US EPA ARCHIVE DOCUMENT

Comments on Antelope Valley Draft

EPA: Make clear that Poor condition rating is due to lack of documentation for one or both ponds, if this is the case as it appears to be.

State: None

Company: See attached letter dated February 17, 2011

US EPA ARCHIVE DOCUMENT

BASIN ELECTRIC POWER COOPERATIVE

1717 EAST INTERSTATE AVENUE
BISMARCK, NORTH DAKOTA 58503-0564
PHONE: 701-223-0441
FAX: 701-557-5336

February 17, 2011

Mr. Stephen Hoffman
US Environmental Protection Agency (5304P)
1200 Pennsylvania Avenue, NW
Washington, DC 20460

RE: Comment Request on Basin Electric Power Cooperative - Antelope Valley Draft Report

Dear Mr. Hoffman:

This letter is in response to the comment request received on January 24, 2011 for the draft of the Specific Site Assessment for Coal Combustion Waste Impoundments at Basin Electric (BEPC) Antelope Valley Station. This report presents the results of a specific site assessment of two coal combustion waste (CCW) impoundments at Antelope Valley, the Spray Drier Ash Water Make-Up Pond (SDA Pond) and the SDA Decantation Pond. The assessment was performed on October 19, 2010 by GEI Consultants, Inc.

Basin Electric's comments on the report are as follows:

Overall
The terms pond, impoundment, and dam should be consistent throughout the report. These facilities are ponds/impoundments with embankments, and are permitted under state law. BEPC does not believe they can be categorized as dams.

Page 3, Section 2.2, Paragraph 2
The SDA Pond was first commissioned during construction of the plant. Commissioning activities began in late 1982 through early 1983, with the plant being fully commissioned on April 14, 1983. The pond was originally lined with a Hypalon liner (referred to on drawing Y1-10 transmitted to GEI Consultants on October 27, 2010). It was reconstructed in 1995 replacing the Hypalon with a double lined HDPE system.

Page 4, Section 2.2, Paragraph 2
The SDA Decantation Pond was first constructed and utilized in 1986. It was first permitted in 1988. Since 1988, the clay liner has been reconstructed each time it has been put into service. BEPC has documentation supporting these dates, and copies are available upon request.

Page 5, Section 2.2, Paragraph 1
Geotechnical and Quality Assurance/Quality Control information for reconstruction of both ponds is available, as well as for the HDPE liner. The geotechnical reports from the original plant design are also available. The reports are from 1976 and 1977, and include borings at the SDA pond location. Pertinent parts of these reports (Attachments A and B) have been included with this letter, and full reports are available upon request.

Page 5, Section 2.4, Paragraph 2
"Once dry, the ash in the SDA Decantation Pond is then hauled to an offsite landfill." This should be "Once *dewatered*..."

Page 6, Section 2.7, Paragraph 1
Coal is not delivered to AVS by train, it is a mine mouth facility. Coal is delivered directly from the mine to the plant.

Page 6, Section 2.7, Paragraph 2
The statement "The waste is sluiced to the SDA Pond" is misleading. No coal combustion waste is directly discharged to the SDA Pond. The SDA Pond functions as a reservoir for scrubber makeup water. It is recommended that the sentence be removed or replaced with "Only small amounts of coal combustion waste enter the pond through the plant sumps, which are the main source of water for the SDA Pond".

Page 6, Section 2.7, Paragraph 3
"...the ash is excavated from the pond and dry hauled to an offsite landfill." This should read "...the ash is excavated from the pond and hauled to *the permitted AVS* Landfill." All references to the landfill should also reflect this.

Page 6, Section 2.7, Paragraph 4
Discussions regarding the operation, inspection and reporting of the SDA and Decantation ponds can be found in the SP-160 solid waste permit document, revised 12/06/05. Narratives can be found that discuss the design, maintenance, QA/QC requirements, seepage calculations, inspection schedules and reporting requirements can be found on pages 29-38 of the permit renewal.
The daily inspections of the CCW facilities are not "site security inspections", they are "operating inspections".

Page 10, Section 5.2.1, Paragraph 1
The contributing area listed for the SDA Pond, estimated to be 21.8 acres, is believed by BEPC staff to be incorrect. The contributing area for the pond is believed to be less than 5 acres.

Page 11, Section 5.6
BEPC believes that there is adequate capacity in the SDA Pond to store and pass the regulatory design floods without overtopping the embankments. This is based on the small amount of site drainage contributing to the ponds.

Page 14, Section 7.3
The SDA Decantation Pond is seldom used. It is used only every 5-7 years, so BEPC feels that instrumentation on this pond is not necessary.

Page 18, Section 10.3
The ash settling ponds are *inspected* once *per shift* by AVS operations personnel. The plant is staffed 24 hours a day, 7 days a week, 365 days per year.

Page 23, Section 12.6 – Assessment Rating
The Antelope Valley Station objects to the assessment rating of "Poor" for the SDA and Decantation Ponds. The conclusion reached when evaluating the Hazard Potential

Classification was that the SDA Pond would be classified as "Low" hazard structure as loss of life is not anticipated and environmental and economic damage is expected to be low. The same conclusion was also reached for the Decantation Pond. In fact, the only deficiencies noted in the draft were that of minor maintenance issues or paperwork requirements such as record keeping or a maintenance manual. The conclusions on page 19 also indicated that "the CCW impoundments at the AVS were generally found to be in satisfactory condition. No visual signs of instability, movement or seepage were observed". The final conclusion is that "Operating personnel are knowledgeable and are well trained in the operation of the project. The current operations of the facilities are satisfactory".

The definition for an assessment ranking of "Poor" in this review is as follows: A management unit safety deficiency is recognized for any required loading condition (static, hydrologic, seismic) in accordance with the applicable dam safety regulatory criteria. Remedial action is necessary. "Poor" also applies when further critical studies or investigations are needed to identify any potential dam safety deficiencies. Given this definition and the fact that the assessment did not identify any safety deficiency or any potential dam safety deficiencies, we respectively request that a more appropriate ranking such as "Satisfactory" be applied to these facilities at the Antelope Valley Station. That would be more in line with the minor maintenance items that were identified.

If you have any questions or comments, please let me know. I can be reached via email at mfluharty@bepc.com or by phone at 701-557-5688.

Sincerely,

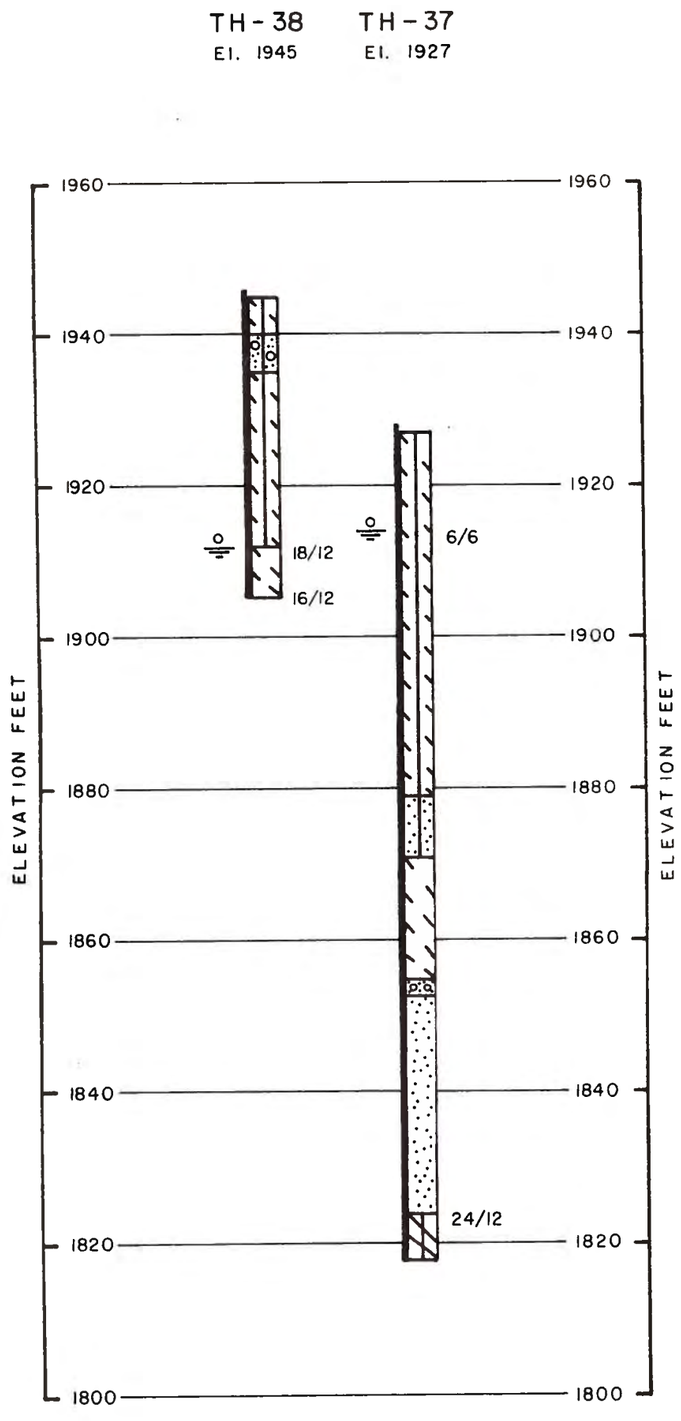
Mike Fluharty
V.P. Plant Operations

cc: Jim Berg
John Jacobs
Lyle Witham
Mike Paul

Attachment A

Excerpt from "Geotechnical Service for Beulah Power Plant Project"
Prepared for Stearns-Roger, Inc. by Woodward-Clyde Consultants
Dated November 22, 1976

1. Drawing, "Summary Logs of Piezometer Holes"



LEGEND

CLAY, SOFT TO MEDIUM STIFF, SANDY, OCCASIONALLY GRAVELLY, CALCAREOUS, MOIST, BROWN, GRAY (CH, CL, CL-CH).

CLAY, STIFF, SANDY, OCCASIONALLY GRAVELLY, INTERBEDDED WITH SILT AND SAND LENSES, CALCAREOUS, POROUS NEAR GROUND SURFACE, MOIST, BROWN, GRAY (CH, CL, CL-CH).

SILT, MEDIUM DENSE, SANDY TO VERY SANDY, INTERBEDDED WITH CLAY AND SAND LENSES, MOIST TO WET, GRAY (ML).

SAND, MEDIUM DENSE, SLIGHTLY SILTY TO SILTY, OCCASIONALLY GRAVELLY, INTERBEDDED WITH SILT AND CLAY LENSES, OCCASIONAL PIECES OF COAL, WET, BROWN, GRAY (SP, SW, SP-SM, SW-SM, SM).

SAND, DENSE, OCCASIONAL VERY DENSE LAYERS AND AND LENSES, SLIGHTLY SILTY TO SILTY, OCCASIONALLY GRAVELLY, INTERBEDDED WITH SILT AND CLAY LENSES, OCCASIONAL PIECES OF COAL, WET GRAY, BROWN (SP, SW, SP-SM, SW-SM, SM).

GRAVELLY SAND AND SANDY GRAVEL MEDIUM DENSE, OCCASIONAL VERY DENSE LAYERS AND LENSES, SLIGHTLY SILTY TO SILTY, INTERBEDDED CLAY AND SILT LENSES, OCCASIONAL PIECES OF COAL, MOIST TO WET, GRAY, BROWN (SP, GP, SP-GP, SP-SM, GP-GM).

GRAVELLY SAND AND SANDY GRAVEL, DENSE, OCCASIONAL VERY DENSE LAYERS AND LENSES, SLIGHTLY SILTY TO SILTY, INTERBEDDED CLAY AND SILT LENSES, OCCASIONAL PIECES OF COAL, MOIST TO WET, GRAY, BROWN (SP, GP, SP-GP, SP-SM, GP-GM).

18/12 INDICATES THAT 18 BLOWS OF A 140-POUND HAMMER FALLING 30 INCHES WERE REQUIRED TO DRIVE A 2-INCH DIAMETER SAMPLER 12 INCHES.

INDICATES FREE WATER LEVEL AND NUMBER OF DAYS AFTER DRILLING THAT MEASUREMENT WAS TAKEN.

INDICATES $1\frac{1}{2}$-INCH DIAMETER PLASTIC PIPE WITH WELL SCREEN INSTALLED IN TEST HOLE.

NOTES:

1. TEST HOLES 2 THROUGH 7,9,10,12,13,14, 16 THROUGH 23,25,27,28, 30 THROUGH 34,35,36, AND 38 WERE DRILLED BETWEEN SEPTEMBER 22, AND NOVEMBER 6, 1976 WITH 4-INCH DIAMETER HELICAL AUGERS POWERED BY CENTRAL MINE EQUIPMENT (CME-45 AND CME-55) DRILLING RIGS. TEST HOLES 1,8,11,15,24,26,29,34 AND 37 WERE DRILLED BETWEEN SEPTEMBER 22 AND NOVEMBER 5, 1976 WITH 4-INCH DIAMETER HELICAL AUGERS, 3 7/16-INCH DIAMETER CASING AND A 3 7/16-INCH DIAMETER TRICONE BIT POWERED BY A CENTRAL MINE EQUIPMENT (CME-55) DRILLING RIG USING WATER, MUD AND REVERT AS DRILLING FLUIDS.
2. TEST HOLE ELEVATIONS AND LOCATIONS WERE PROVIDED BY STEARNS-ROGER, INC.
3. DRILL LOGS IN THIS REPORT ARE SUBJECT TO LIMITATIONS, EXPLANATIONS, AND CONCLUSIONS OF THIS REPORT.
4. THESE DRILL LOGS SUMMARIZE FINDINGS RELIED ON IN FORMULATING THE DESIGN CRITERIA PRESENTED IN THIS REPORT. THE EXPLORATIONS WERE NOT MADE TO DEFINE CONDITIONS FOR CONSTRUCTION NOR IS THE INFORMATION PRESENTED HEREIN FOR THAT PURPOSE.

WOODWARD-CLYDE CONSULTANTS
CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS
ROCKY MOUNTAIN REGION – DENVER, COLORADO

SUMMARY LOGS OF PIEZOMETER HOLES

PREPARED BY : W.L.Z	DATE : 11/22/76
JOB NO. 18766 – 17733 : 18774 – 17733	

FIG. 9

Attachment B

Excerpts from "Additional Geotechnical Services – Antelope Valley Station, Units 1 and 2, Mercer County, North Dakota"

Prepared for Stearns-Roger, Inc. by Woodward-Clyde Consultants

Dated October 7, 1977

1. Report Pages 52-54, relating to the proposed construction of the evaporation pond and the ash scrubber makeup water pond (SDA Pond).
2. Drawing, "Location of Test Holes"
3. Drawing, "Summary Logs of Test Holes, Evaporation, HQW Holding and Ash, Scrubber Make-Up Water Ponds"

EVAPORATION POND AND ASH SCRUBBER MAKEUP WATER POND

Proposed Construction

We understand two synthetically lined ponds, an evaporation pond and a smaller ash scrubber makeup water pond are planned as part of the processing system for untreated water at the Antelope Valley Station site. Both ponds will be lined with Hypalon or some other synthetic type lining. The evaporation pond will be excavated into the natural soils with some site grading fill placed in low areas. The evaporation pond will not have exterior slopes as it will be below existing and planned grades. The ash scrubber makeup water pond bottom level will be near existing grades. Depending upon finally chosen site grades, the ash scrubber makeup water pond could have compacted earth embankments or be below site grades. Interior slopes of 3:1 (horizontal to vertical) are planned for both ponds.

Locations of the ponds are shown on Figure 1 and pond bottom and crest levels are shown on Figure 9.

If final designs vary from our understanding, we should be advised to permit re-evaluation of our recommendations and conclusions.

Underground Conditions

Subsoils. Our test holes in the evaporation pond showed from 4 to 8 feet of medium dense sands, 11 feet of medium dense silts and 13 feet of stiff sandy clays over dense sandy

gravels and medium stiff to stiff clays to the maximum depth drilled of 30 feet. A 5-foot thick layer of dense clayey to very clayey gravels was found beneath the upper clays in one test hole and a 3-foot thick layer of stiff sandy clays was found beneath the medium dense sands and the dense gravels in another test hole.

Our two test holes drilled for this study in the ash scrubber makeup water pond area showed stiff sandy clays to the depths drilled of 15 and 20 feet. Our previously drilled test hole (for our report dated November 22, 1976) in the ash scrubber makeup water pond area showed 48 feet of medium stiff sandy clays over interbedded layers of lenses of clays, sands and silts.

The clays are sandy, calcareous and contain occasional sand and silt lenses. The sands and sands and gravels are slightly silty to silty and are interbedded with silt and clay lenses. The silts contain sand and clay lenses.

Ground Water. Free water was found in only one of the test holes in the ash makeup water pond area at depths of from 13 to 17 feet during and up to 300 days after drilling. No free water was found in test holes in the evaporation pond area. It appears ground water will have little affect on planned pond construction.

Recommended Section

We believe planned 3:1 (horizontal to vertical) pond slopes will be suitable for the intended use. Site grading

fill placed within 15 feet (approximately one scraper width) of pond slopes should be on-site or similar soils with a maximum size of 6 inches placed in 8-inch maximum loose lifts at the moisture content optimum for compaction and compacted to 95 percent of maximum density (ASTM D 698). Similarly placed and compacted fill should be used to construct embankments for the ash scrubber makeup water pond, should site grading fill levels be below the crest level of the pond. We recommend exterior embankment slopes be 2:1 or flatter and a 10-foot minimum crest width be considered.

To prevent damage of the synthetic linings we suggest the excavated areas and interiors of compacted berms be graded prior to placement of the linings. Rocks, debris, vegetation and other matter which might puncture the lining should be removed. Rolling excavated areas prior to lining placement would also be helpful to compact soft and loose zones.

COAL YARD

Proposed Construction

The approximately 1250-foot square coal yard will be excavated into an east to west sloping hill to the east of the main station facilities. Some site grading fill will be placed along its west edge to raise that area to planned grades. The coal yard will store lignite from surrounding open pit lignite mines and will feed the coal conveyor system to the main station units from a live storage building located

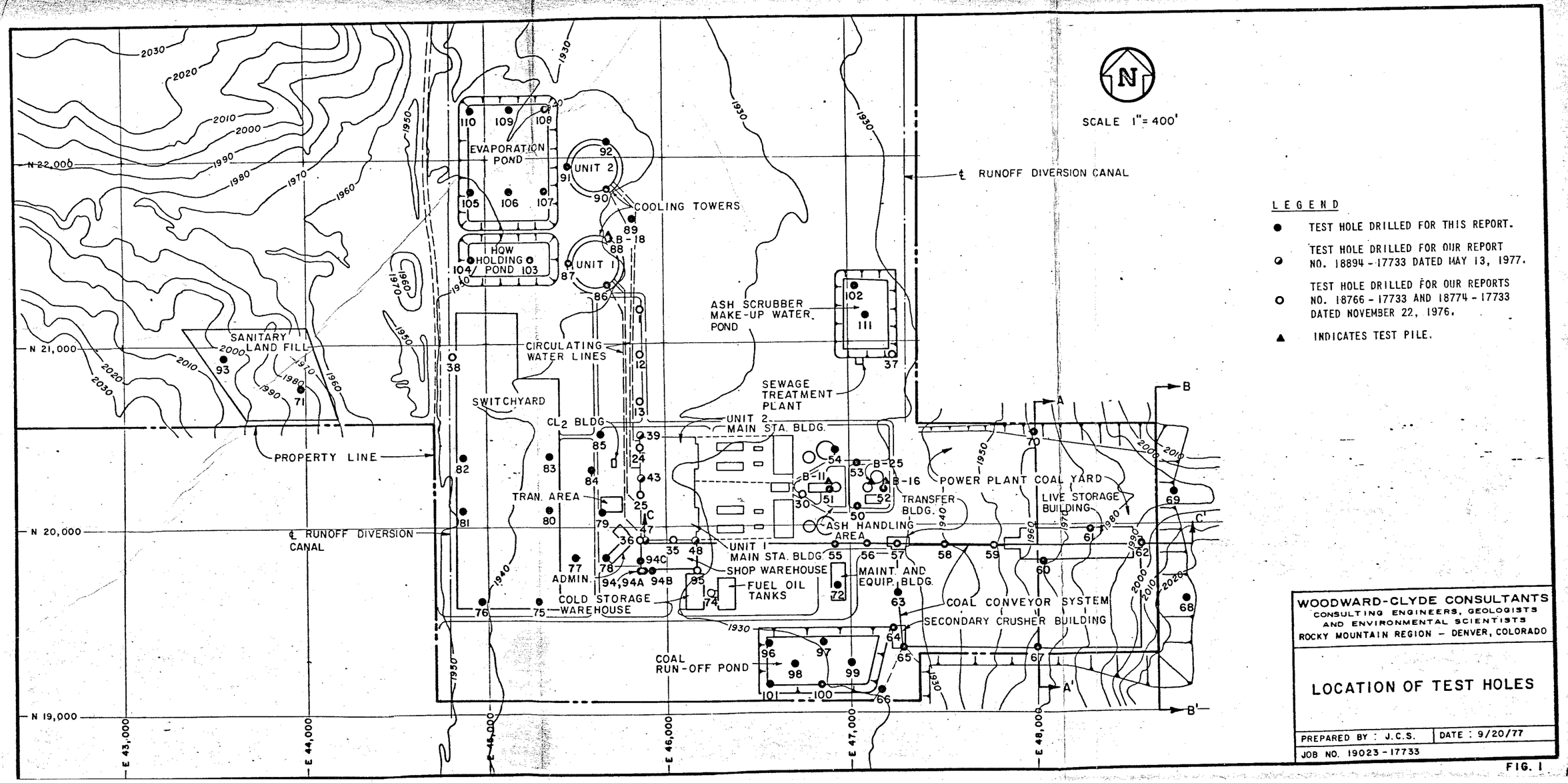
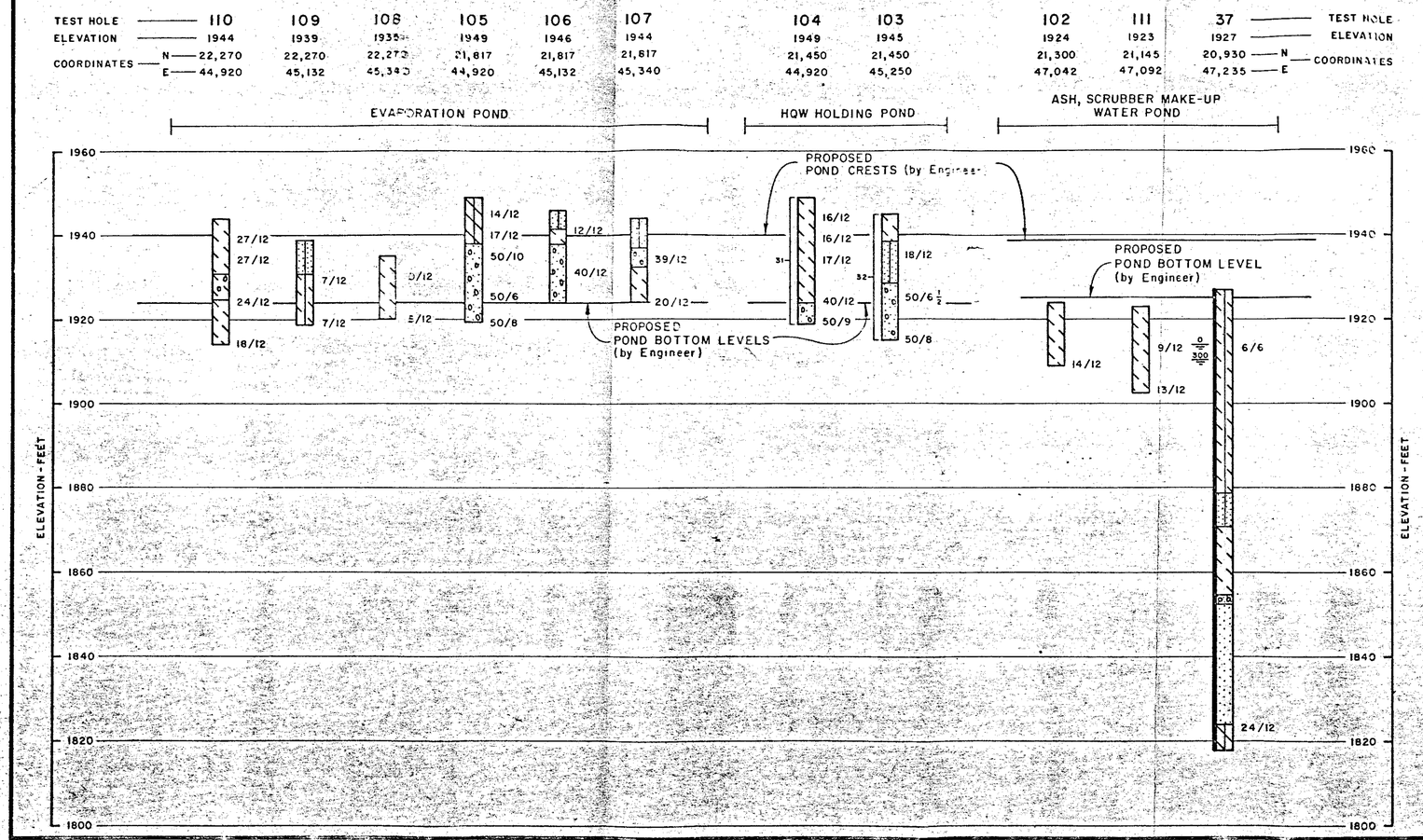

SCALE 1" = 400'
N
LEGEND
TEST HOLE DRILLED FOR THIS REPORT.
TEST HOLE DRILLED FOR OUR REPORT NO. 18894-17733 DATED MAY 13, 1977.
TEST HOLE DRILLED FOR OUR REPORTS NO. 18766-17733 AND 18774-17733 DATED NOVEMBER 22, 1976.
INDICATES TEST PILE.
EVAPORATION POND
UNIT 2
COOLING TOWERS
HOW HOLDING POND
UNIT 1
℄ RUNOFF DIVERSION CANAL
ASH SCRUBBER MAKE-UP WATER POND
SANITARY LAND FILL
CIRCULATING WATER LINES
SEWAGE TREATMENT PLANT
SWITCHYARD
CL2 BLDG
UNIT 2 MAIN STA. BLDG.
PROPERTY LINE
TRAN. AREA
POWER PLANT COAL YARD
TRANSFER BLDG.
LIVE STORAGE BUILDING
ASH HANDLING AREA
UNIT 1 MAIN STA. BLDG.
SHOP WAREHOUSE
MAINT. AND EQUIP. BLDG.
ADMIN.
FUEL OIL TANKS
COLD STORAGE WAREHOUSE
COAL CONVEYOR SYSTEM
SECONDARY CRUSHER BUILDING
COAL RUN-OFF POND
N 22,000
N 21,000
N 20,000
N 19,000
E 43,000
E 44,000
E 45,000
E 46,000
E 47,000
E 48,000
WOODWARD-CLYDE CONSULTANTS
CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS
ROCKY MOUNTAIN REGION – DENVER, COLORADO
LOCATION OF TEST HOLES
PREPARED BY : J.C.S.
DATE : 9/20/77
JOB NO. 19023-17733

FIG. 1



LEGEND

CLAY, SOFT TO MEDIUM STIFF, SANDY, OCCASIONALLY GRAVELLY, CALCAREOUS, DRY TO MOIST, BROWN, GRAY (CH, CL, CL-CH).

CLAY, STIFF, SANDY, OCCASIONALLY GRAVELLY, INTERBEDDED WITH SILT AND SAND LENSES, CALCAREOUS, FOROUS NEAR GROUND SURFACE, MOIST, BROWN, GRAY (CH, CL, CL - CH).

SILT, MEDIUM DENSE, SANDY TO VERY SANDY, INTERBEDDED WITH CLAY AND SAND LENSES, MOIST TO WET, GRAY (ML).

SAND, MEDIUM DENSE, SLIGHTLY SILTY TO SILTY, OCCASIONALLY GRAVELLY, INTERBEDDED WITH SILT AND CLAY LENSES, OCCASIONAL PIECES OF COAL, DRY TO WET, BROWN, GRAY (SP, SW, SP-SM, SW-SM, SM).

SAND, DENSE, OCCASIONAL VERY DENSE LAYERS AND LENSES, SLIGHTLY SILTY TO SILTY, OCCASIONALLY GRAVELLY, INTERBEDDED WITH SILT AND CLAY LENSES, OCCASIONAL PIECES OF COAL, WET, GRAY, BROWN (SP, SW, SP - SM, SW - SM, SM).

GRAVELLY SAND AND SANDY GRAVEL, DENSE, OCCASIONAL VERY DENSE LAYERS AND LENSES, SLIGHTLY SILTY TO SILTY, INTERBEDDED CLAY AND SILT LENSES, OCCASIONAL PIECES OF COAL, MOIST TO WET, GRAY, BROWN. (SP, GP, SP - GP, SP - SM, GP - GM).

GRAVEL, DENSE, CLAYEY TO VERY CLAYEY, SANDY, MOIST, BROWN, GRAY (GC, GC - CL).

27/12 INDICATES THAT 27 BLOWS OF A 140-POUND HAMMER FALLING 30 INCHES WERE REQUIRED TO DRIVE A 2 - INCH DIAMETER SAMPLER 12 INCHES.

INDICATES FREE WATER LEVEL AND NUMBER OF DAYS AFTER DRILLING THAT MEASUREMENT WAS TAKEN.

INDICATES A 1½ -INCH DIAMETER PLASTIC PIPE WITH WELL SCREEN INSTALLED IN TEST HOLE.

31 INDICATES AN AVERAGE CALCULATED PERMEABILITY OF 31 FEET/YEAR FOR LENGTH OF HOLE INDICATED. SEE APPENDIX FOR DETAILS.

FOR NOTES SEE FIGURE 14.

WOODWARD-CLYDE CONSULTANTS
CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS
ROCKY MOUNTAIN REGION — DENVER, COLORADO

SUMMARY LOGS OF TEST HOLES
EVAPORATION, HQW HOLDING AND ASH, SCRUBBER MAKE-UP WATER PONDS

PREPARED BY : J.C.S. | DATE : 9/20/77
JOB NO. 19023-17733

FIG. 9