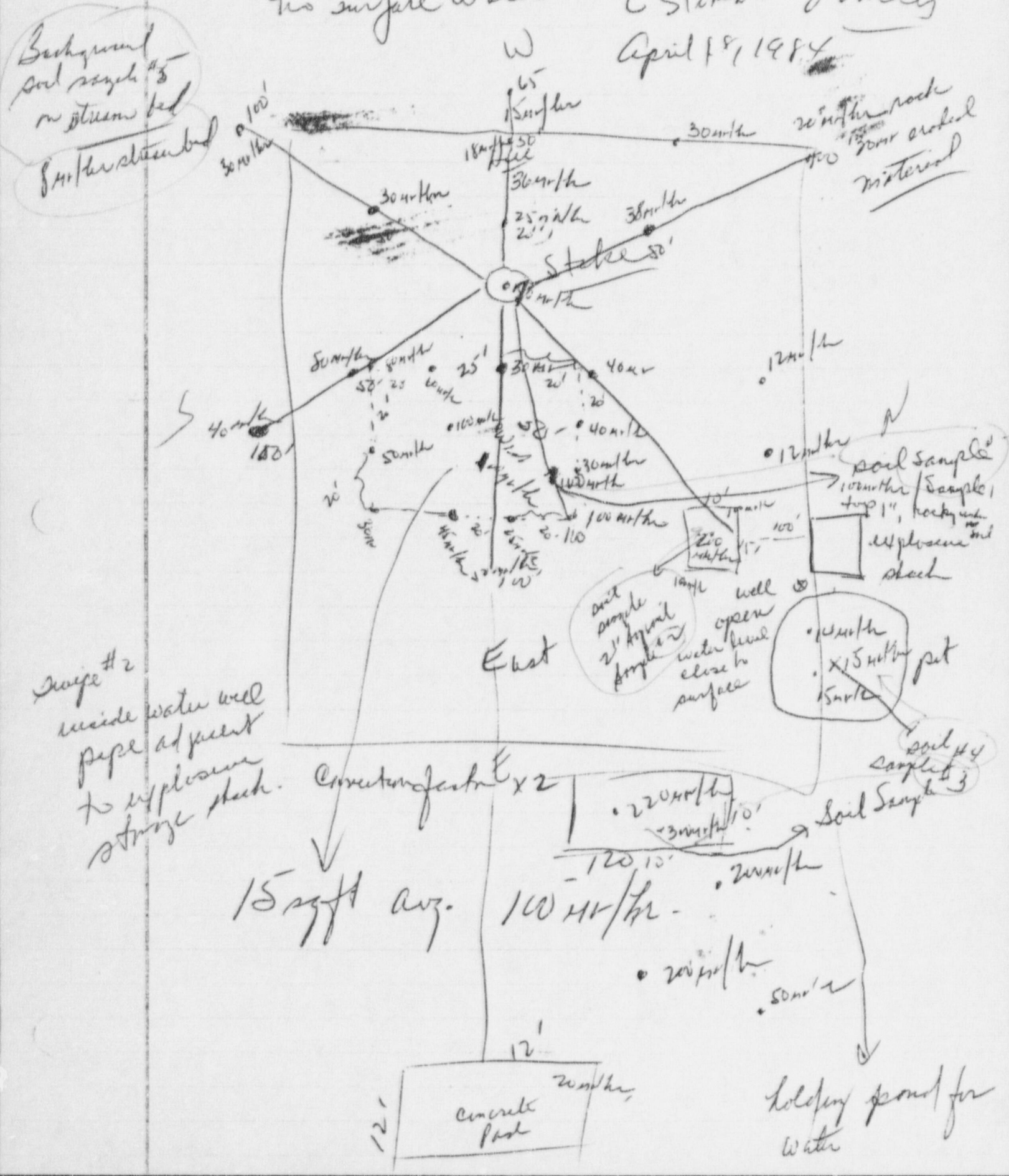
① to ⑤ = soil sample locations.

• 20, 200, 100 = mr/hr readings

Race Site #3

no surface water Estimate: 2 acres

W April 18, 1984



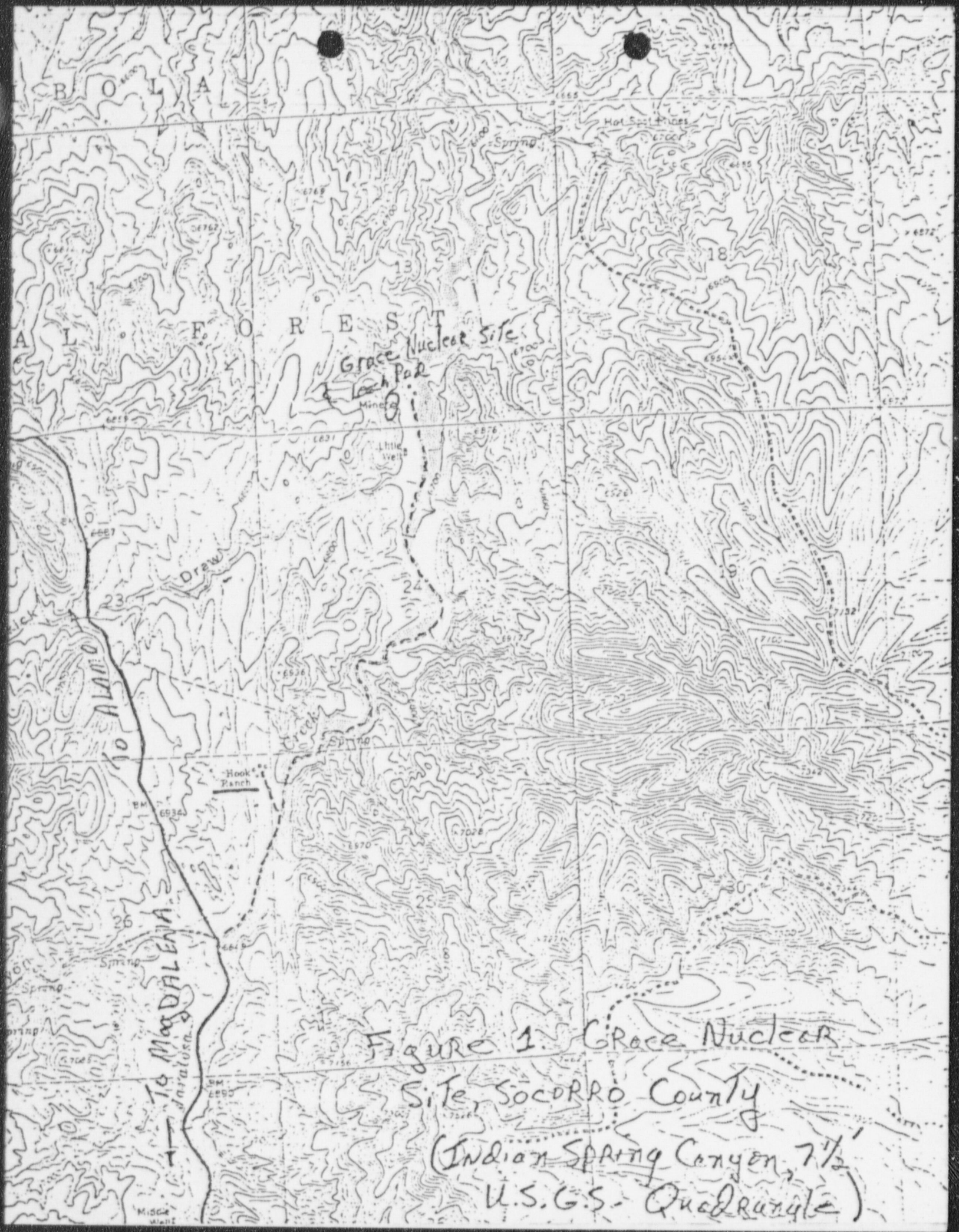


Figure 1. Grace Nuclear Site, Socorro County (Indian Spring Canyon, 7½' U.S.G.S. Quadrangle)

October 17, 1984

TO BE PUBLISHED ON OR BEFORE OCTOBER 25, 1984

PUBLIC NOTICE
NEW MEXICO ENVIRONMENTAL IMPROVEMENT DIVISION

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations, the following proposed discharge plans have been submitted for approval to the Director of the New Mexico Environmental Improvement Division, P.O. Box 968, Crown Bldg., Santa Fe, New Mexico 87504-0968; telephone (505) 984-0020.

(DP-100) BOKUM RESOURCES CORPORATION, P.O. Box 13958, Albuquerque, NM 87192, proposes to modify its discharge plan (DP-100) for its proposed discharge of uranium mill effluent to its Marquez Uranium Mill tailings disposal site located in T13N, R4W approximately one mile east of the village of Marquez in Sandoval County, NM. The approved discharge plan which is currently being evaluated for renewal is for approximately 2,200 tons per day of tailings soilds and 2,700 tons per day of tailings liquid to be transported by pipeline and deposited in unlined trenches excavated into weathered and unweathered shale. Free water which accumulates in the trenches is to be pumped to a series of excavated evaporation ponds lined with compacted weathered shale. The proposed modifications are (1) an extension of time for submission of the reclamation plan for the Canon de Marquez and (2) a change in the method of estimating the depth of diversion channel flow. The ground water most likely to be affected by the tailings disposal is that in the shallow alluvium of adjacent watercourses, and has a total dissolved solids concentration of approximately 2,000 mg/l. The company estimates that the depth to ground water from the base of the excavated trenches is greater than 300 feet and that the minimum distance from the base of the excavated evaportation ponds to the nearest ground water is greater than 100 feet. This project is currently inactive and it is not known when it might become active.

(DP-360) BRINE 529 STATION, Ernie L. Hegwer, P.O. Box 1637, Hobbs, NM 88240. A discharge plan has been submitted for this existing brine well and associated facilities which are located in the SW/4 of SE/4, Section 30, T17S, R32E in Lea County, New Mexico. Brine is produced by injecting fresh water, purchased from the Double Eagle Corporation, into salt beds 1100' to 1300' below the land surface and returning brine to the surface. Production averages 286 Bbls (Barrels) per day and ranges from 1,000 to 18,340 Bbls of brine per month. Chloride concentrations of the brine are 97,000 to 204,000 mg/l. Brine is stored in three steel tanks with a total capacity of 3,000 Bbls from which it is pumped to trucks for sale. Groundwater mostly likely to be affected by this operation is contained within the Santa Rosa sandstone at a depth of 450 to 600 feet. This water has TDS concentrations ranging from 426 to 3680 mg/l.

(DP-359) CHAPARRAL ENERGY, Gary J. Bunger, President, P.O. Box 1942, Clovis, NM 88101 proposes to discharge 70,000 gallons per day of thin stillage and 5,000 gallons per day of cooling and washwater from an ethanol production facility into an anaerobic methane digestor followed by clay lined holding ponds. Effluent from the holding ponds will be sold for cattle feed when a market exists. Otherwise, the effluent will either be used to irrigate alfalfa or discharged into an evaporation pond. The ethanol facility is located 6 miles east of Clovis in Section 18, T2N,

R37E, Curry County, New Mexico. The ground water below the site is at a depth of approximately 240 feet and has a total dissolved solids concentration of approximately 320 mg/1.

(DP-209) THE CITY OF DEMING, Lloyd Pratz, Mayor, 309 South Gold Avenue, Deming, NM 88030 proposes to modify its previously approved discharge plan (DP-209) for the discharge of 740,000 gallons per day of treated effluent from the Deming municipal wastewater treatment plant. The modification consists of using a portion of the effluent to irrigate 12 to 15 acres of soccer fields and parks which will be located approximately 1,000 feet west of the treatment plan in Section 6, T24S, R8W, Luna County, New Mexico. The bulk of the effluent will continue to be used to irrigate 529 acres of cropland one mile south of the treatment plan. Ground water below the site is at a depth of approximately 80 feet and has a total dissolved solids concentration of approximately 300 mg/1.

(DP-95) THE CITY OF GALLUP, Frank Colaianni, Mayor, P.O. Box 1270, Gallup, NM 87301 proposes to renew its approved discharge plan (DP-95) for the discharge of treated sewage effluent from an unlined 2 million gallon storage reservoir located at the Gallup Municipal Golf Course to a 60 acre, 9 hole golf course addition, Section 23, T15N, R18W, McKinley County, New Mexico. The design flow is .17 million gallons per day. The ground water most likely to be affected is at a depth of approximately 200 feet and has a total dissolved solids concentration of approximately 1000 mg/1.

(DP-60) CITY OF GRANTS, Dave Zerwas, Mayor, P.O. Box 879, Crants, NM 87020 has submitted a modification and renewal application for its approved discharge plan DP-60. The city proposes to continue land applying digested sewage sludge from their wastewater treatment plan. The application will be to 545 acres of land located in T10N, R9W, Sections 6, 7, 8, 17 and 18, Cibola County, New Mexico. The maximum daily discharge of sludge is to be 13,200 gpd with a maximum total nitrogen concentration of 2500 mg/1. Ground water most likely to be affected is at a depth of 10 to 50 feet with a total dissolved solids content of more than 2000 mg/1.

(DP-358) THE INN AT ANGEL FIRE, Zeb Syed, Owner, Highway 38, P.O. Box 580, Angel Fire, NM 87710 proposes to discharge an average of 3,000 gallons per day (gpd) with peak discharges of 8,000 gpd of domestic-type wastewater into a septic tank leach field from a restaurant and hotel rooms. The Inn at Angel Fire is located in T25N, R16E, Section 19 in Colfax County, New Mexico. The existing septic tank leach field is being extended to handle the effluent from the inn. The ground water most likely to be affected is at a depth of 10 ft. below land surface with a total dissolved solids concentration of approximately 200-400 mg/1.

Any interested person may obtain further information from the Ground Water Section, Ground Water/Hazardous Waste Bureau, EID, and may submit written comments to the Director of the EID at the address given above. Prior to ruling on any proposed discharge plan or its modification, the Director of EID will allow thirty (30) days after the date of publication of this Notice during which comments may be submitted to her and a public hearing may be requested by any interested person. Requests for public hearing shall set forth the reasons why the hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

HEALTH & ENVIRONMENT department

TONEY ANAYA
GOVERNOR

STATE OF NEW MEXICO
ENVIRONMENTAL IMPROVEMENT DIVISION
P.O. Box 968, Santa Fe, New Mexico 87504-0968
(505) 984-0020
DENISE FORT, DIRECTOR

Certified Mail-
Return Receipt Requested

October 5, 1984

Stuart E. Faith
Faith Engineering, Inc.
5701 Pedro Road NW
Albuquerque, New Mexico 87114

RE: Bokum Resources Corp. Discharge Plan DP-100 Renewal

Dear Mr. Faith:

As I informed you by telephone today, I have reviewed the conditions placed on the original 1980 approval of Bokum Resources Corporation's Discharge Plan DP-100. The questions I have remaining concern conditions 17 and 18. Please let me know what BRC's intentions are regarding the fulfilling of these two conditions.

If you have any questions please do not hesitate to contact me.

Sincerely,

Maxine S. Goad

Maxine S. Goad, Program Manager
Ground Water Section

MSG:ps

cc: Felix Miera, EID Radiation
Richard Mitzelfelt, EID District I
Ray Madson, EID Milan
Bokum Resources Corp.

HEALTH ENVIRONMENT department

TONEY ANAYA
GOVERNOR

STATE OF NEW MEXICO
ENVIRONMENTAL IMPROVEMENT DIVISION
P.O. Box 968, Santa Fe, New Mexico 87504-0968
(505) 984-0020

MEMORANDUM

TO: Denise Fort, Director, EID

THRU: Benito J. Garcia, Acting ~~Program Manager~~ Bureau Chief
Radiation Protection Bureau

FROM: Felix R. Miera, Program Manager
Uranium Licensing Section/RPB

DATE: September 14, 1984

SUBJECT: Meeting on Bokum Resources Corporation (BRC) License Renewal

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ATTENDEES: BRC-R. Bokum, S. Faith, McCorkle
EID-R. Young, S. Simpson, F. Miera

PURPOSE: BRC was seeking clarification on EID requests for additional information required for their Radioactive Materials License renewal on the following:

(1) Criteria demonstrating transferability of title to land and any interests therein (NMRPR 3-300.J).

(2) Proposed or projected engineering plans and costs for stabilizing waste-retention systems to be developed by the licensee (NMRPR 12-300).

BRC submitted materials on requirements for EID evaluation. Submitted materials will be evaluated by the Legal and Licensing staff. The decision must then be made if the submitted materials satisfy requirements to accept the BRC application for formal review and to proceed with the analysis in accordance with NMRPR 3-300.B.

In accordance with NMRPR 3-312.A., within 60 days following receipt of submission of the requested information (i.e., 60 days from September 13, 1984), the Director will either accept the application for review or notify the applicant in writing of further deficiencies which must be corrected for the application to be accepted for formal review.

SUGGESTED FOLLOW-UP:

(1) Acknowledge receipt of information in writing to BRC immediately.

(2) By October 10, 1984, the RPB Licensing Section, in conjunction with Legal staff will perform a detailed written analysis of the application, as well as conditions granted in the original license.

(3) By October 30, 1984, inform BRC in writing if the application is acceptable for formal review, or, inform BRC of deficiencies in the application.

(4) I recommend that activities in regard to the Discharge Plan be coordinated with the Ground Water and Hazardous Waste Bureau so that the RPB does not require BRC to provide information for which they may have been, or are to be, granted an exemption prior to going operational.

FRM/cvg

cc: Richard Holland, Deputy Director, EID
Laure van Heijenoort, Legal Counsel, EID
Tony Drypolcher, GW/HWB, EID
Ron Conrad, GW/HWB, EID
Sam Simpson, RPB, EID