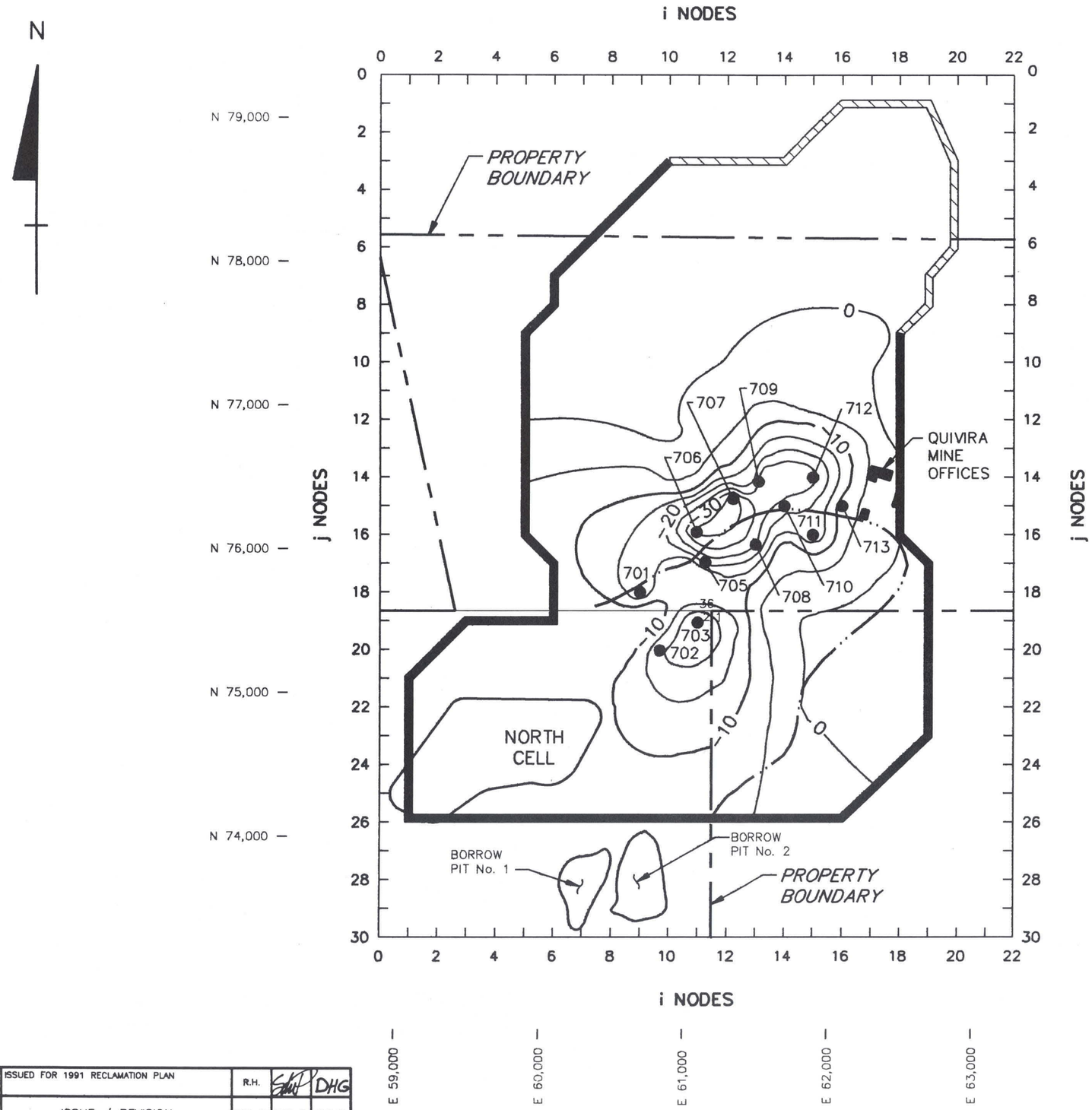
DRAWING NUMBER 86-060-B526



NOTES:

1. MEASURED CHANGES IN SATURATED THICKNESS ARE PRESENTED WITHIN THE FRAMEWORK OF THE COMPUTER SIMULATION USED TO REFINE THE DESIGN OF THE SYSTEM. FOR A DESCRIPTION OF THE COMPUTER SIMULATION REFER TO THE RD (CANONIE 1989d). THE CONTOURS PRESENTED ARE BASED ON FIELD DATA AND ARE NOT PREDICTED BY THE MODEL.
2. CONTOUR INTERVAL IS 5 FEET.
3. AFTER DRAWING No. 86-060-B312 (FIGURE 2-4), IN THE 1989 ANNUAL REVIEW (CANONIE 1989d).

LEGEND:

- MODEL BOUNDARY: CONSTANT HEAD
- MODEL BOUNDARY: NO FLOW
- 707 — STAGE I EXTRACTION WELL LOCATION AND NUMBER
- -30 — DECREASE IN SATURATED THICKNESS OF ZONE 3 BASED ON 3rd AND 4th QUARTER 1989 DATA, FEET
- BOUNDARY OF REMEDIAL ACTION TARGET AREA
- 36 / 2 1 — SECTION CORNER AND NUMBERS

SCALE

800 0 800 FEET

CHANGE IN ZONE 3
SATURATED THICKNESS
BETWEEN 3rd AND 4th QUARTERS, 1989

PREPARED FOR

UNC MINING AND MILLING
GALLUP, NEW MEXICO

CanonieEnvironmental

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1	8/24/91	ISSUED FOR 1991 RECLAMATION PLAN	R.H.		DHG

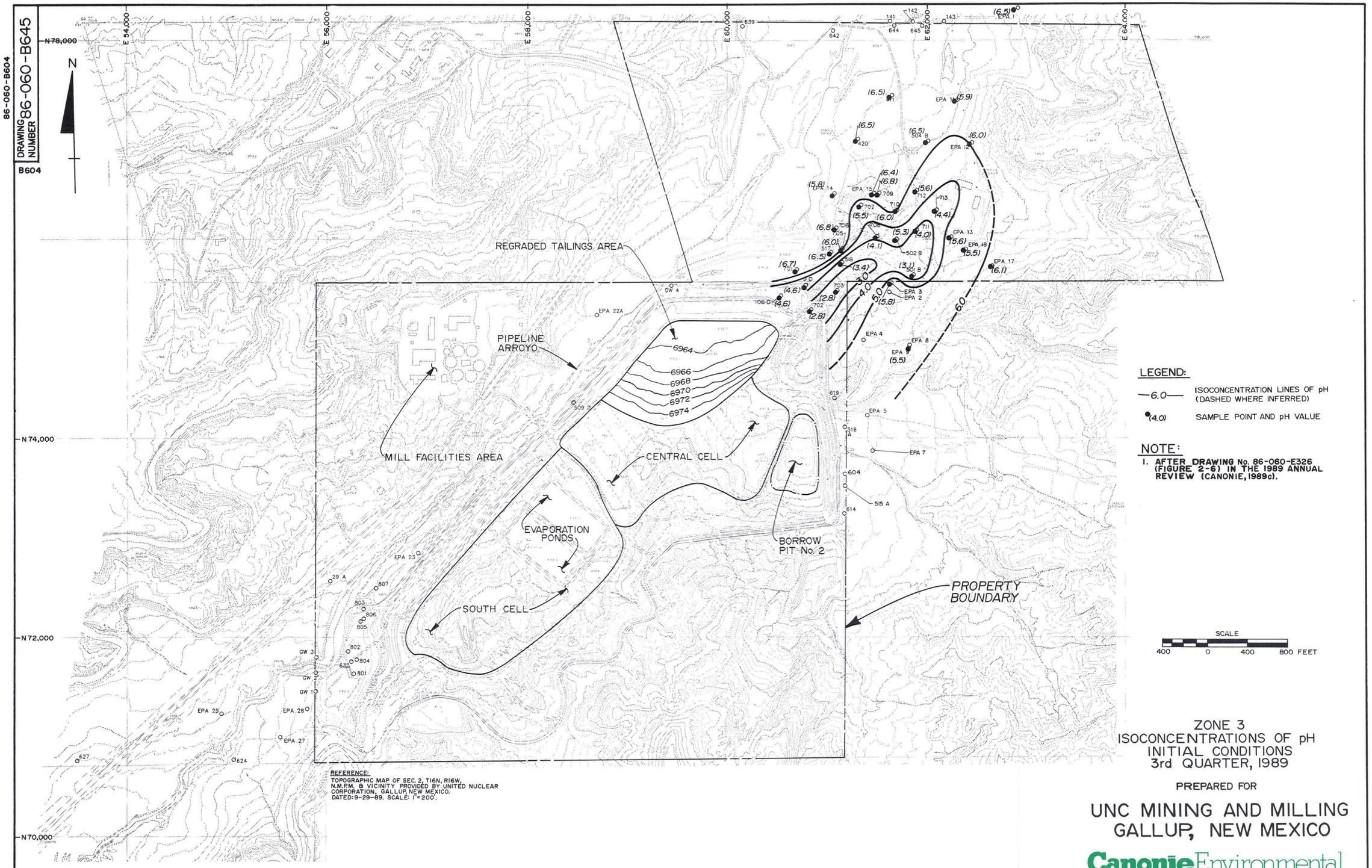
DATE: 8-12-91	FIGURE 6-10	DRAWING NUMBER
SCALE: AS SHOWN		86-060-B526

1

86-060-B604

DRAWING NUMBER 86-060-B645

B604



REFERENCE:
TOPOGRAPHIC MAP OF SEC. 2, T16N, R16W, N.M.P.M. & VICINITY PROVIDED BY UNITED NUCLEAR CORPORATION, GALLUP, NEW MEXICO. DATED: 9-29-89. SCALE: 1" = 200'.

ZONE 3
ISOCONCENTRATIONS OF pH
INITIAL CONDITIONS
3rd QUARTER, 1989

PREPARED FOR

UNC MINING AND MILLING
GALLUP, NEW MEXICO

Canonie Environmental

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1	8/24/91	ISSUED FOR 1991 RECLAMATION PLAN	P.M.W.		DHG

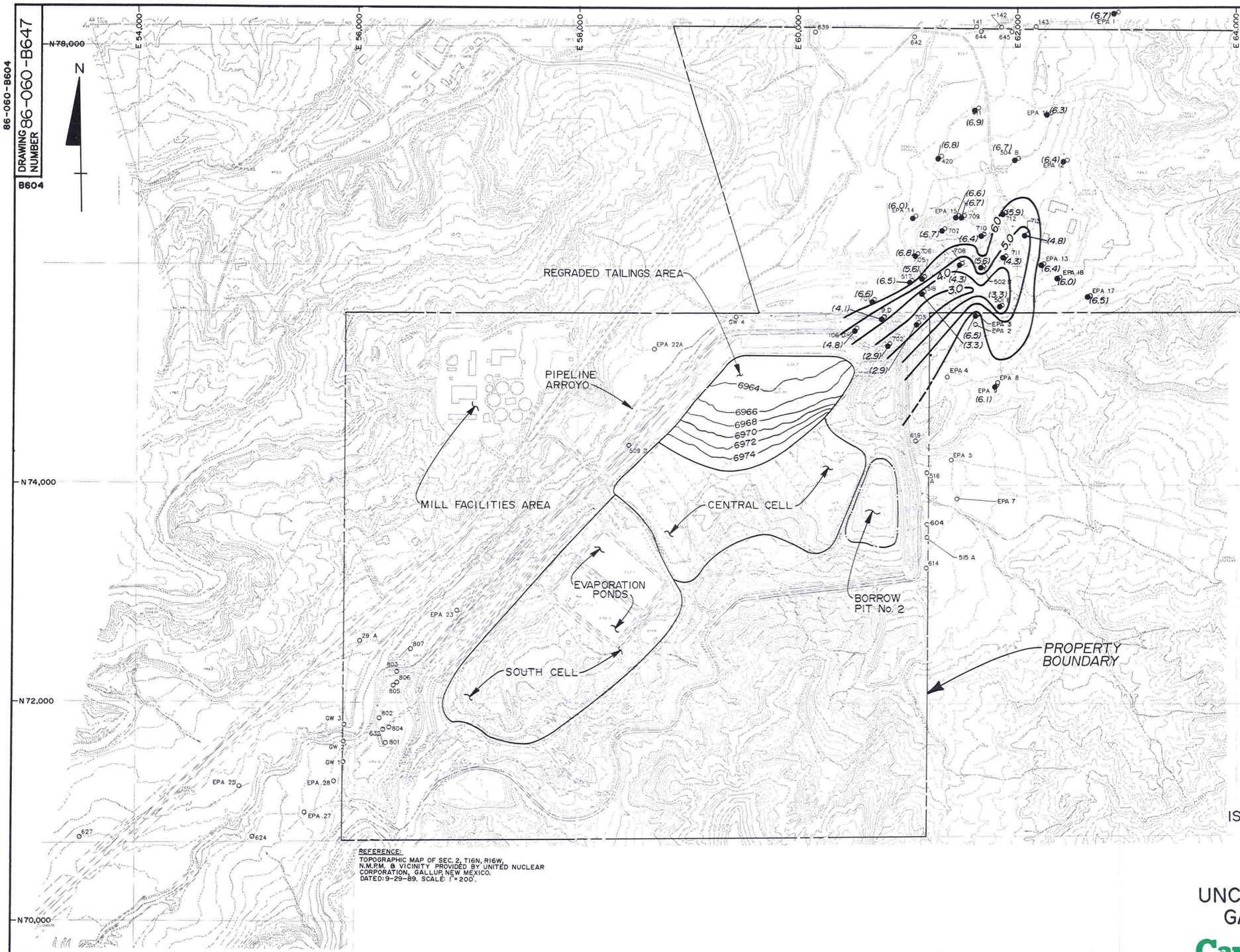
DATE: 8-13-91	FIGURE 6-11	DRAWING NUMBER 86-060-B645	REV. 1
SCALE: AS SHOWN			

86-060-B604

86-060-B604

DRAWING NUMBER 86-060-B647

B604



LEGEND:

—6.0— ISOCONCENTRATION LINES OF pH (DASHED WHERE INFERRED)

●(6.1) SAMPLE POINT AND pH VALUE

NOTE:

1. AFTER DRAWING No. 86-060-E327 (FIGURE 2-7) IN THE 1989 ANNUAL REVIEW (CANONIE, 1989c).

SCALE

400 0 400 800 FEET

REFERENCE:
TOPOGRAPHIC MAP OF SEC. 2, T16N, R16W, N.M.P.M. & VICINITY PROVIDED BY UNITED NUCLEAR CORPORATION, GALLUP, NEW MEXICO. DATED: 9-29-89. SCALE: 1" = 200'.

ZONE 3
ISOCONCENTRATIONS OF pH
RESPONSE TO PUMPING
4th QUARTER, 1989

PREPARED FOR

UNC MINING AND MILLING
GALLUP, NEW MEXICO

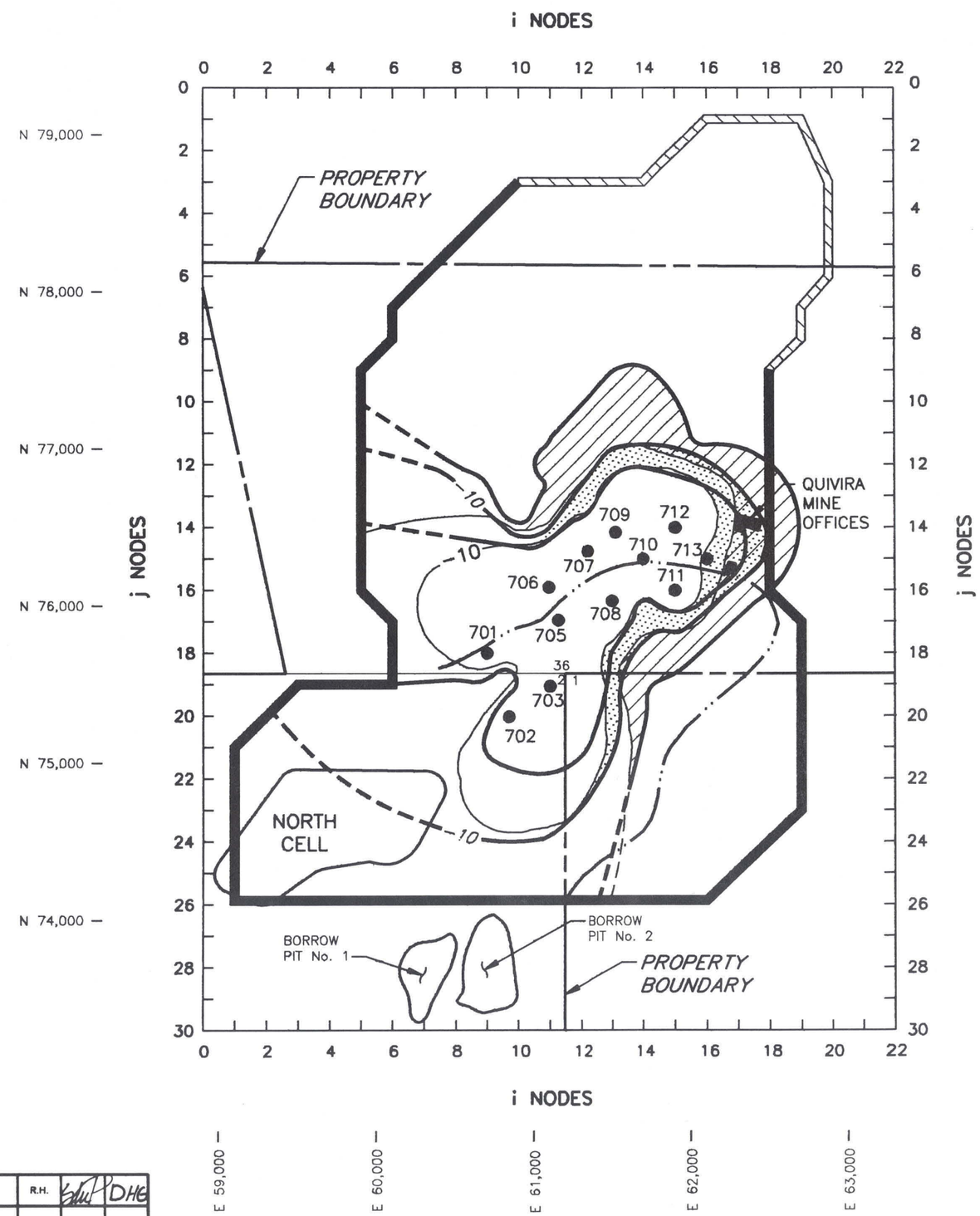
CanonieEnvironmental

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1	8/24/91	ISSUED FOR 1991 RECLAMATION PLAN	P.M.W.		DHG

DATE: 8-13-91	FIGURE 6-12	DRAWING NUMBER 86-060-B647	REV. 1
SCALE: AS SHOWN			

86-060-B604

DRAWING NUMBER 86-060-B527



NOTES:

1. MEASURED CHANGES IN SATURATED THICKNESS ARE PRESENTED WITHIN THE FRAMEWORK OF THE COMPUTER SIMULATION USED TO REFINE THE DESIGN OF THE SYSTEM. FOR A DESCRIPTION OF THE COMPUTER SIMULATION REFER TO THE RD (CANONIE 1989d). THE CONTOURS PRESENTED ARE BASED ON FIELD DATA AND ARE NOT PREDICTED BY THE MODEL.
2. CONTOUR INTERVAL IS 5 FEET.
3. AFTER DRAWING No. 86-060-E468 (FIGURE 2-6), IN THE 1990 ANNUAL REVIEW (CANONIE 1990a).

LEGEND:

- MODEL BOUNDARY: CONSTANT HEAD
- MODEL BOUNDARY: NO FLOW
- 707 — STAGE I EXTRACTION WELL LOCATION AND NUMBER
- -10 — DECREASE IN SATURATED THICKNESS OF ZONE 3 BASED ON 3rd AND 4th QUARTER 1989 DATA, FEET (DASHED WHERE INFERRED)
- -10 — DECREASE IN SATURATED THICKNESS OF ZONE 3 BASED ON 4th QUARTER 1990 DATA, FEET (DASHED WHERE INFERRED)
- BOUNDARY OF REMEDIAL ACTION TARGET AREA
- 36 / 2 | 1 — SECTION CORNER AND NUMBERS
- EXPANDED AREA OF 5 FOOT REDUCTION IN SATURATED THICKNESS
- EXPANDED AREA OF 10 FOOT REDUCTION IN SATURATED THICKNESS

SCALE

800 0 800 FEET

COMPARISON OF CHANGE IN SATURATED THICKNESS AFTER ONE QUARTER 8/89-10/89 AND ONE YEAR 10/89-10/90 OF PUMPING

PREPARED FOR

UNC MINING AND MILLING
GALLUP, NEW MEXICO

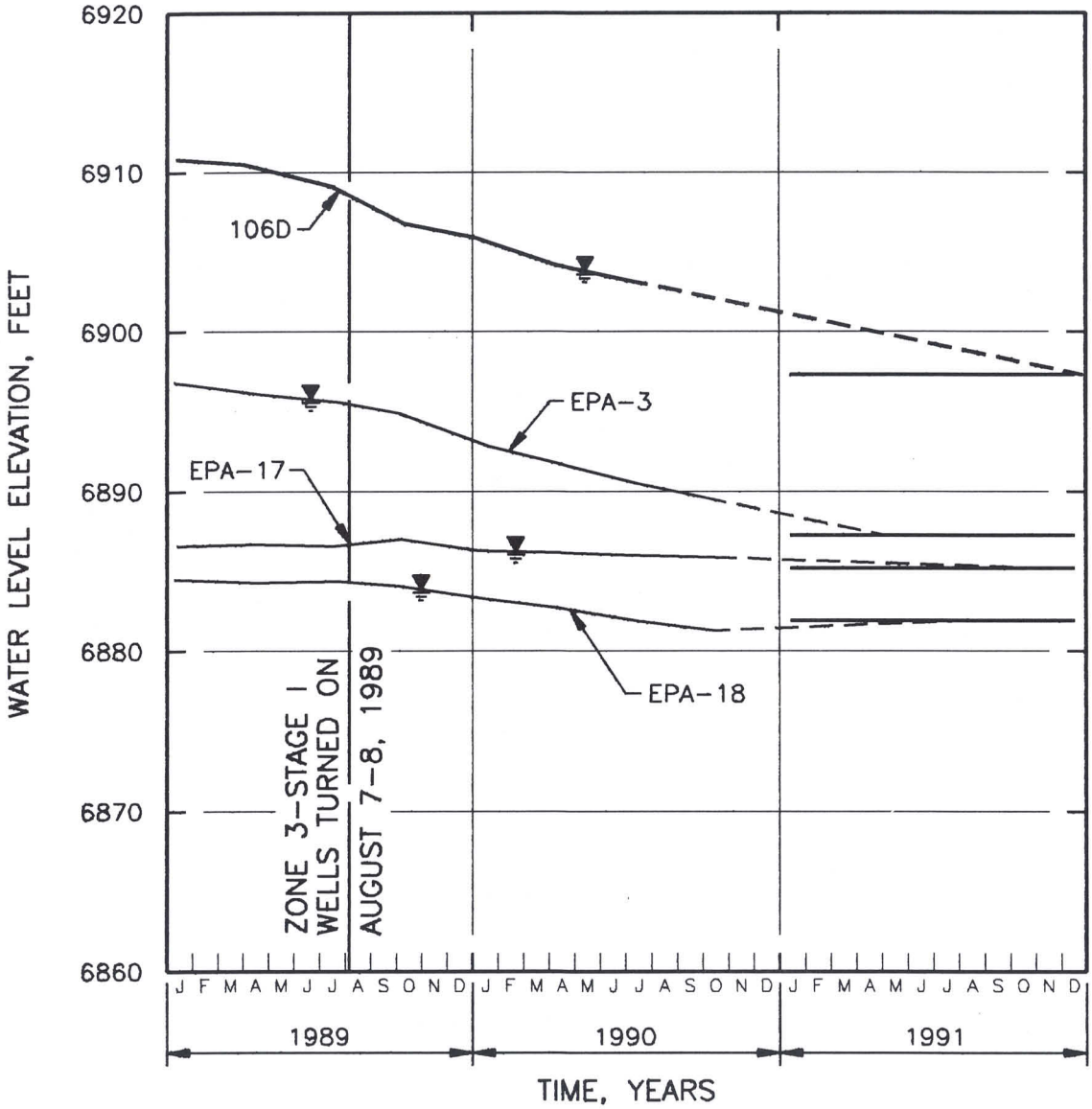
CanonieEnvironmental

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1	8/24/91	ISSUED FOR 1991 RECLAMATION PLAN	R.H.		DHE

DATE: 8-10-91	FIGURE 6-13	DRAWING NUMBER 86-060-B527
SCALE: AS SHOWN		

1

DRAWING NUMBER 86-060-A528



NOTE:

1. AFTER DRAWING No. 86-060-A460 (FIGURE 2-7), IN THE 1990 ANNUAL REVIEW (CANONIE 1990a).

LEGEND:

CURRENT WATER LEVEL ELEVATION, FEET (DASHED WHERE PROJECTED)

BOTTOM OF ZONE 3

ZONE 3 DEWATERING
AS OF 4TH QUARTER 1990

PREPARED FOR

UNC MINING AND MILLING
GALLUP, NEW MEXICO

Canonie Environmental

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1	8/24/91	ISSUED FOR 1991 RECLAMATION PLAN	R.H.		DHG

DATE: 8-10-91
SCALE: AS SHOWN

FIGURE 6-14

DRAWING NUMBER 86-060-A528

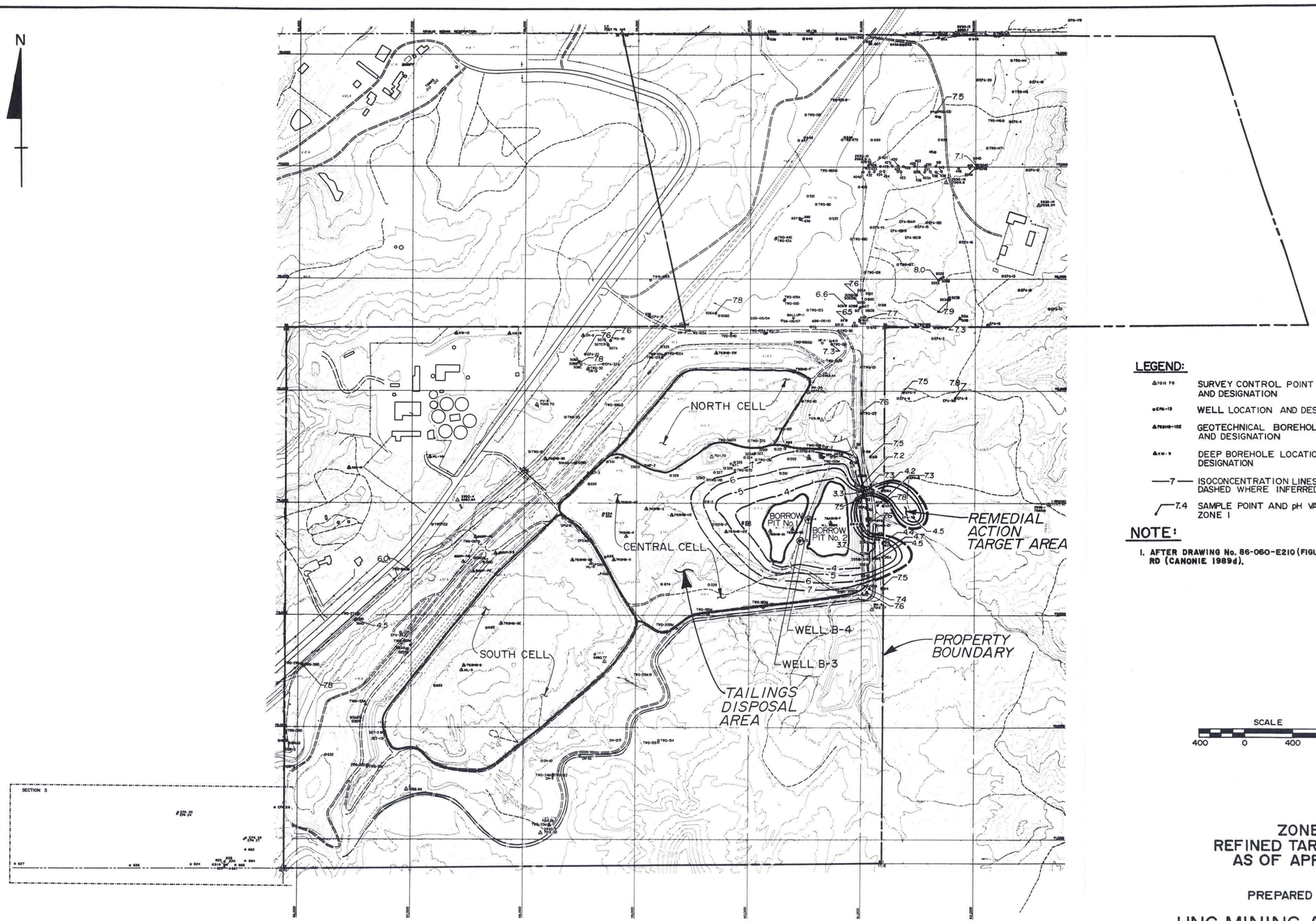
1

DRAWING NUMBER 86-060-B539

86-060-B629

B629

N



LEGEND:

- SURVEY CONTROL POINT LOCATION AND DESIGNATION
- WELL LOCATION AND DESIGNATION
- GEOTECHNICAL BOREHOLE LOCATION AND DESIGNATION
- DEEP BOREHOLE LOCATION AND DESIGNATION
- —7— ISOCONCENTRATION LINES OF pH, DASHED WHERE INFERRED
- 7.4 SAMPLE POINT AND pH VALUE FOR ZONE I

NOTE:

1. AFTER DRAWING No. 86-060-E210 (FIGURE 3-1) IN THE RD (CANONIE 1989d).

SCALE

400 0 400 800 FEET

ZONE I
REFINED TARGET AREA
AS OF APRIL 1989

PREPARED FOR

UNC MINING AND MILLING
GALLUP, NEW MEXICO

Canonie Environmental

REFERENCE:

-COMPOSITE OF TOPOGRAPHIC MAPS PROVIDED BY UNITED NUCLEAR CORP. DRAWING NOS. 1798-A, AND C-1797-B. DATED: MAY 1, 1988. SCALE: 1" = 200'.

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1	8/24/91	ISSUED FOR 1991 RECLAMATION PLAN	P.M.W.	SDUT	DHG

DATE: 5-20-91	FIGURE 6-15	DRAWING NUMBER 86-060-B539
SCALE: AS SHOWN		

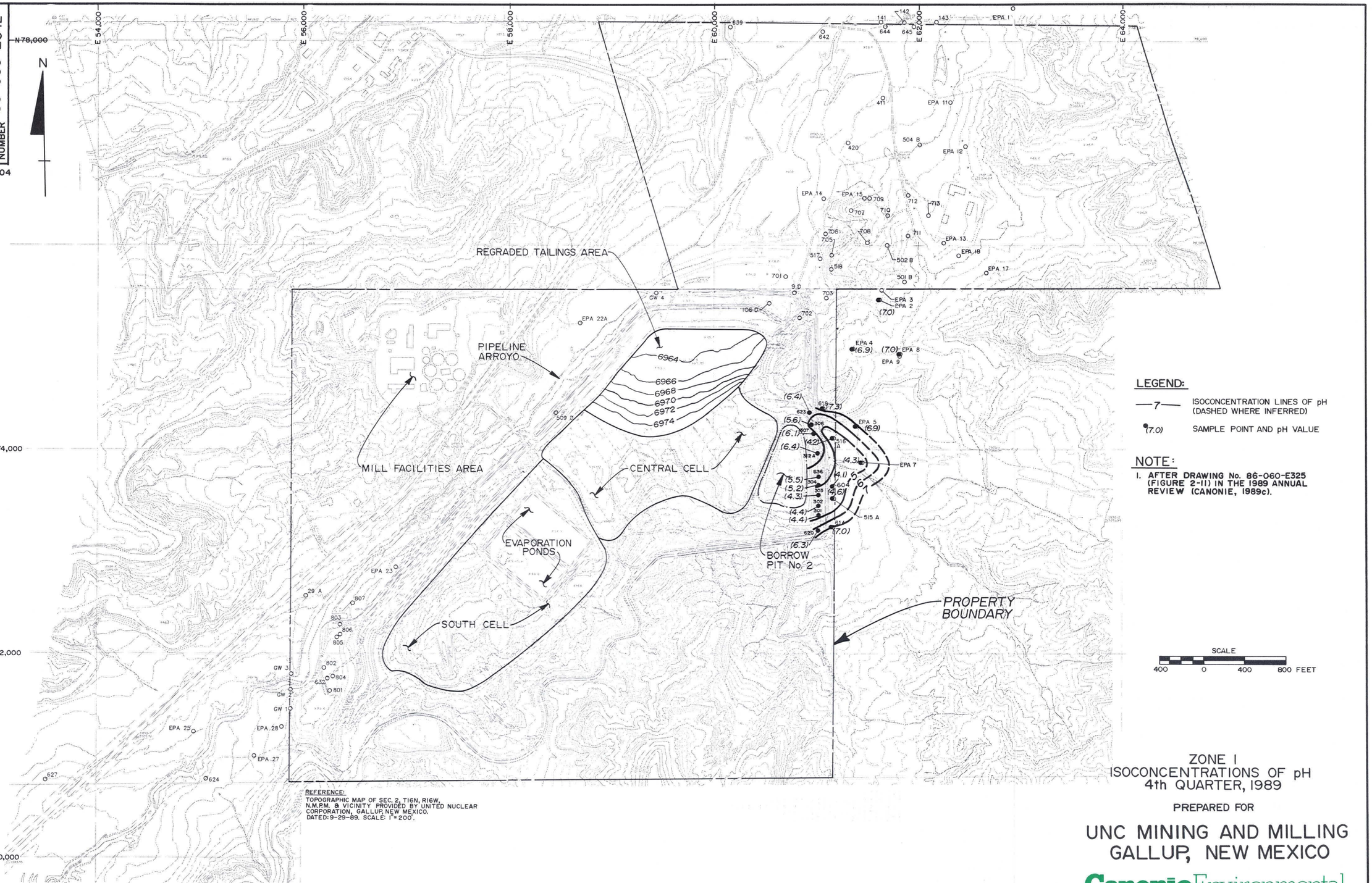
86-060-B629

1

86-060-B604

DRAWING NUMBER 86-060-E642

B604



REFERENCE:
TOPOGRAPHIC MAP OF SEC. 2, T16N, R16W, N.M.P.M. & VICINITY PROVIDED BY UNITED NUCLEAR CORPORATION, GALLUP, NEW MEXICO. DATED: 9-29-89. SCALE: 1" = 200'.

ZONE I
ISOCONCENTRATIONS OF pH
4th QUARTER, 1989

PREPARED FOR

UNC MINING AND MILLING
GALLUP, NEW MEXICO

CanonieEnvironmental

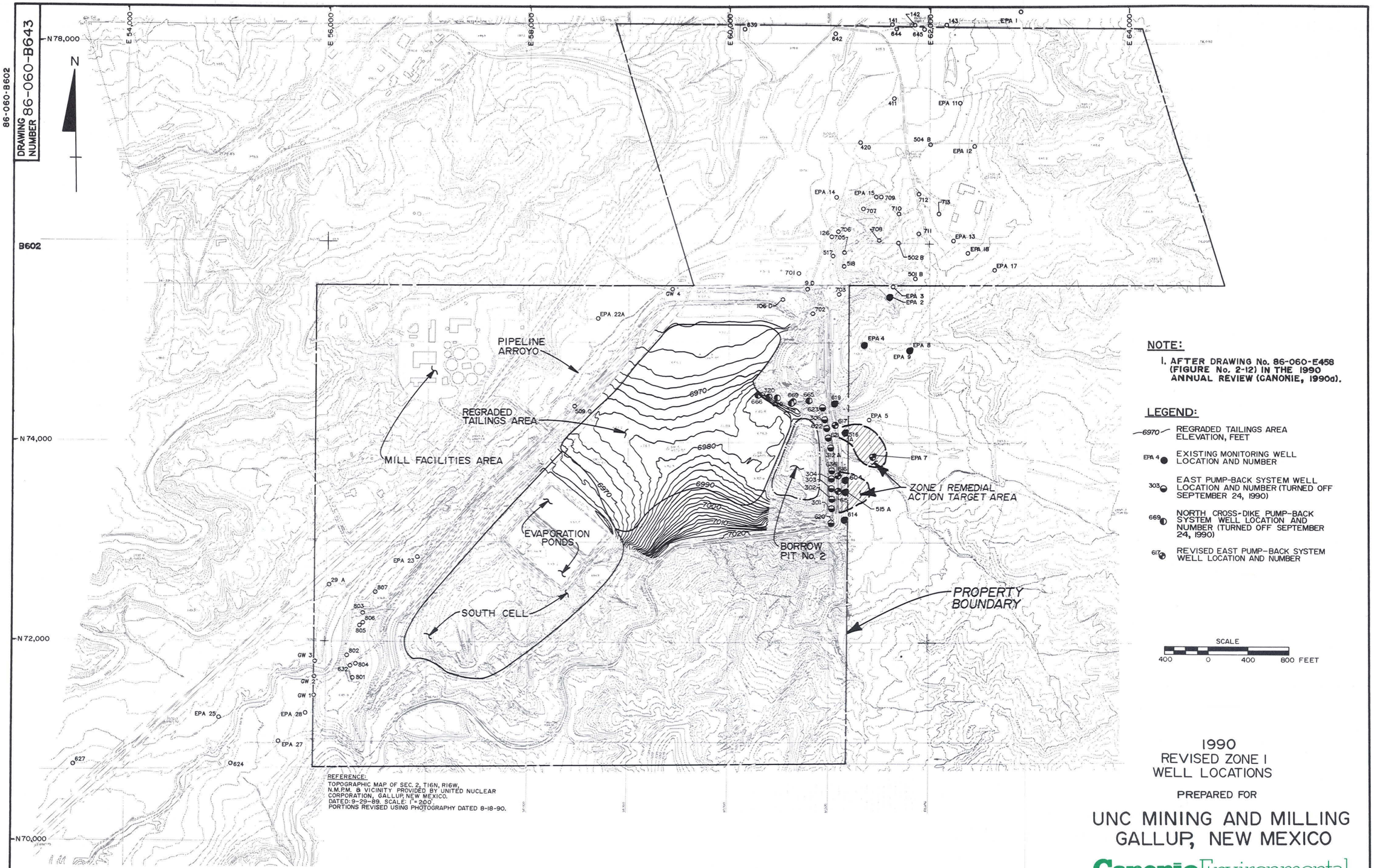
No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1	8/21/91	ISSUED FOR 1991 RECLAMATION PLAN	P.M.W.	SMR	DHG

DATE: 8-13-91	FIGURE 6-16	DRAWING NUMBER	REV.
SCALE: AS SHOWN		86-060-B642	1

86-060-B604

86-060-B602

DRAWING NUMBER 86-060-B643



REFERENCE:
TOPOGRAPHIC MAP OF SEC. 2, T16N, R16W, N.M.P.M. & VICINITY PROVIDED BY UNITED NUCLEAR CORPORATION, GALLUP, NEW MEXICO.
DATED: 9-29-89. SCALE: 1" = 200'.
PORTIONS REVISED USING PHOTOGRAPHY DATED 8-18-90.

NOTE:

1. AFTER DRAWING No. 86-060-E458 (FIGURE No. 2-12) IN THE 1990 ANNUAL REVIEW (CANONIE, 1990d).

LEGEND:

- 6970 — REGRADED TAILINGS AREA ELEVATION, FEET
- EPA 4 ● — EXISTING MONITORING WELL LOCATION AND NUMBER
- 303 — EAST PUMP-BACK SYSTEM WELL LOCATION AND NUMBER (TURNED OFF SEPTEMBER 24, 1990)
- 669 — NORTH CROSS-DIKE PUMP-BACK SYSTEM WELL LOCATION AND NUMBER (TURNED OFF SEPTEMBER 24, 1990)
- 617 — REVISED EAST PUMP-BACK SYSTEM WELL LOCATION AND NUMBER

SCALE
400 0 400 800 FEET

1990
REVISED ZONE I
WELL LOCATIONS

PREPARED FOR

UNC MINING AND MILLING
GALLUP, NEW MEXICO

CanonieEnvironmental

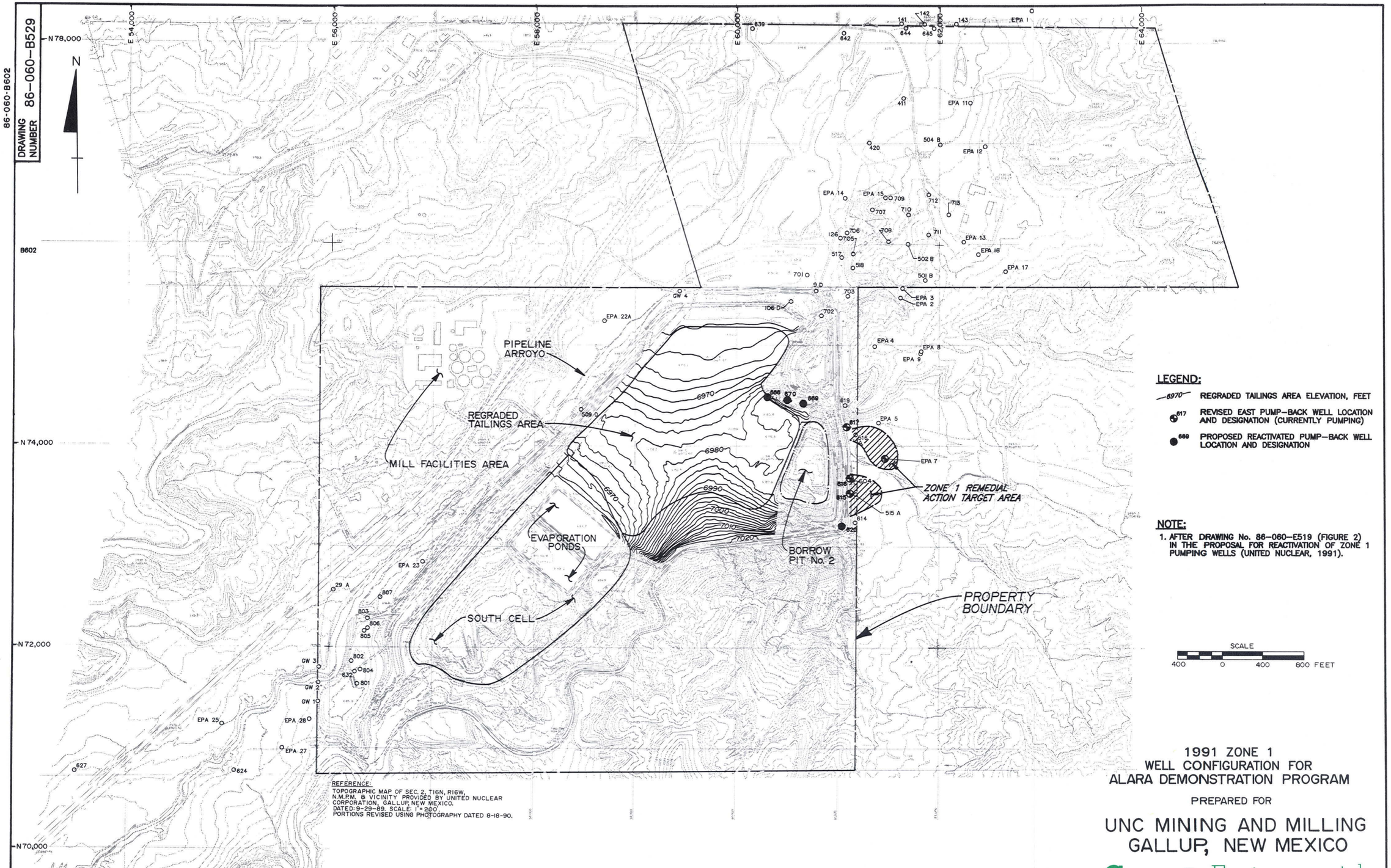
No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1	8/24/91	ISSUED FOR 1991 RECLAMATION PLAN	M.T.H.		DHG

DATE: 12-11-90	FIGURE 6-17	DRAWING NUMBER 86-060-B643
SCALE: AS SHOWN		

86-060-B602

86-060-B602

DRAWING NUMBER 86-060-B529



REFERENCE:
TOPOGRAPHIC MAP OF SEC. 2, T16N, R16W, N.M.P.M. & VICINITY PROVIDED BY UNITED NUCLEAR CORPORATION, GALLUP, NEW MEXICO. DATED: 9-29-89. SCALE: 1" = 200'. PORTIONS REVISED USING PHOTOGRAPHY DATED 8-18-90.

1991 ZONE 1 WELL CONFIGURATION FOR ALARA DEMONSTRATION PROGRAM

PREPARED FOR

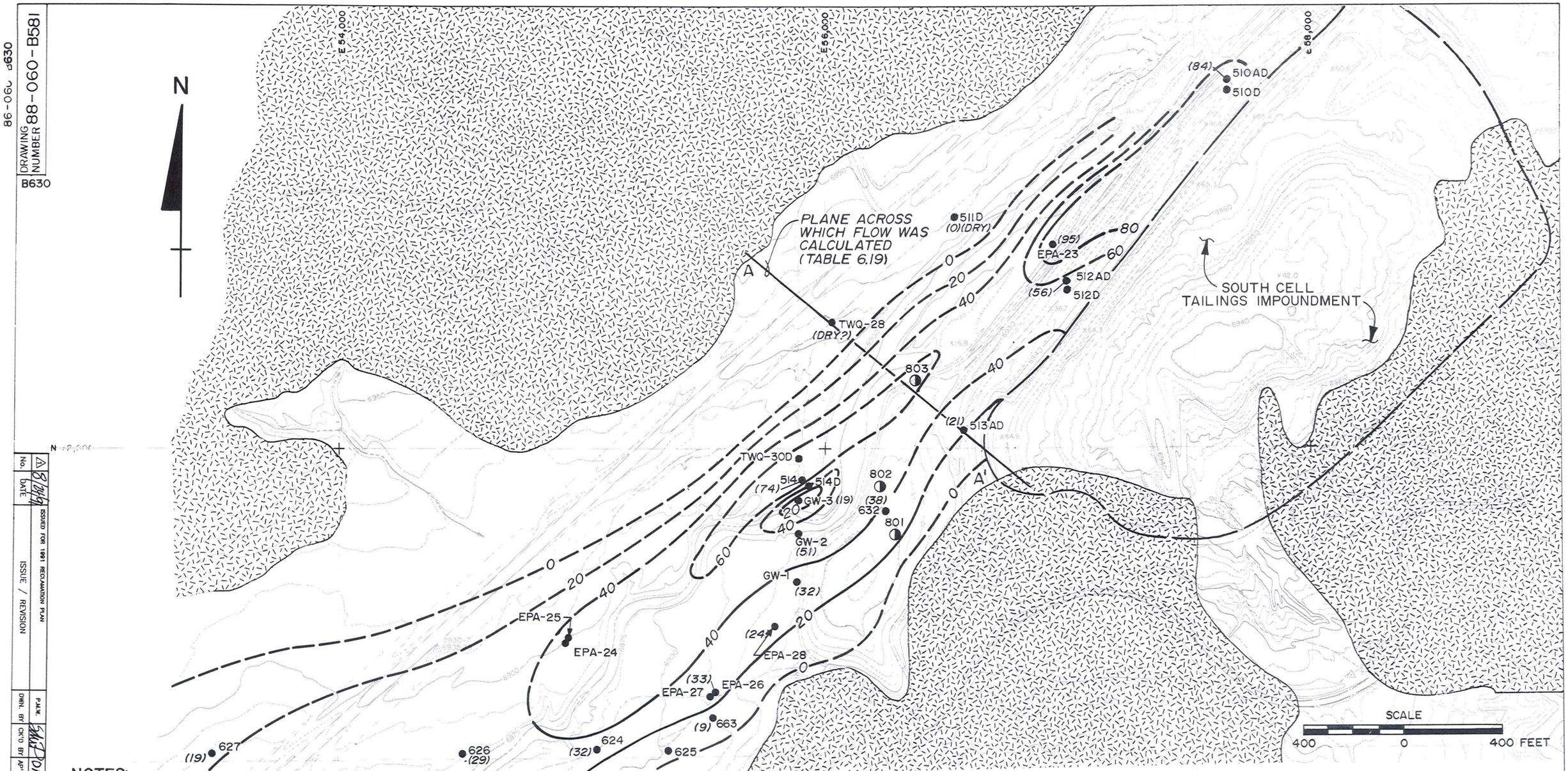
UNC MINING AND MILLING GALLUP, NEW MEXICO

Canonie Environmental

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1	8/21/91	ISSUED FOR 1991 RECLAMATION PLAN	R.H.		DHG

DATE: 8-12-91	FIGURE 6-18	DRAWING NUMBER 86-060-B529	1
SCALE: AS SHOWN			

86-060-B602



NOTES:

1. SOURCE OF OBSERVED DATA: UNITED NUCLEAR CORPORATION NRC MONITORING PROGRAM.
2. AFTER DRAWING No. 86-060-B163 (FIGURE 3-2) IN AMENDMENT II (CANONIE, 1989a) AND (FIGURE 4-1) IN THE RD (CANONIE, 1989d).

REFERENCE:
TOPOGRAPHIC MAP PROVIDED BY UNITED NUCLEAR CORPORATION. DRAWING NO. 1796-A DATED: MAY 1, 1985.
SCALE: 1" = 400'.

LEGEND:

- BEDROCK OUTCROP
- ALLUVIUM
- 624 (32) — WELL LOCATION AND DESIGNATION WITH SATURATED THICKNESS VALUE, FEET
- 40 — ISOPACH ELEVATION CONTOURS OF SATURATED ALLUVIUM - DASHED WHERE INFERRED, FEET
- 802 — PROPOSED PUMPING WELL AND NUMBER

ISOPACH OF SATURATED ALLUVIUM FOR THE REMEDIAL DESIGN

PREPARED FOR

UNC MINING AND MILLING
GALLUP, NEW MEXICO

Canonie Environmental

DATE: 6-4-91	FIGURE 6-19	DRAWING NUMBER 86-060-B581
SCALE: AS SHOWN		

86-060-B630 1

No.	DATE	ISSUE / REVISION
1	8/21/91	ISSUED FOR 1991 RECLAMATION PLAN

DWN. BY P.M.W.
CK'D BY
APP'D BY

DRAWING NUMBER 88-060-B581
B630
86-060-B630

86-060-B630

DRAWING NUMBER 88-060-B579

B630

NOTES:

1. SOURCE OF OBSERVED DATA: UNITED NUCLEAR CORPORATION NRC MONITORING PROGRAM.
2. AFTER DRAWING No. 86-060-B161 (FIGURE 3-3) IN AMENDMENT II (CANONIE, 1989a) AND (FIGURE 4-2) IN THE RD (CANONIE, 1989d).

REFERENCE:
TOPOGRAPHIC MAP PROVIDED BY UNITED NUCLEAR CORPORATION. DRAWING NO. 1796-A DATED: MAY 1, 1985.
SCALE: 1" = 400'.

LEGEND:

- BEDROCK OUTCROP
- ALLUVIUM
- EPA-28 (6860) — WELL DESIGNATION / APR.-AUG. 1988 WATER LEVEL ELEVATION, FEET
- 6870 — WATER LEVEL ELEVATION CONTOURS OF ALLUVIUM - DASHED WHERE INFERRED, FEET

WATER LEVEL ELEVATIONS IN ALLUVIUM FOR THE REMEDIAL DESIGN

PREPARED FOR

UNC MINING AND MILLING
GALLUP, NEW MEXICO

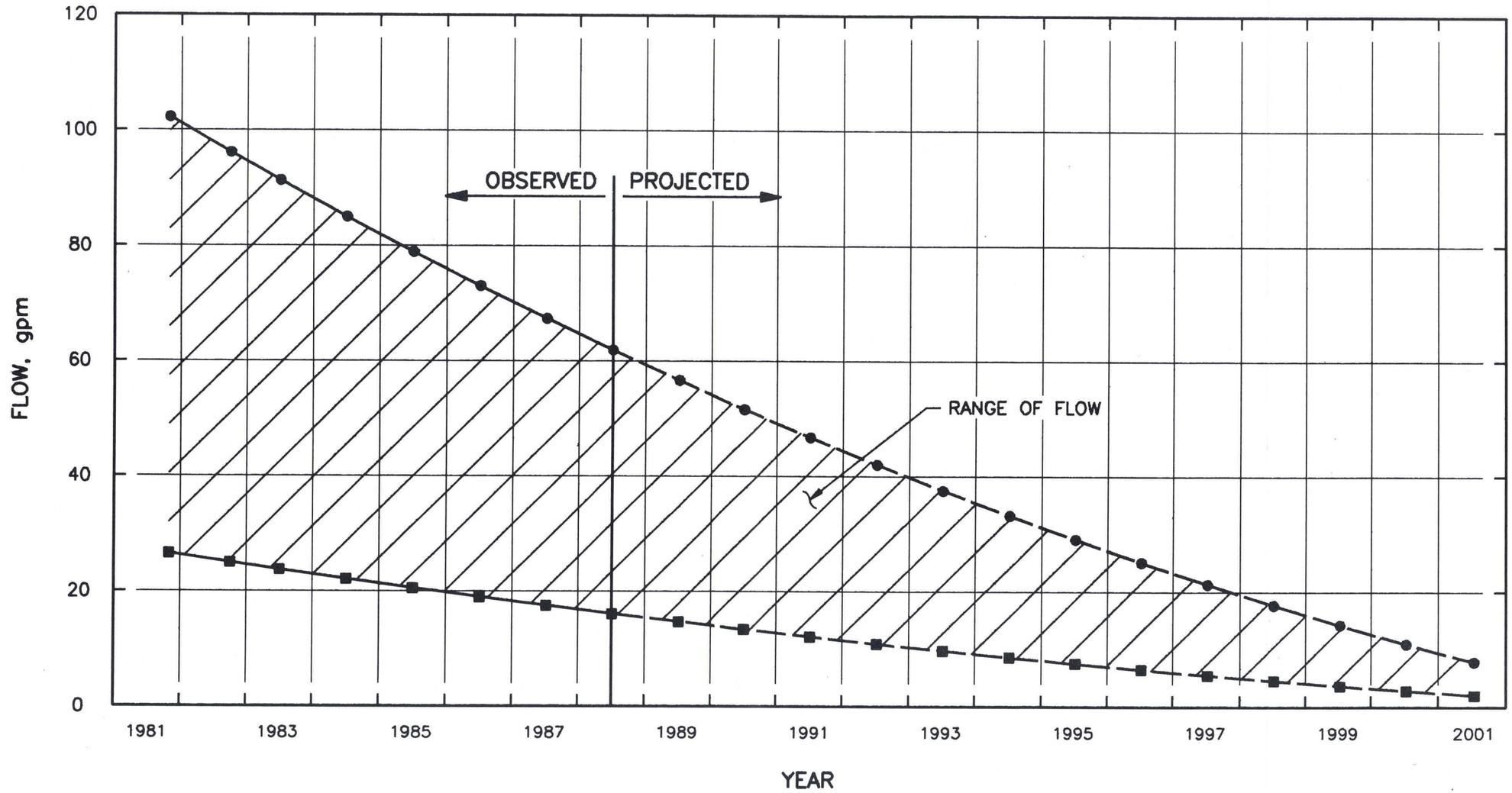
Canonie Environmental

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1	8/24/91	ISSUED FOR 1991 RECLAMATION PLAN	P.M.W.	[illegible]	DHG

DATE: 6-4-91	FIGURE 6-20	DRAWING NUMBER
SCALE: AS SHOWN		86-060-B579

86-060-B630 1

DRAWING NUMBER 86-060-B587



LEGEND:

- ● K= 1.0E-2 cm/sec
- ■ K= 2.6E-3 cm/sec

NOTES:

1. SOURCE OF OBSERVED DATA: TABLE 6.19.
2. AFTER DRAWING No. 86-060-B199 (FIGURE 3-4) IN AMENDMENT II (CANONIE, 1989a) AND (FIGURE 4-3) IN THE RD (CANONIE, 1989d).

RANGE OF OBSERVED AND PROJECTED FLOW THROUGH SOUTHWEST ALLUVIUM FOR THE REMEDIAL DESIGN

PREPARED FOR

UNC MINING AND MILLING
GALLUP, NEW MEXICO

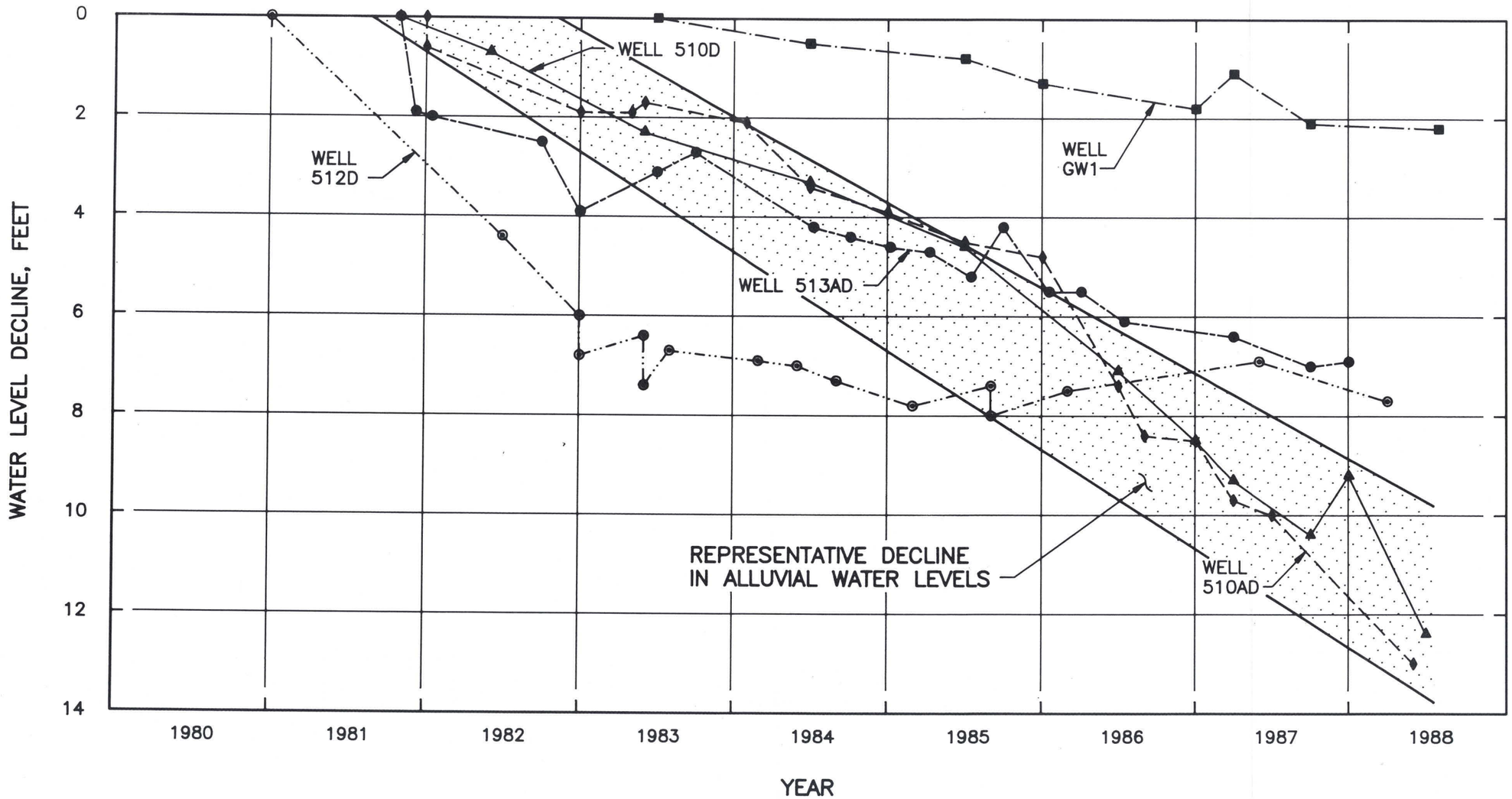
Canonie Environmental

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1	8/24/91	ISSUED FOR 1991 RECLAMATION PLAN	M.T.H.	SMH	DHG

DATE: 5-24-91	FIGURE 6-21	DRAWING NUMBER
SCALE: AS SHOWN		86-060-B587

1

DRAWING NUMBER 86-060-B575



NOTES:

1. SOURCE OF OBSERVED DATA: UNITED NUCLEAR CORPORATION, NRC MONITORING PROGRAM.
2. WELLS 512D AND 513AD HAVE BEEN PLUGGED IN ACCORDANCE WITH NRC LICENSE REQUIREMENTS.
3. AFTER DRAWING No. 86-060-B192 (FIGURE 3-5) IN AMENDMENT II (CANONIE, 1989a) AND (FIGURE 4-4) IN THE RD (CANONIE, 1989d).

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1	8/24/91	ISSUED FOR 1991 RECLAMATION PLAN	R.H.		DHG

DOCUMENTED
WATER LEVEL DECLINES
IN ALLUVIUM FOR THE
REMEDIAL DESIGN

PREPARED FOR

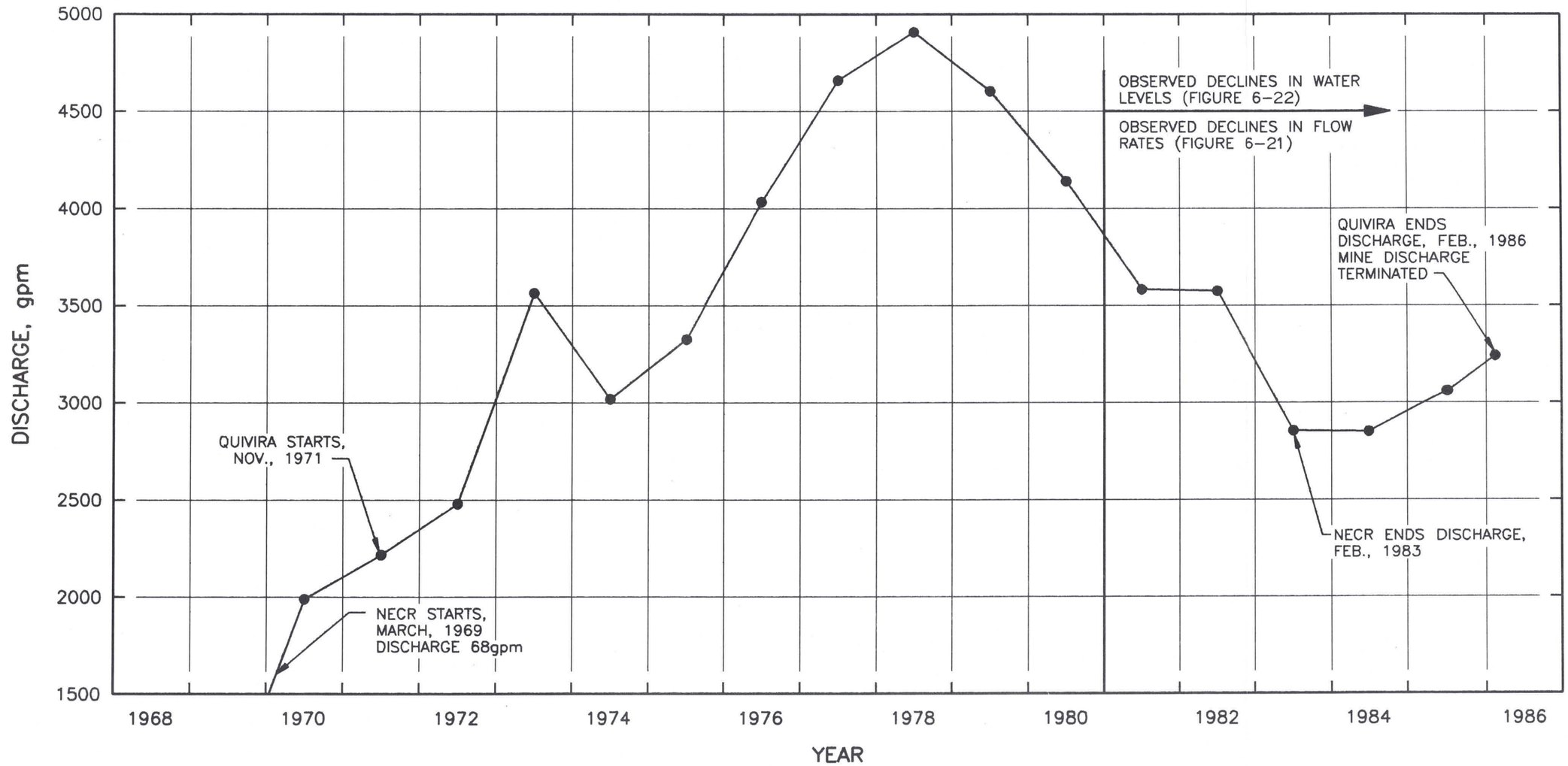
UNC MINING AND MILLING
GALLUP, NEW MEXICO

CanonieEnvironmental

DATE: 5-24-91	FIGURE 6-22	DRAWING NUMBER 86-060-B575
SCALE: AS SHOWN		

1

DRAWING NUMBER 86-060-B588



NOTES:

1. MINE WATER WAS DISCHARGED FROM BOTH THE NORTHEAST CHURCH ROCK MINE (NECR) AND THE QUIVIRA MINE.
2. SOURCE OF OBSERVED DATA: UNC MINING AND MILLING MEMORANDUM DATED: SEPTEMBER 30, 1986.
3. AFTER DRAWING No. 86-060-B196 (FIGURE 3-6) IN AMENDMENT II (CANONIE, 1989a) AND (FIGURE 4-5) IN THE RD (CANONIE, 1989d)

AVERAGE YEARLY MINE WATER DISCHARGE TO PIPELINE ARROYO FOR THE REMEDIAL DESIGN

PREPARED FOR

UNC MINING AND MILLING
GALLUP, NEW MEXICO

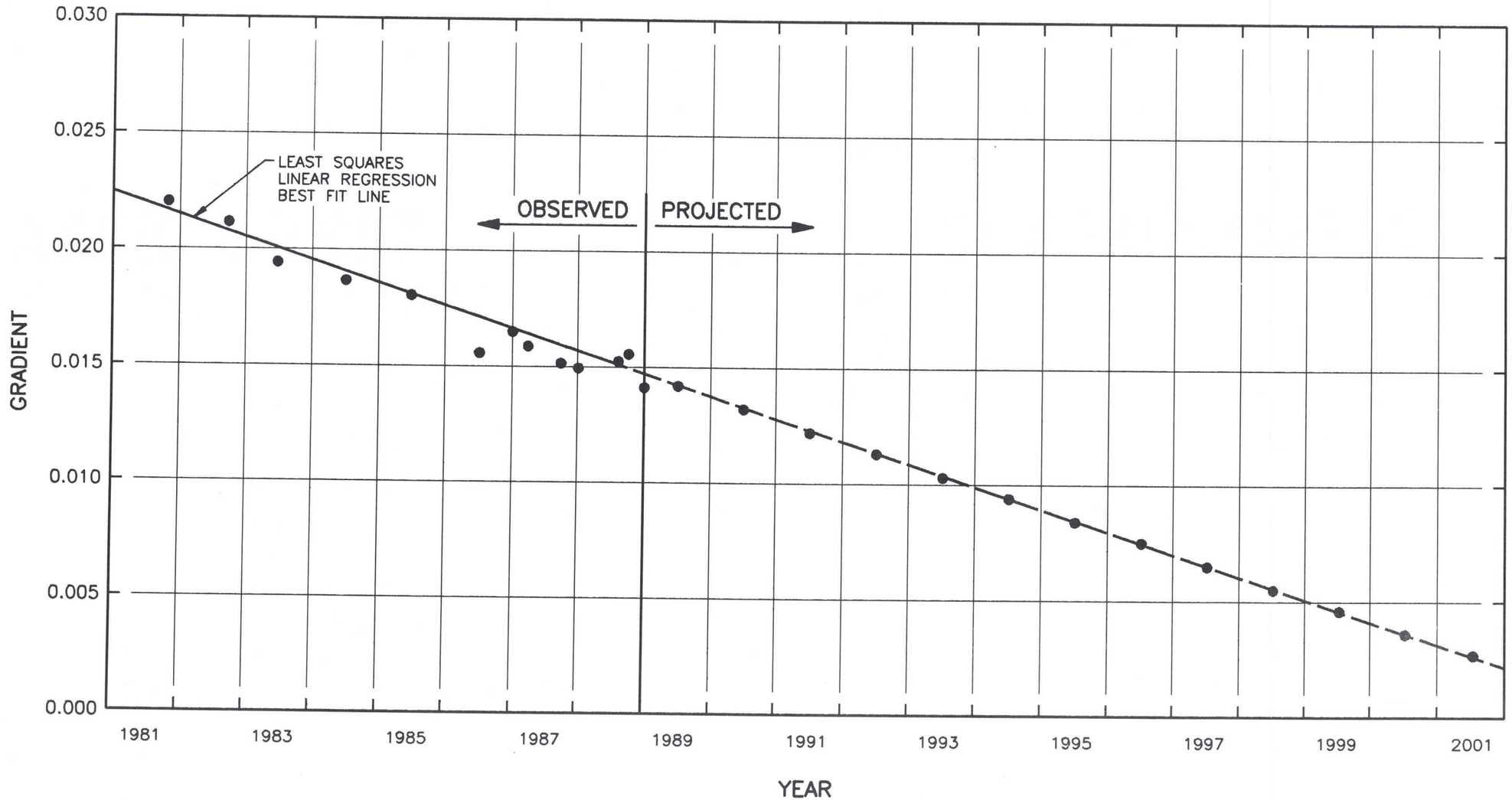
CanonieEnvironmental

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1	8/24/91	ISSUED FOR 1991 RECLAMATION PLAN	R.H.	SAW	DHG

DATE: 5-24-91	FIGURE 6-23	DRAWING NUMBER 86-060-B588
SCALE: AS SHOWN		

1

DRAWING NUMBER 86-060-B589



NOTES:

1. OBSERVED VALUES ARE AVERAGES BASED ON 38 WELL PAIRS, SEE APPENDIX D IN THE RD (CANONIE, 1989d) FOR CALCULATIONS.
2. AFTER DRAWING No. 86-060-B193 (FIGURE 3-7) IN AMENDMENT II (CANONIE, 1989a) AND (FIGURE 4-6) IN THE RD (CANONIE, 1989d).

WATER TABLE GRADIENT
VS. TIME IN THE
SOUTHWEST ALLUVIUM
FOR THE REMEDIAL DESIGN

PREPARED FOR

UNC MINING AND MILLING
GALLUP, NEW MEXICO

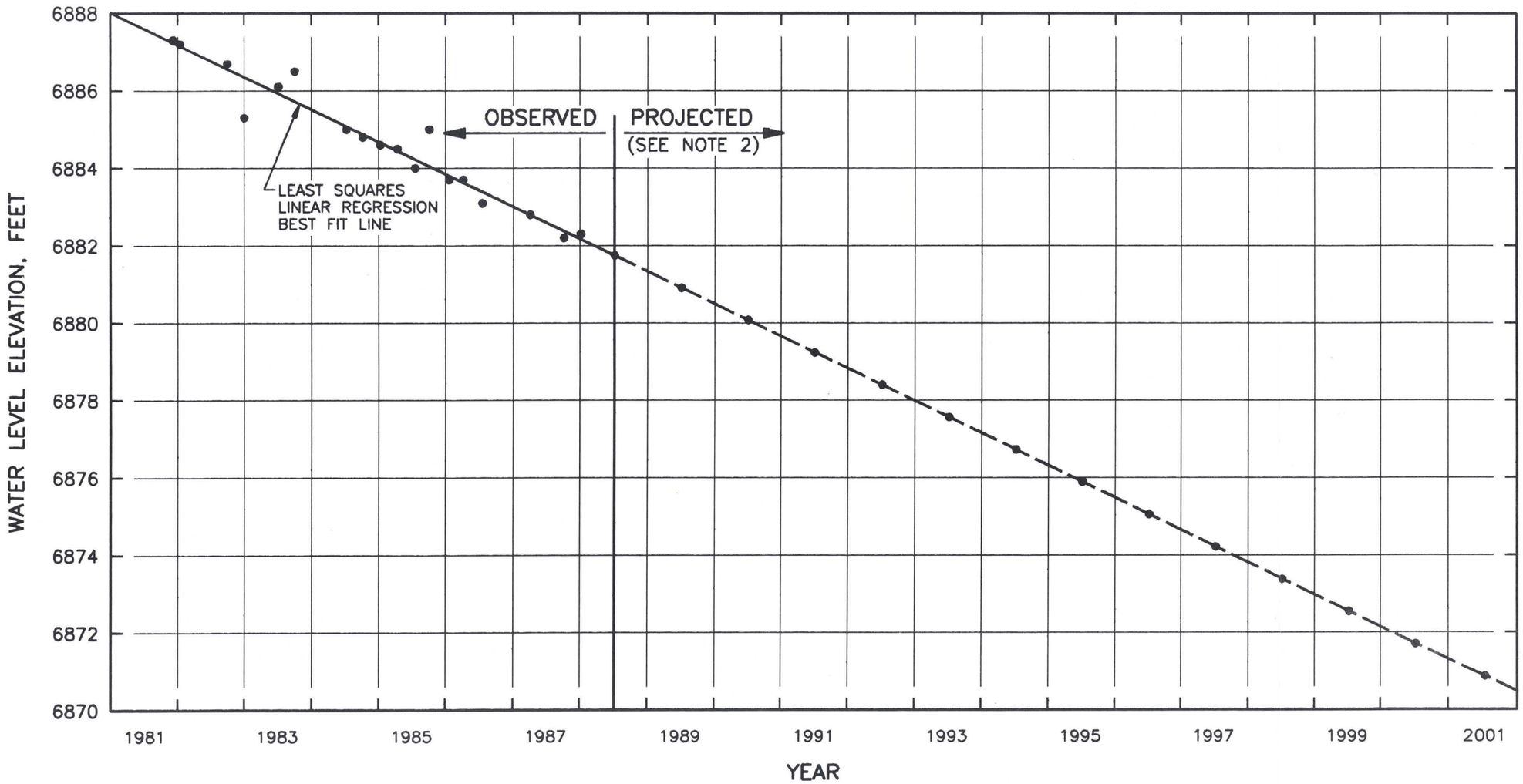
CanonieEnvironmental

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1	8/24/91	ISSUED FOR 1991 RECLAMATION PLAN	R.H.		DHG

DATE: 5-24-91	FIGURE 6-24	DRAWING NUMBER
SCALE: AS SHOWN		86-060-B589

1

DRAWING NUMBER 86-060-B590



NOTES:

1. REPRESENTATIVE GENERAL DECLINE OF WATER LEVELS IN ALLUVIUM IS SHOWN ON FIGURE 6-22.
2. WELL 513AD PLUGGED IN 1988 IN ACCORDANCE WITH LICENSE REQUIREMENTS.
3. SOURCE OF OBSERVED DATA: UNITED NUCLEAR CORPORATION, NRC MONITORING PROGRAM.
4. AFTER DRAWING No. 86-060-B191 (FIGURE 3-8) IN AMENDMENT II (CANONIE, 1989a) AND (FIGURE 4-7) IN THE RD (CANONIE, 1989d).

WATER LEVEL VS. TIME
IN WELL 513AD
USED FOR THE REMEDIAL DESIGN

PREPARED FOR

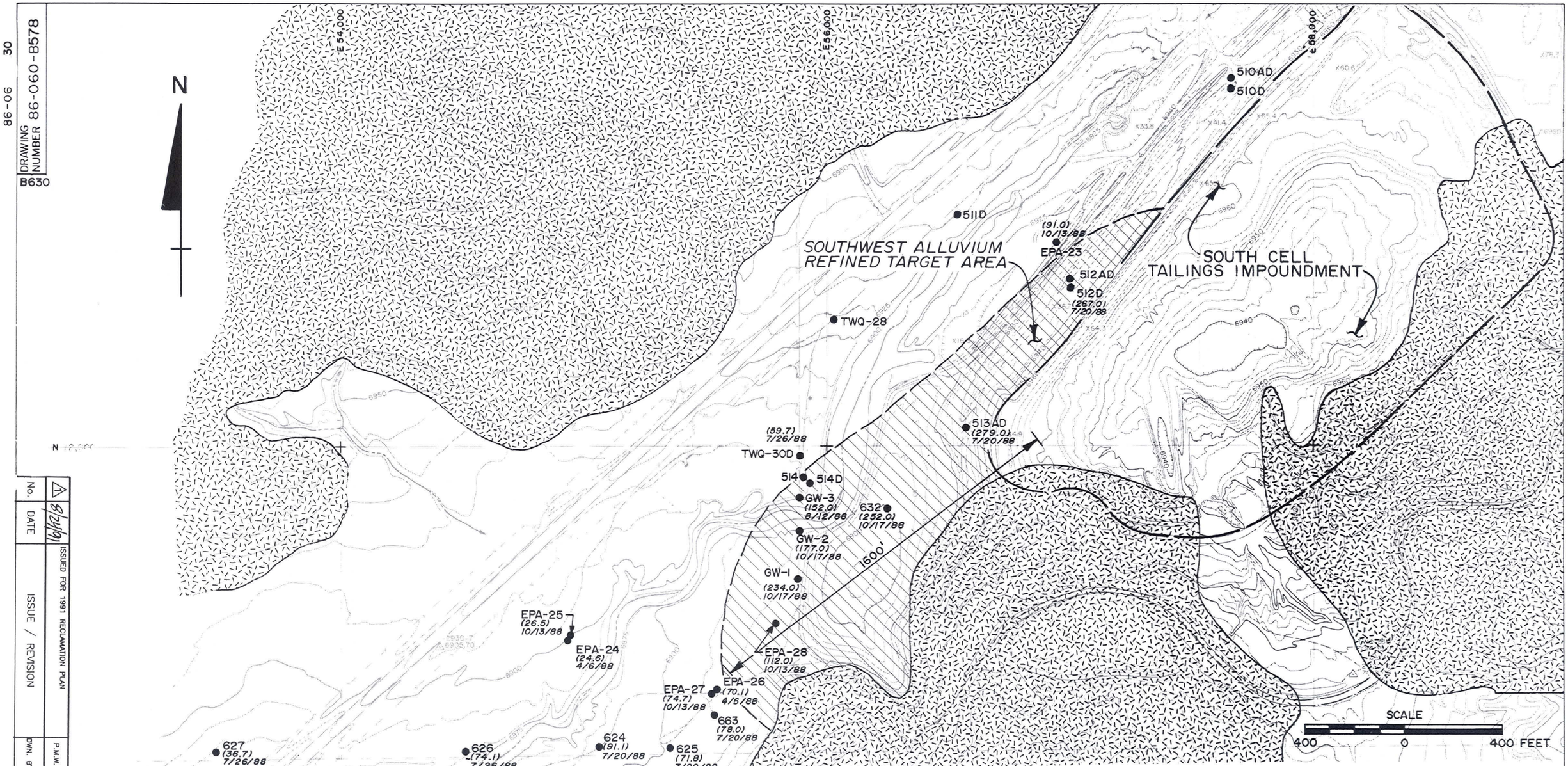
UNC MINING AND MILLING
GALLUP, NEW MEXICO

CanonieEnvironmental

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1	8/24/91	ISSUED FOR 1991 RECLAMATION PLAN	R.H.		DHG

DATE: 5-24-91	FIGURE 6-25	DRAWING NUMBER 86-060-B590
SCALE: AS SHOWN		

1



REFERENCE:
TOPOGRAPHIC MAP PROVIDED BY UNITED NUCLEAR CORPORATION. DRAWING NO. 1796-A DATED: MAY 1, 1985.
SCALE: 1" = 400'.

LEGEND:

●624	WELL NUMBER
(9.1)	CHLORIDE CONCENTRATION, mg/l
7/20/88	SAMPLE DATE

NOTES:

1. SOURCE: UNITED NUCLEAR CORP. NRC MONITORING PROGRAM
2. AFTER DRAWING No. 86-060-B201 (FIGURE 3-9) IN AMENDMENT 11 (CANONIE, 1989a) AND (FIGURE 4-8) IN THE RD (CANONIE, 1989d).

SOUTHWEST ALLUVIUM REFINED TARGET AREA FOR THE REMEDIAL DESIGN

PREPARED FOR

UNC MINING AND MILLING
GALLUP, NEW MEXICO

Canonie Environmental

DATE: 6-4-91	FIGURE 6-26	DRAWING NUMBER 86-060-B578
SCALE: AS SHOWN		

86-060-B630

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1	8/24/91	ISSUED FOR 1991 RECLAMATION PLAN	P.M.W.	SMT	DHG

DRAWING NUMBER B630 86-060-B578

86-06 30