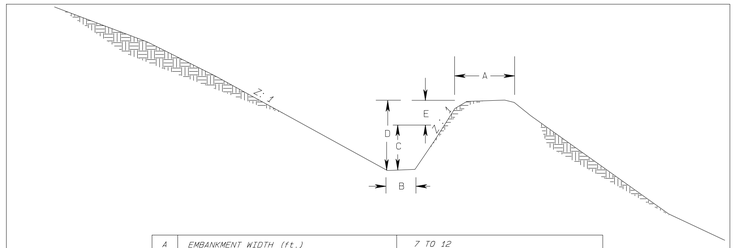
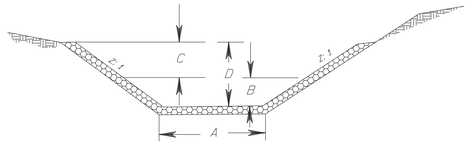
PLAN



A	EMBANKMENT WIDTH (ft.)	7 TO 12
B	BOTTOM WIDTH (ft.)	5 TO 16
C	FLOWDEPTH W/SEDIMENT (100 YR-6HR) (ft.)	0.2 TO 0.7
D	DEPTH (ft.)	2 TO 5
Z:1	SLOPES (ft.)	2.0:1 TO 10:1
	FLOW VELOCITIES (10 YR-6HR) (fps)	1.2 TO 3.3
	TERRACE GRADIENTS (%)	0.1 TO 3.0
E	MINIMUM FREEBOARD (ft.)	1.3 TO 4.1

Typical Terrace Cross-Section
For Terrace 1 thru 6.
NTS



		DS-1	DS-2	DS-3	DS-4[1]	DS-5[1]
A	BOTTOM WIDTH (ft.)	4.0 - 8.0	6.0 - 7.5	5.0 - 8.0		
B	FLOW DEPTH (100 YR - 6 HR (ft.)	0.2	0.1	0.2		
C	MINIMUM FREEBOARD (ft.)	1.0	1.5	2.7		
D	DEPTH (ft.)	1.2 - 2.0	1.6 - 4.0	1.5 - 3.5		
Z: 1	SIDE SLOPES (ft.)	1.6: 1 - 6: 1	3.0: 1 - 8.0: 1	1.9: 1 - 7.5: 1		
	RIPRAP D50 (Req'd)(In)	6	6	12		
	RIPRAP D50 (PLACED)(In)	9	9	12		
	RIPRAP THICKNESS (In)	12	12	12		
	GRADIENT (%)	1.5 - 9.5	3.0 - 24.0	3.5 - 24		

1.See note 1 under certification statement.

Typical Riprap Drop Structure Cross-Section
NTS

NOTES:

1. For additional details of drainage structures, see exhibit 12-31.

CERTIFICATION STATEMENT

I, Leonard Raymond, hereby certify that the reclamation surface shown has been constructed in accordance with the approved AOC plans and that the information shown is complete and accurate to the best of my knowledge, except as noted below.

LEONARD RAYMOND
NEW MEXICO
6600
REGISTERED PROFESSIONAL ENGINEER

1. Due to technical issues associated with structures DS-4 and DS-5 the area in Lowe Hole 3 will be temporarily with-held from this as-built until the issues are resolved. The technical issues will be resolved by 6/01/01 and any additional fieldwork required will also be completed by that date.

LEGEND

- ROAD
- WATERSHED
- BUILDING
- FENCE
- IRRIGATION LINE
- CULVERT
- DAM
- DRAINAGE
- RAILROAD
- TREES
- POWERLINE
- ×5338.5 SPOT ELEVATION
- 5300 INDEX CONTOUR
- 5298 INTERMEDIATE CONTOUR
- 218 5422.45 CONTROL
- LEASE LINE
- TERRACE
- MAIN CHANNEL
- AUXILLARY CHANNEL
- RIPRAP
- RECLAIMED AREA

REVISION	DATE
1 SUBMITTED TO OSM	10/13/00
2	
3	
4	
5	

PROJECT MANAGER: CORY NELSON
ENGR. of RECORD: LEONARD RAYMOND
REG. NO: 6600
SRVYR of RECORD:
REG. NO:

BHP-NAVAJO COAL CO.
PO BOX 155, FRUITLAND, NEW MEXICO, 87416

ACCOUNT:
DATE: 10/13/00
DESIGNED BY: RYAZZIE
DRAWN BY: RYAZZIE
CHECKED BY: LR
APPROVED BY: LR

EXHIBIT 12-31A
PLAN & DETAILS

LOWE RECLAMATION
AS-BUILT

DRAWING

SHEET 1
OF 1

Project Desc.: Path: G:\Departments\GS\GSM_SUBMVPER_PROG\CH_12_PAP EXHIBITS\12-31A\Lowe Reclamation AsBuilt.prb Plot time: Mon Oct 31 14:36:13 2005