SMITH

June 1996 86-060-20

TECHNICAL SUPPORT FOR PROPOSED MODIFICATION TO THE CHURCH ROCK SITE TAILINGS RECLAMATION PLAN NRC LICENSE SUA-1475

REVISION 1

Prepared for:

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TECHNICAL SUPPORT FOR PROPOSED MODIFICATION TO THE CHURCH ROCK SITE TAILINGS RECLAMATION PLAN NRC LICENSE SUA-1475 REVISION 1

1.0 INTRODUCTION

United Nuclear Corporation (United Nuclear) is requesting a modification to the Church Rock Site Tailings Reclamation Plan as Approved by NRC March 1, 1991, License No. SUA-1475 (Reclamation Plan). This modification request replaces the document submitted in April 1996 and is based on discussions between United Nuclear and the Nuclear Regulatory Commission (NRC) during a site visit on June 11, 1996. This document provides a discussion of the proposed modification as well as a revised figure, which is enclosed for insertion into the approved Reclamation Plan dated March 1, 1991. The modification request summarized below is discussed in detail in Section 2.

It is proposed that recontouring plans for the area south of the buried jetty and west of the South Tailings Cell be altered. Instead of recontouring the entire area between the South Cell and the Pipeline Arroyo, the existing surface features will remain in place. The existing surface drainages will be cleaned out and regraded as necessary to ensure positive drainage parallel to the face of the tailings pile until the channels discharge into the Pipeline Arroyo.

2.0 REGRADING SOUTH OF THE BURIED JETTY

2.1 Introduction

This proposed modification addresses regrading of the area shown on Figure 1, which is located west of the reclaimed tailings disposal area and south of the Buried Jetty. The engineered contours require that a large volume be moved. These contours were developed to promote positive drainage away from the tailings area. However, review of the existing surface features indicates that the existing roadways and natural drainage channels actually provide equal or better long-term protection for the tailings. The existing surface features direct runoff into flow paths parallel to the face of the tailings, thus inhibiting the development of headward erosion toward the reclaimed tailings pile.

2.2 Discussion

Figure 1 shows that the engineered contours required by the Reclamation Plan result in a smooth slope from the tailings to the Pipeline Arroyo. As shown on Figure 2, this area is currently occupied by two roadways and portions of a toe dam which was built in 1979 to protect the tailings impoundment. These features, with the runoff control ditch, produce a drainage pattern that results in several small channels directing runoff parallel to the face of the tailings pile. These channels flow southwest to discharge into the Pipeline Arroyo.

The existing channels have a beneficial effect because, by promoting flow parallel to the tailings embankment, headward erosion into the tailings and the development of gullies in the reclaimed cover is inhibited. Figure 3 shows a series of surface profiles which illustrate that the existing surface features produce a terraced effect, which slows and breaks up flow off the tailings embankment. The surface profiles also show that the probable maximum flood (PMF) flow is entirely contained in the channels farthest from the tailings and within the Pipeline Arroyo beyond a point about 300 feet southwest of the buried jetty. An additional safety factor is provided by the fact that the closest

tailings material contained in the reclaimed disposal area is located 75 to 100 feet from the outside edge of the reconfigured outslope of the reclaimed tailings embankment.

It is proposed that the existing roadways and drainage channels be left in place. The channels will be cleaned out, and any existing obstructions will be removed to ensure that positive drainage exists along the entire length of each channel. The upper ends of the drainage channels adjacent to the buried jetty will be regraded as necessary to maintain a gradual slope from the top of the buried jetty to the channel bottoms.

Also, the depression located south of the South Cell Drainage Channel (SCDC), highlighted on Figure 1, will be backfilled with material excavated from the SCDC. The backfill will be contoured to maintain the natural drainage toward the SCDC and the Pipeline Arroyo.

2.3 Revised Pages

A revised Figure 5-1 is included as an attachment. The engineered contours for the area under discussion (shown on the original figure) have been removed, indicating that the existing contours will be left in place.

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FIGURES

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ATTACHMENT

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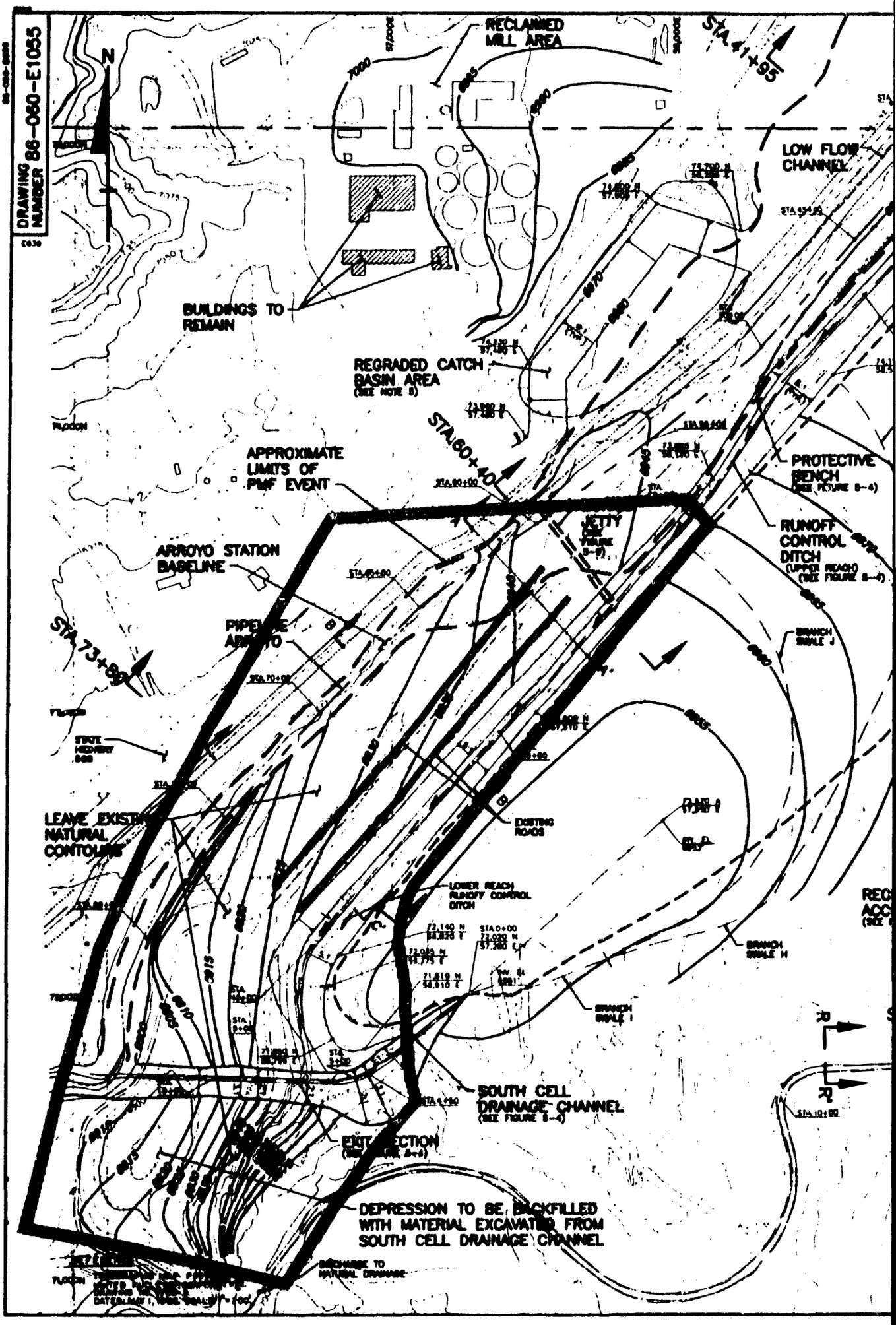
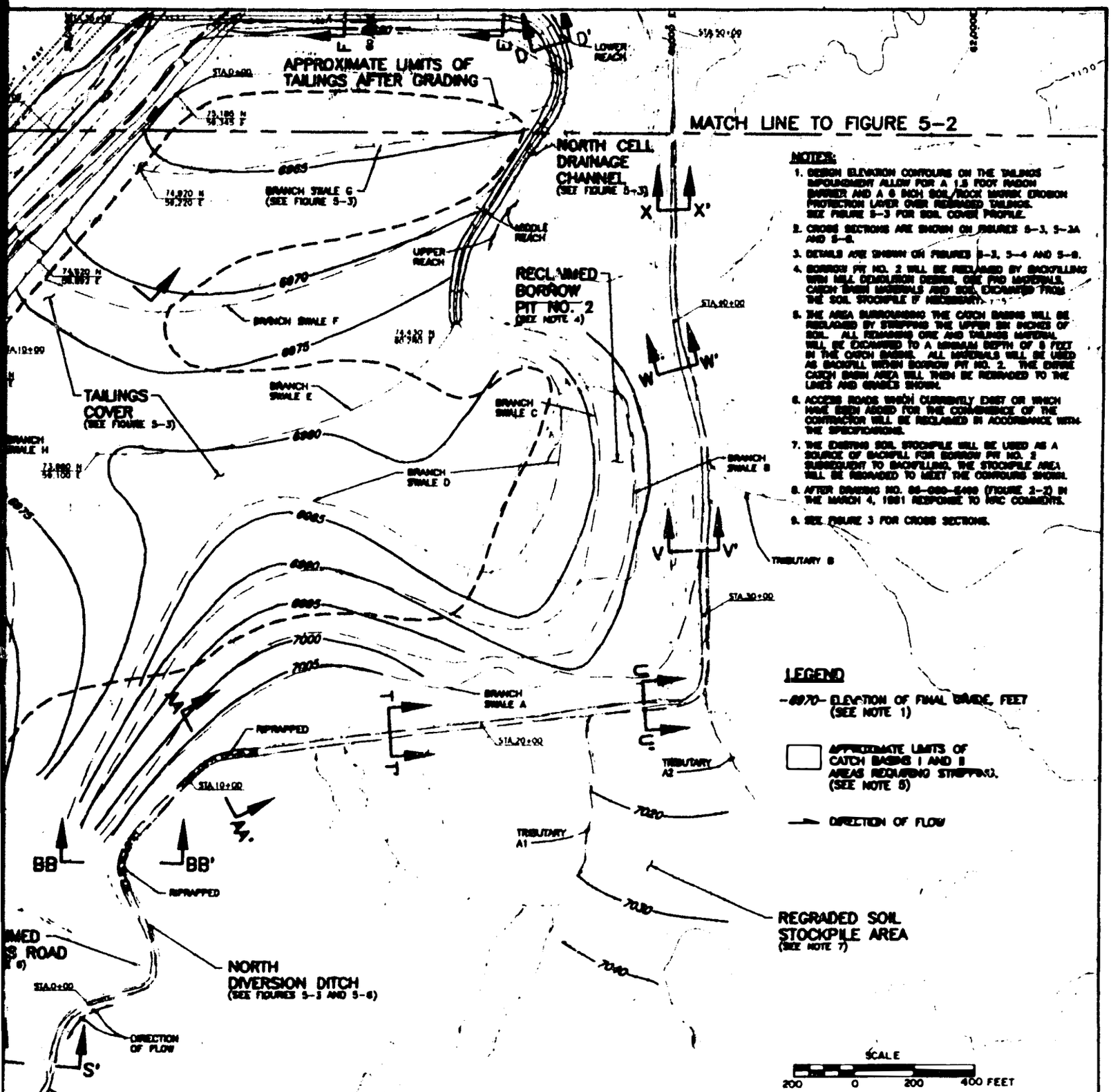
TAILINGS RECLAMATION PLAN

REVISION CONTROL SHEET

Chapter/Section		evision	Pages	Effective Date
Figure 5-1		1.0	NA	


DRAWING NUMBER 86-060-E1055
N
RECLAIMED MILL AREA
STA 41+95
LOW FLOW CHANNEL
BUILDINGS TO REMAIN
REGRADED CATCH BASIN AREA
(SEE NOTE 5)
STA 60+40
APPROXIMATE LIMITS OF PMF EVENT
PROTECTIVE BENCH
(SEE FIGURE 5-4)
RUNOFF CONTROL DITCH
(UPPER REACH)
(SEE FIGURE 5-4)
ARROYO STATION BASELINE
STA 73+80
PIPELINE ARROYO
STATE HIGHWAY 68
LEAVE EXISTING NATURAL CONTOURS
EXISTING ROADS
LOWER REACH RUNOFF CONTROL DITCH
BRANCH SWALE J
BRANCH SWALE H
BRANCH SWALE I
SOUTH CELL DRAINAGE CHANNEL
(SEE FIGURE 5-4)
DEPRESSION TO BE BACKFILLED WITH MATERIAL EXCAVATED FROM SOUTH CELL DRAINAGE CHANNEL
DRAINAGE TO NATURAL DRAINAGE



PROPOSED AMENDMENTS TO
FINAL RECLAMATION PLAN
SOUTH END
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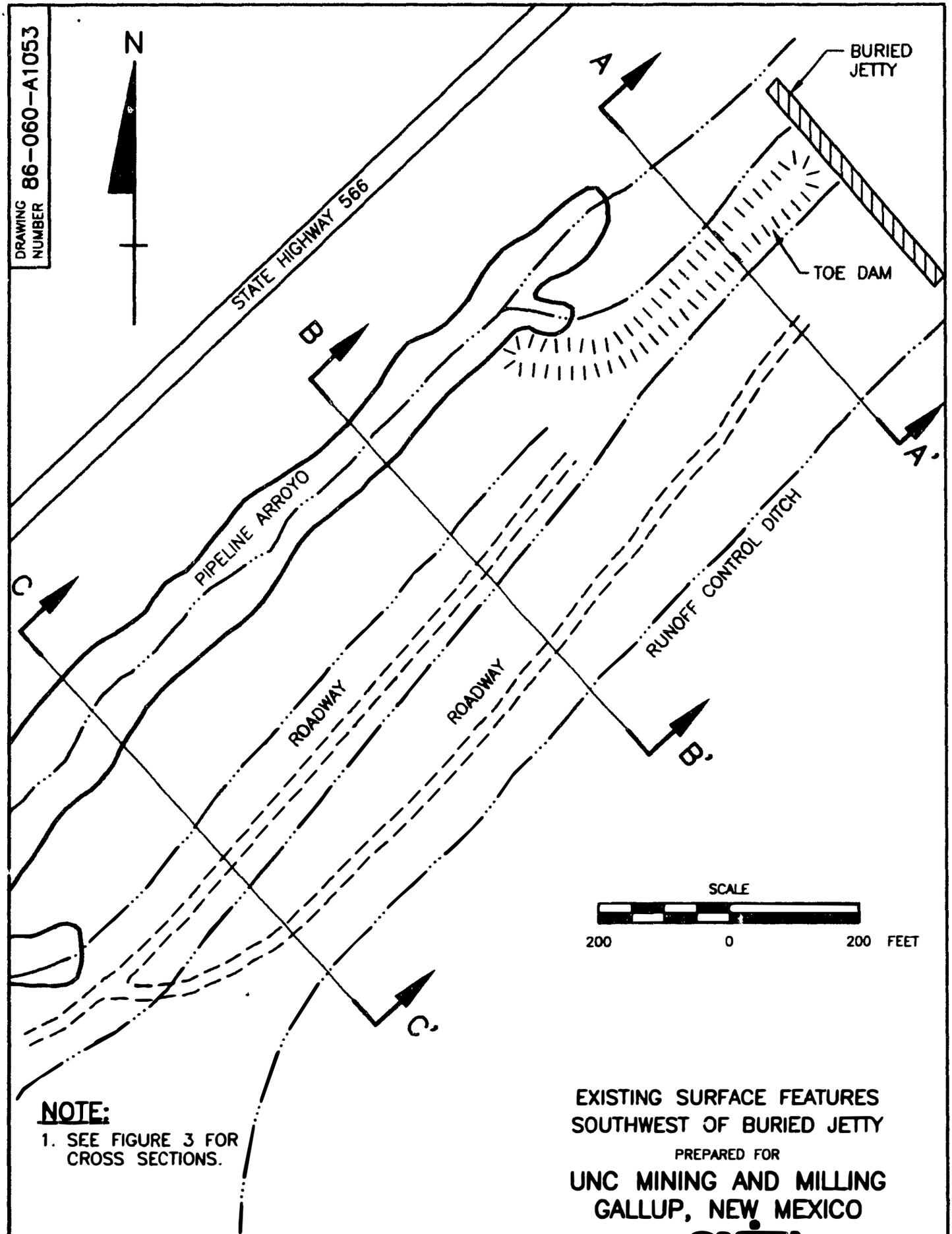
No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	APP'D BY
1	6/20/96	ISSUED FOR REVISED TECHNICAL SUPPORT DOCUMENT			

DATE: 6-20-96	FIGURE 1	DRAWING NUMBER
SCALE:		86-060-E1056



NOTE:

1. SEE FIGURE 3 FOR CROSS SECTIONS.

EXISTING SURFACE FEATURES
SOUTHWEST OF BURIED JETTY

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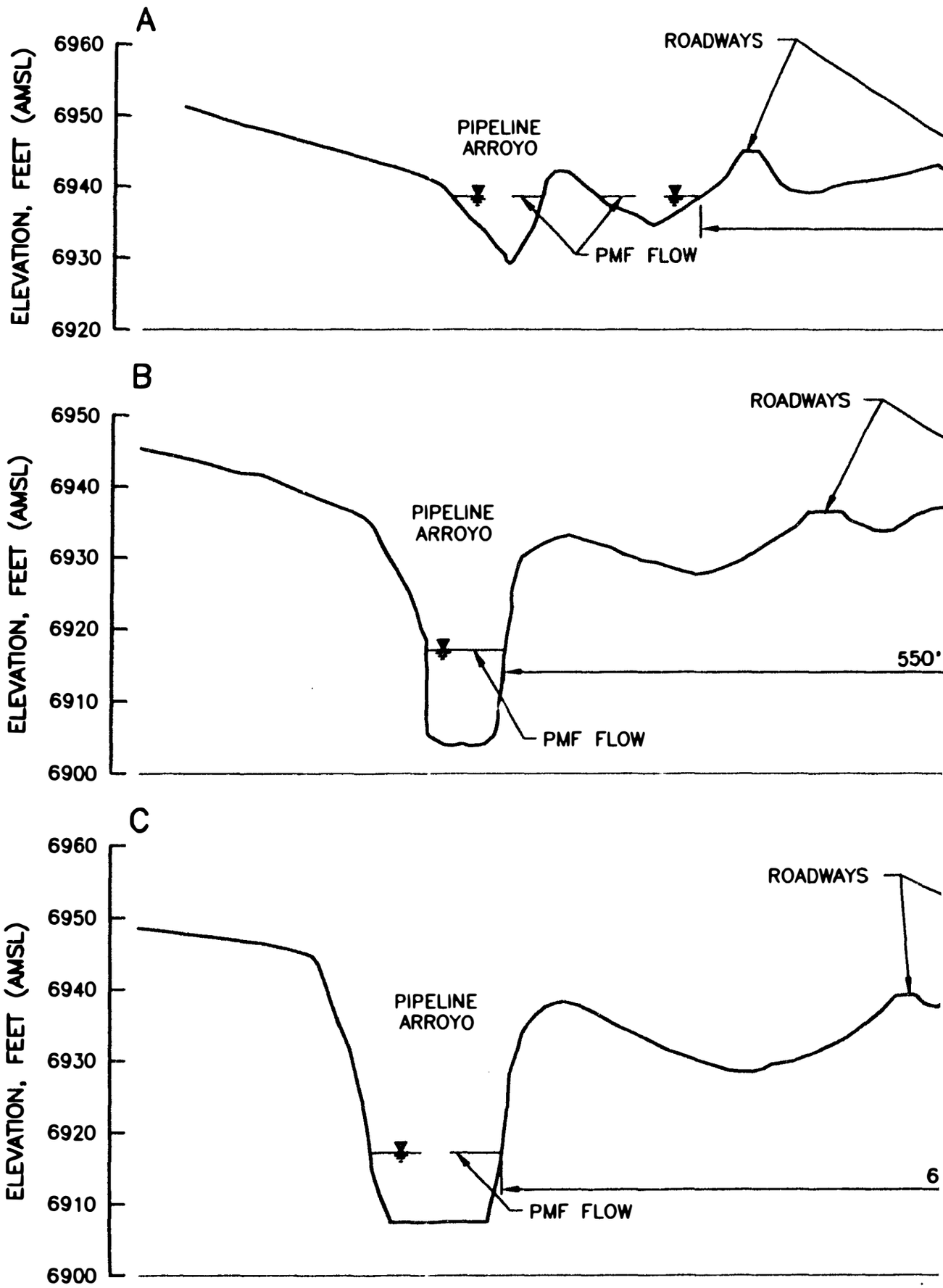
No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1	6/20/96	ISSUED FOR REVISED TECHNICAL SUPPORT DOCUMENT	R.H.		

DATE: 6-18-96
SCALE: AS SHOWN

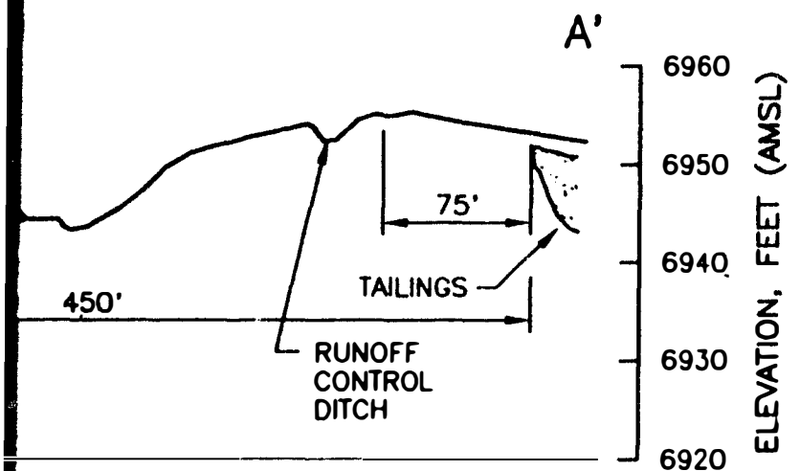
FIGURE 2

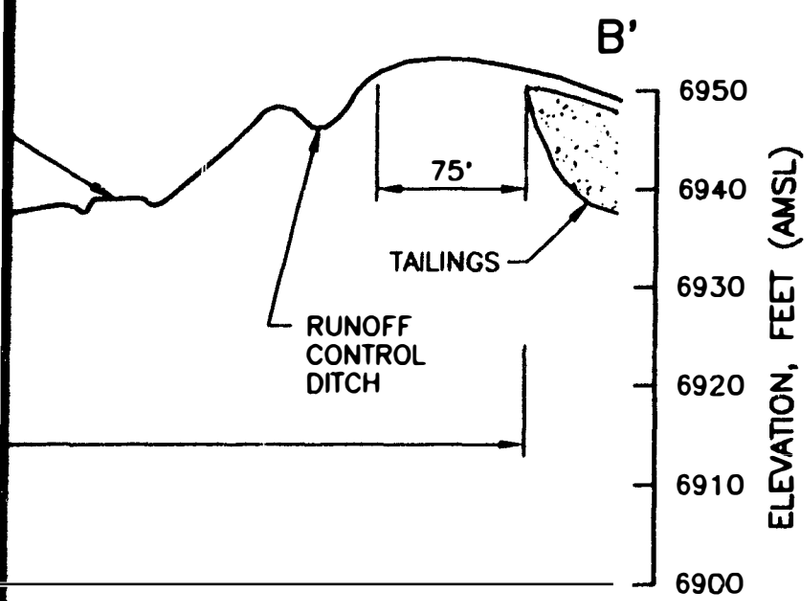
DRAWING NUMBER 86-060-A1053

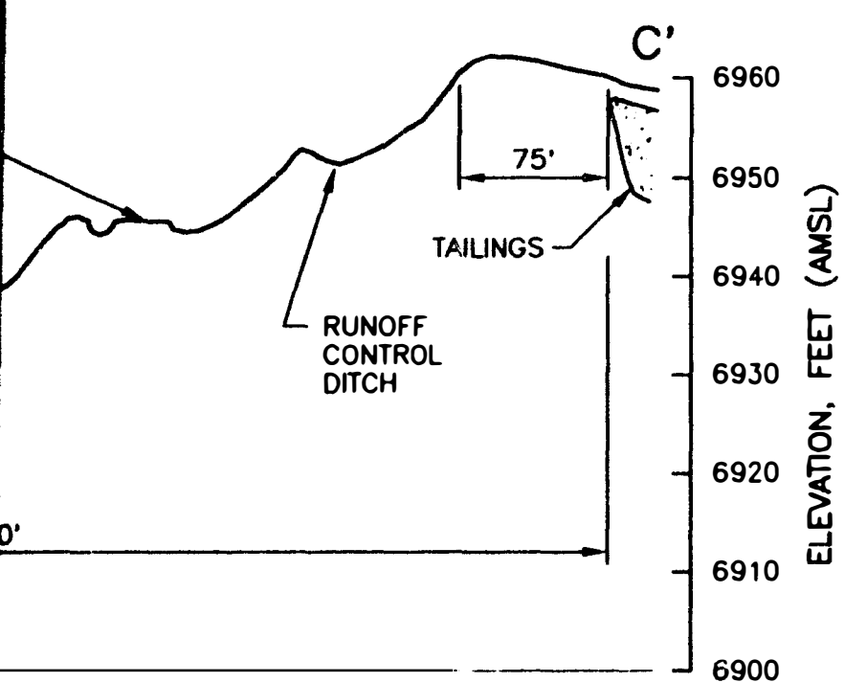
DRAWING NUMBER 86-060-B1054



No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1	4/20/96	ISSUED FOR REVISED TECHNICAL SUPPORT DOCUMENT	R.H.		







NOTE:

1. SEE FIGURES 1 AND 2 FOR LOCATION OF CROSS SECTIONS.

Also Available on Aperture Card

VERTICAL SCALE

20 0 20 FEET

HORIZONTAL SCALE

100 0 100 FEET

VERTICAL EXAGGERATION = 5X

9606260054-02

SURFACE PROFILES

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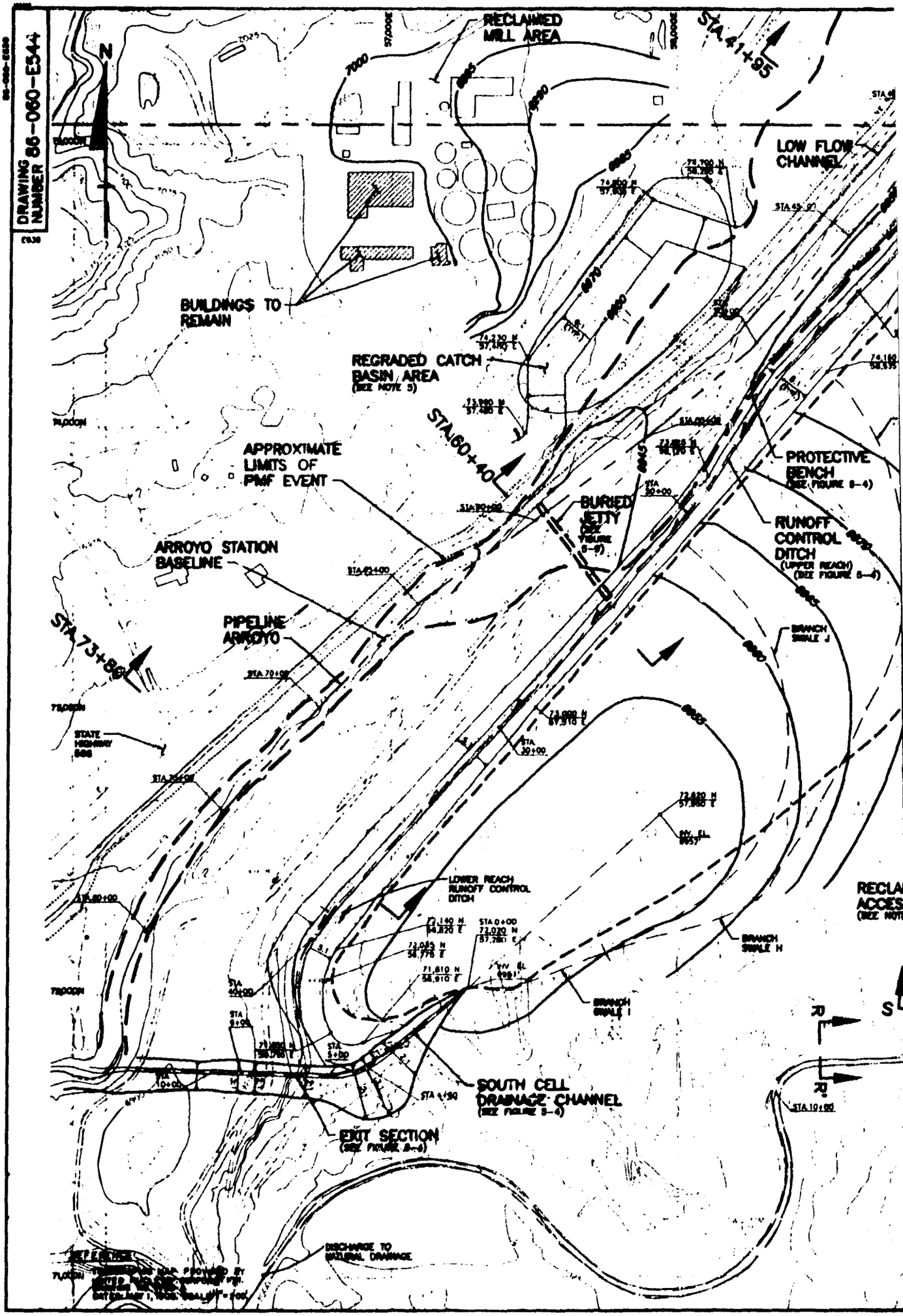
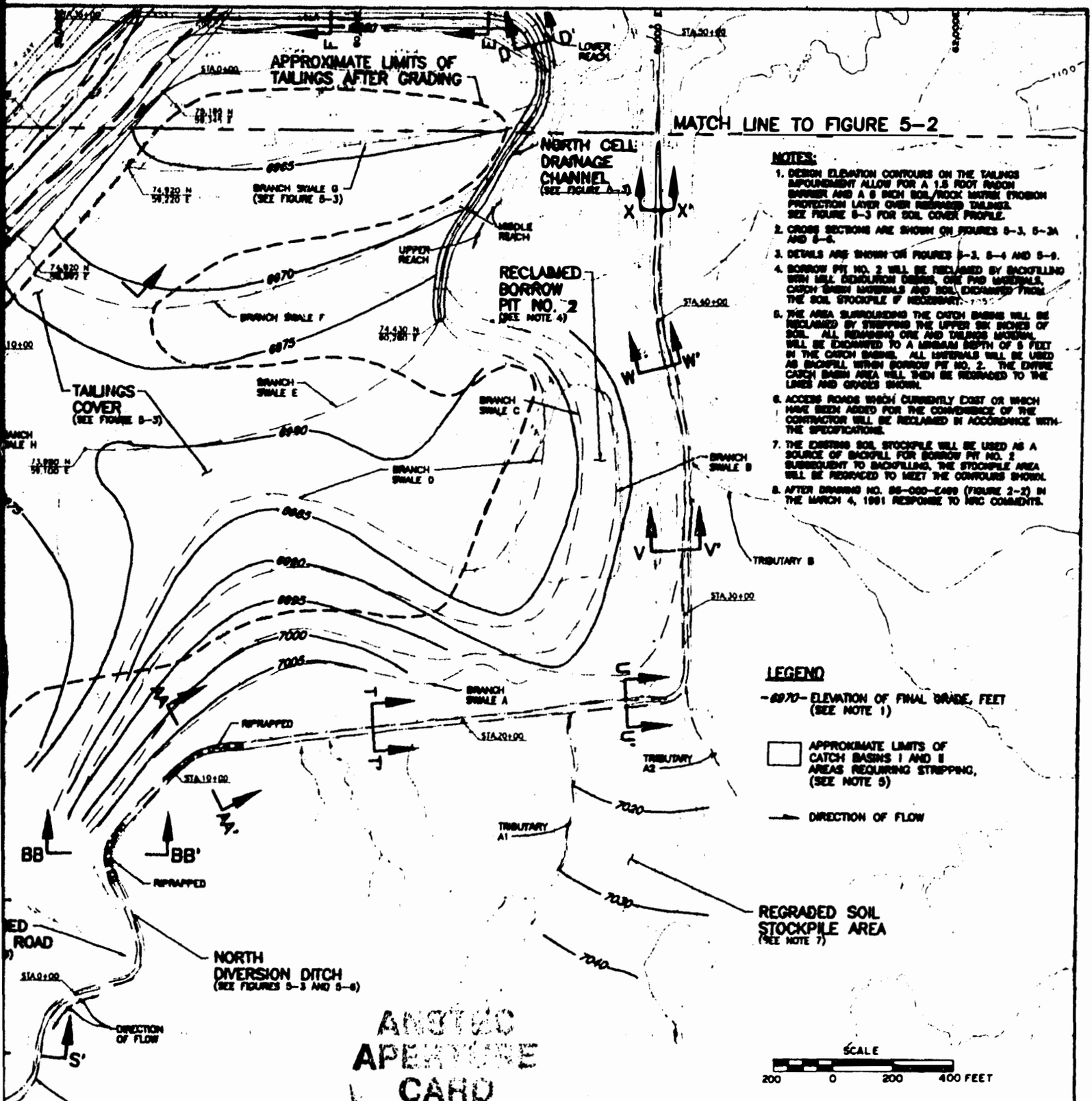
DATE: 6-18-96	FIGURE 3	DRAWING NUMBER
SCALE: AS SHOWN		86-060-B1054

1


DRAWING NUMBER 86-060-E544
RECLAIMED MILL AREA
STA 41+95
LOW FLOW CHANNEL
BUILDINGS TO REMAIN
REGRADED CATCH BASIN AREA
(SEE NOTE 5)
STA 60+40
APPROXIMATE LIMITS OF PMF EVENT
PROTECTIVE BENCH
(SEE FIGURE 8-4)
BURIED JETTY
(SEE FIGURE 8-9)
RUNOFF CONTROL DITCH
(UPPER REACH)
(SEE FIGURE 8-4)
ARROYO STATION BASELINE
PIPELINE ARROYO
STA 73+80
BRANCH SWALE J
STATE HIGHWAY 395
LOWER REACH RUNOFF CONTROL DITCH
BRANCH SWALE H
BRANCH SWALE I
SOUTH CELL DRAINAGE CHANNEL
(SEE FIGURE 8-4)
EXIT SECTION
(SEE FIGURE 8-4)
DISCHARGE TO NATURAL DRAINAGE



NOTES:

1. DESIGN ELEVATION CONTOURS ON THE TAILINGS IMPOUNDMENT ALLOW FOR A 1.5 FOOT RADON BARRIER AND A 6 INCH SOIL/ROCK WATER EROSION PROTECTION LAYER OVER REGRADED TAILINGS. SEE FIGURE 5-3 FOR SOIL COVER PROFILE.
2. CROSS SECTIONS ARE SHOWN ON FIGURES 5-3, 5-3A AND 5-6.
3. DETAILS ARE SHOWN ON FIGURES 5-3, 5-4 AND 5-6.
4. BORROW PIT NO. 2 WILL BE RECLAIMED BY BACKFILLING WITH MILL DEMOLITION DEBRIS, ORE PAD MATERIALS, CATCH BASIN MATERIALS AND SOIL EXCAVATED FROM THE SOIL STOCKPILE IF NECESSARY.
5. THE AREA SURROUNDING THE CATCH BASINS WILL BE RECLAIMED BY STRIPPING THE UPPER SIX INCHES OF SOIL. ALL REMAINING ORE AND TAILINGS MATERIAL WILL BE EXCAVATED TO A MINIMUM DEPTH OF 5 FEET IN THE CATCH BASINS. ALL MATERIALS WILL BE USED AS BACKFILL WITHIN BORROW PIT NO. 2. THE ENTIRE CATCH BASIN AREA WILL THEN BE REGRADED TO THE LINES AND GRADES SHOWN.
6. ACCESS ROADS WHICH CURRENTLY EXIST OR WHICH HAVE BEEN ADDED FOR THE CONVENIENCE OF THE CONTRACTOR WILL BE RECLAIMED IN ACCORDANCE WITH THE SPECIFICATIONS.
7. THE EXISTING SOIL STOCKPILE WILL BE USED AS A SOURCE OF BACKFILL FOR BORROW PIT NO. 2 SUBSEQUENT TO BACKFILLING, THE STOCKPILE AREA WILL BE REGRADED TO MEET THE CONTOURS SHOWN.
8. AFTER DRAWING NO. 86-080-E469 (FIGURE 2-2) IN THE MARCH 4, 1991 RESPONSE TO NRC COMMENTS.

LEGEND

-6970- ELEVATION OF FINAL GRADE, FEET (SEE NOTE 1)

APPROXIMATE LIMITS OF CATCH BASINS I AND II AREAS REQUIRING STRIPPING, (SEE NOTE 5)

DIRECTION OF FLOW

SCALE

200 0 200 400 FEET

FINAL RECLAMATION PLAN
SOUTH END

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GALLUP, NEW MEXICO

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No.	DATE	ISSUE / REVISION	DSN. BY	CK'D BY	APP'D BY
4	6/20/91	REVISED FOR 1990 RECLAMATION PLAN AMENDMENT	R.H.		
3	9-9-87	ISSUED TO CORRECT CATCH BASIN COORDINATES	WH	DRK	DRK
2	8-24-91	ISSUED FOR 1991 RECLAMATION PLAN	WH	DRK	DRK

DATE: 8-7-91	FIGURE 5-1	DRAWING NUMBER 86-080-E544 4
SCALE:		

86-080-E619

OVERSIZE DOCUMENT PAGE PULLED

SEE APERTURE CARDS

NUMBER OF OVERSIZE PAGES FILMED ON APERTURE CARDS 1

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