

SECTION 22

SUPPORT FACILITIES

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SUPPORT FACILITIES

LIST OF REVISIONS DURING PERMIT TERM

REV.		DATE
NUMBER	REVISION DESCRIPTION	APPROVED

22 SUPPORT FACILITIES

Mine facilities for the Navajo Mine are comprised of transportation facilities, topdressing stockpiles, water and air monitoring facilities, diversions, and water storage and/or treatment facilities such as ponds, impoundments, berms, or embankments.

Support facilities include various permanent structures (structures in place for greater than 6 months) which are greater than 100 ft² and not readily mobile (e.g. not on wheels or skids) or are attached to a permanent foundation. This may include structures within industrial complex areas, equipment storage areas, water pipelines, water loadouts, electric power lines, explosives/blasting agent storage areas, and coal sizing and storage facilities. [Exhibit 22-1](#), [Exhibit 22-2](#), and [Exhibit 22-3](#) show the locations of all mine facilities.

Various structures not meeting the size criteria outlined above, mobile structures, utility connections, and other such facilities of insignificant magnitude will be situated on lands classified as Approved Disturbance/Bond Areas (see Exhibit 26-19 through 26-23). These structures will be operated under the regulatory requirements, but will not require regulatory approval. Plans for all proposed Support Facilities as defined in OSM's December 2, 1992 letter, will be submitted to OSM for prior approval per 30 CFR § 780.38

Upon bond release, the support facilities will become the property of the Navajo Nation, as specified in Navajo Mine's lease agreement. The bond amount is based on the maximum reclamation requirements (Section 50 – Bonding) and includes removal of all facilities. The bond will be adjusted accordingly in the future if the Navajo Nation wants to retain any facilities. Following removal, the affected areas will be regraded, topdressed, and revegetated as discussed in Part 5 – Reclamation Plan.

22.1 Existing Support Facilities and Structures

22.1.1 Coal Handling Facilities

The coal plant is owned and operated by the Navajo Mine and is located adjacent to the Four Corners Power Plant ([Exhibit 22-1](#), [Exhibit 22-2](#), and [Exhibit 22-3](#)). It includes a coal delivery terminus, crushers, conveyors, and stacking and reclaiming equipment. The coal delivery terminus is a rail/truck-conveyor interface in which coal is dumped from bottom-dump rail cars or trucks into hoppers. From there the coal is fed into the crusher and conveyor system for stacking in blend piles. From the blend piles, the coal is reclaimed for delivery to the Four Corners Power Plant. The sales grade of the coal is based on contract obligations with the power plant. Delivery to the power plant is on a continuous, 24 hour basis.

Coal waste materials are also stored at various locations from time to time within the plant area. This is to allow for staging waste materials prior to being disposed of in pit. All of the area containing waste materials is within primary sediment control and permitted disturbance.

These facilities are designed, constructed, maintained, and used in a manner which prevents additional contributions of suspended solids to runoff outside the Permit Area. The facility is not a coal cleaning operation, but a stacking and reclaiming facility; therefore, no water or Coal Plant wastes are discharged from the Coal Plant area. Total water usage is confined to dust suppressant sprays and housekeeping. Fugitive dust control measures are outlined in Section 40 – Environmental Protection.

22.1.2 Coal Transportation Facilities

22.1.2.1 Railroad

The Navajo Mine Railroad consists of one main line and five spurs. The five spurs are as follows:

Pinto Siding: Located south of the North Area Industrial Complex

Spur B: Located at Hosteen Stockpile,

Spur C: Located at Barber Stockpile,

Spur D: Commences in Area 2 and continues to Area 3, and services Lowe Stockpile, and North Spur: The tail track for access to the North Shop locomotive repair bay.

In general, the mainline of the railroad is parallel to the mine's permit line geometry in the north-south direction. The end points of the mainline are at the North Plant (Area 1) and Lowe Pit (Area 3). The majority of the alignment consists of a single track, although the railroad stockpiles have double tracks to accommodate coal loading operations. The railroad alignment layout is shown in Exhibit 10-1 through 10-5.

The main railroad line beginning from the north operations of Area 1 was constructed around 1975. As the mine progressed to the south, the railroad extension of Spur D into Area 3 was constructed in 1982.

A railroad service road runs parallel to the railroad tracks for the entire alignment. The service road is properly maintained to ensure that no adverse conditions arise that are harmful to the environment. Two 7-foot diameter reinforced concrete pipes serve as a cattle crossing near railroad culverts CP-1 and CP-6.

There are 10 rail storage yards along the rail right-of-way. See Mine Structures Map, [Exhibit 22-1](#), [Exhibit 22-2](#), and [Exhibit 22-3](#), for locations. These areas are used to store both old and new rail materials for maintenance and replacement of deteriorated sections of track. Materials include but are not limited to ballast, ties, rail, fill dirt, and hardware related to track construction. All storage areas have sediment control as described in Section 25 – Sediment Control Plan and Table 25-1 for miscellaneous applications. On occasion new panel tracks (new complete sections of track) will be placed at various locations, both in and out of storage yards, along the rail right-of-way to facilitate track repairs. This practice will not be a long-term storage of materials but a process to facilitate track maintenance in a short period of time. Length of time will vary however from a few days to possibly a few months due to customer demand and scheduling down time for the rail. In instances where materials are not in an approved

storage yard, sediment control methods from Section 25 – Sediment Control Plan will be used to mitigate any offsite disturbance.

22.1.2.2 Railroad Maintenance

Railroad maintenance will consist of railroad track repairs, rail testing, maintaining drainage control structures, and maintaining access roads. The railroad shall be inspected periodically and repairs will be made to areas found defective or unsafe. The inspection will include the railroad track, drainage controls structures, and roads along the railroad. The overhead catenary system will be inspected on a monthly basis. The steel rail will be routinely tested and maintained according to the test results. All drainage control structures along the railroad will be maintained to ensure that no adverse condition that maybe harmful to the environment will arise. Structures will be inspected after each major storm event, any adverse conditions identified will be corrected. The railroad access road will be maintained as outlined in Section 23 – Roads.

22.1.2.3 Coal Storage

The Navajo Mine has four coal stockpiles. Three are field stockpiles located at railroad spurs, and the fourth stockpile is an emergency coal stockpile located near the north area coal plant. The approximate maximum capacities and date of construction of these stockpiles are listed in [Table 22-1](#).

Barber, Hosteen and Lowe field stockpiles are divided down the center by the railroad spur to facilitate blending. This division allows coal of varying qualities to be stacked on either side of the rail.

The stockpiles are built with bottom-dump haul trucks and rubber-tired dozers. The trucks drive up a pile on one end, dump their loads, then drive off the other end. Rubber-tired dozers then level the pile and compact the coal. Large front-end loaders load the coal from the piles onto trains for delivery to the coal plant. [Figure 22-1](#) and [Figure 22-2](#) show typical cross sections and plan views of the coal stockpiles, while [Exhibit 22-1](#), [Exhibit 22-2](#), and [Exhibit 22-3](#) show their locations. Section 26 – Drainage Control Plan, provides detailed descriptions of the surface runoff impoundments in the stockpile areas.

The employee coal dump is maintained near the Area 3 facilities to allow employees and chapter members to gather coal for their own use. The dump is cleaned out periodically, and the coal is transported to field stockpiles. Typically the employee coal dump is open from October through March.

22.2 Buildings and Support Facility Areas

22.2.1 Industrial Complex

The industrial complex is composed of two major portions:

1. The North Area support facilities, covering approximately 70 acres and located adjacent to the Four Corners Power Plant about four miles south of the northern end of the Permit Area and,
2. The Area 3 support facilities, covering approximately 30 acres and located about 11 miles south of the northern end of the Permit Area.

The Navajo Mine North Area (built starting in 1962) includes; a heavy equipment repair shop, a carpentry and plumbing shop, an auto repair shop, fuel and lube tanks, storage yards, a coal waste storage yard, a tire installation and repair shop, change rooms, a heavy equipment ready line, a wash bay, a sewage treatment facility, a coal plant, a weld shop, an irrigation system pump house, a reclamation seed building, a reclamation yard, a coal lab, a railroad yard, a warehouse with associated storage yard, a communication tower, offices for training, field maintenance, and security. South of the North Area Support facilities is a potable water tank that is used for these facilities.

Area 3 (built starting in 1982) includes an engineering and production office building, an equipment maintenance shop, a weld shop, an equipment loading dock, a vehicle fueling area, a propane tank, a warehouse-storage building, change rooms, a wash bay, a potable water tank, a heavy equipment ready line, an employee coal stockpile, a recycling facility, a sewage facility, a solvent containment building, a safety building and security offices. South of Area 3 is a second communication tower for the mine radio system transmitter/repeater.

The North Area and Area 3 Diesel Loadout areas are protected from spills by containment bunkers.

All of these facilities are currently in use and maintained in good condition. The Navajo Mine area support facilities and associated parking lots are designed to comply with Federal Regulation 30 CFR Part 816.181.

22.2.2 Reclamation Storage Yard

The reclamation storage yard is a 5.6-acre storage area located west of the Lowe loadout. The facility was created by blading the area level, applying a thin layer of regolith material, followed by the creation followed by the creation of 3 ft. berm ([Figure 22-3](#)) around the yard. The facility is used for the storage of revegetation equipment (tractors and implements), irrigation pipe and supplies, fencing material, and other reclamation materials.

22.3 Water, Sewage, and Other Utility Facilities

A potable water line is used to supply the facilities with fresh water. It is supplied from the Navajo Tribe Utilities Authority (NTUA) line that runs between Farmington and Shiprock, New Mexico. It supplies the North Area and Area 3 support facilities. The location and details of the potable water line are displayed on [Exhibit 22-1](#), [Exhibit 22-2](#), and [Exhibit 22-3](#). Construction of the potable water line began in 1962, and continued in 1982 to the Area 3 Industrial Complex.

22.3.1 Sewer and Loadout Facility Ponds

[Table 22-2](#), [Table 22-3](#), [Table 22-4](#), [Table 22-5](#), and [Table 22-6](#) list the sewer and loadout facility ponds at Navajo Mine with a brief description of each pond. Navajo Nation Permit No. 96.289 allows for the use of lagoon water from the North Sewer Lagoon for operational use, subject to permit conditions.

22.3.2 Water Pipelines

The irrigation pipeline (built starting in 1975) provides water from Morgan Lake for the irrigation of revegetation plots. The pipeline also supplies water to the storage ponds at the Barber and Lowe water loadout facilities. The location and details of the pipeline are displayed on [Exhibit 22-1](#), [Exhibit 22-2](#), and [Exhibit 22-3](#).

The location of three major water supply intakes for current users of surface water flowing into, out of, and within one mile of the Navajo Mine Permit Area are shown on [Exhibit 22-1](#), [Exhibit 22-2](#), and [Exhibit 22-3](#). The three sites are all in the Morgan Lake vicinity and include the Four Corners Power Plant's intake canal, Navajo Mine's irrigation uptake, and a water loadout facility which intakes near the irrigation uptake.

Other surface water use on or within one mile of the Permit Area consists of livestock watering ponds. These ponds have been constructed to capture and store the intermittent surface waters near the Permit Area and are shown on Exhibit 16-2.

A water monitoring network and various water control measures, as described in this Section and in Section 42 – Monitoring, Maintenance, Inspections and Examinations, will be implemented throughout the life of the mine to ensure that impacts to surface waters are minimized. Navajo Mine has water rights on the San Juan River which can be used to offset any adverse impacts to the State of New Mexico and present users. These rights will be maintained throughout the mining operation and a period thereafter, for retirement, if required to any affected San Juan Basin water users. Should it become necessary, Navajo Mine will develop water supplies of suitable quantity, quality and location, and provide an adequate distribution system to ensure that water supplies will be maintained at an equal or better condition.

22.3.3 Water Loadouts

There are three water loadouts, one at the North Complex, one near Barber Stockpile, and one near Lowe Stockpile. These loadouts supply water to water trucks used for haulroad dust suppression. A water loadout typically consists of:

1. A storage pond, (except at the North Complex),
2. An overhead pipe for filling the trucks,
3. A concrete pad for parking while the truck is being filled, and
4. A pump to fill the trucks.

These facilities have been constructed to minimize erosion and siltation. Embankments and drainageways are regularly examined after each storm event. The location of the water loadouts is shown on [Exhibit 22-1](#), [Exhibit 22-2](#), and [Exhibit 22-3](#).

22.4 Pipelines, Electrical Lines, and Communications Facilities

22.4.1 Electric Power Lines

Arizona Public Service Company supplies the mine with power at 69,000 volts. Approximately 31 miles of mainline and nine miles of stublines make up the existing power distribution network for Areas 2, 3, and 4 North. The mainlines originate at the FCPP and branch to the east and west sides of the pits in Areas 2, and 3, and 4 North. Stublines service the pits about every 5,000 feet from the east side. On the west, the power line follows the railroad catenary. See [Exhibit 22-1](#), [Exhibit 22-2](#), and [Exhibit 22-3](#) for details. Power lines will be constructed to meet the recommended design criteria (Miller et al., 1975) to prevent the electrocution of raptors.

22.5 Other Structures and Facilities

22.5.1 Explosives Handling and Storage Facilities

There are four ammonium nitrate and emulsion storage facilities at Navajo Mine:

1. Yazzie Silos (Inactive),
2. Barber Silos,
3. Lowe Silos, and
4. Gilmore Silos.

A typical storage facility has nitrate silos, diesel fuel storage tanks, and silos for emulsion blasting agent product. The location of these facilities is shown on [Exhibit 22-2](#) and [Exhibit 22-3](#).

There are explosives magazines at the north-end of Lowe Pit which was built in accordance with the Bureau of Alcohol, Tobacco, and Firearms Division regulations 26 CFR Parts 181.198 and 181.200. This area is used for storing primers, blasting cord, delays, and wet hole blasting product. See [Exhibit 20-3](#) for locations of these stores.

22.6 Overburden Stockpiles

There are no overburden stockpiles in the Permit Area.

22.7 Soil Stockpiles

22.7.1 Topdressing Stockpiles

There are numerous topdressing stockpiles in use in the Permit Area, as shown on [Exhibit 22-1](#), [Exhibit 22-2](#), and [Exhibit 22-3](#). [Table 22-7](#) gives the stockpile inventories and approximate volumes. Removed topsoil is stockpiled only when it is impractical to be promptly redistributed on graded areas.

Topdressing is not removed from stockpiles until required for redistribution on graded areas. However, stockpiles may be relocated to facilitate mining and/or reclamation. Changes or revisions to the permit necessitated by topdressing stockpile relocations will also be submitted to OSMRE.

Topdressing stockpiles are situated on stable sites in such a manner as to minimize wind and water erosion, and to avoid sources of contamination. Berms and/or surface water control structures are constructed around the stockpiles as described in Section 26 – Drainage Control Plan. Topdressing stockpiles may be stockpiled with slopes at angle of repose. Topdressing stockpiles which remain undisturbed for greater than six months will be mulched on side slopes less than 4:1 (H:V). Topdressing stockpiles which will be undisturbed for greater than one year or longer will be seeded and mulched, on side slopes less than 4:1, during the next appropriate seeding period using procedures described in Part 5. After the stockpiles are reclaimed, the stockpile areas will be left with adequate topdressing so that they may also be reclaimed. All stockpiles are clearly marked so that other mining activities do not inadvertently disturb or contaminate them.

Snow fences are currently used on several stockpiles for stabilization ([Table 22-7](#)). Where snow fences are not controlling erosion they will be removed and the stockpiles will be seeded and mulched. In the future, snow fencing will not be used on topdressing stockpiles.

[Table 22-8](#) lists the miscellaneous mitigation area capacities.

22.7.2 Regolith Stockpiles:

Regolith stockpiles to be used as topsoil substitute or root zone material will be identified and managed the same as topdressing stockpiles.

References

Miller, Dean; E. L. Boeker; R. S. Thorsell; R. R. Olendorff. 1975. Suggested Practices for Raptor Protection on Powerlines. Raptor Research Foundation, Inc., for Edison Electric Institute.

US Environmental Protection Agency. 1994. Quality Assurance Handbook for Air Pollution Measurement Systems: Volume II, Ambient Air Quality Monitoring Program. EPA-600/R-94/038A; April.

Table 22-1 Navajo Mine Coal Stockpiles

Name	Capacity (tons)	Construction Date
Barber	1,500,000	1973
Hosteen	800,000	1974
Emergency	80,000	1988
Lowe	2,700,000	1982
Total	5,080,000	

Table 22-2 Area 3 Sewer Pond 1

Type of Pond	Sewage
Location	Exhibit 26-11
Purpose	Collects and retains effluent from the Area 3 Complex.
Design Information	Appendix 26.C & Exhibit 22-4
As-Built Information	Exhibits 11-26, 11-27 and Exhibit 22-4
Intended Life Span	Will be removed in 2025.
Watershed Area (ac)	1.2
As-Built Capacity (ac-ft)	4.2
Curve Number (SCS)	89
Design Storm Event	100 yr, 6 hr
Peak Discharge (cfs)	2.67
Runoff Volume (ac-ft)	0.11
Max. Permissible Gauge Reading for Water/Sediment (ft)	N/A, Elev. 5446.9
Depth at Upstream Toe (ft)	N/A
NRCS Hazard Classification	Low Potential
Spillway Type	N/A
25 yr - 6 hr Peak Discharge (cfs)	N/A
Foundation Soil Type	N/A
Comments	Lined.

Notes: All references unless otherwise noted are from the current approved PAP.

Table 22-3 Barber Loadout

Type of Pond	Sediment
Location	Exhibit 26-10
Purpose	Water storage for dust suppression.
Design Information	Appendix 26.C
As-Built Information	Exhibit 22-5
Intended Life Span	Will be removed in 2025.
Watershed Area (ac)	3.6
As-Built Capacity (ac-ft)	19.0
Curve Number (SCS)	89
Design Storm Event	100 yr, 6 hr
Peak Discharge (cfs)	8.01
Runoff Volume (ac-ft)	0.33
Max. Permissible Gauge Reading for Water/Sediment (ft)	N/A
Depth at Upstream Toe (ft)	N/A
NRCS Hazard Classification	Low Potential
Spillway Type	N/A
25 yr - 6 hr Peak Discharge (cfs)	N/A
Foundation Soil Type	N/A
Comments	Fed by Irrigation Pipeline, no surface water runoff stored.

Table 22-4 Lowe Loadout

Type of Pond	Sediment
Location	Exhibit 26-12
Purpose	Water storage for dust suppression.
Design Information	Appendix 26.C
As-Built Information	Exhibits 11-29 and 22-6
Intended Life Span	Will be removed in 2025.
Watershed Area (ac)	3.4
As-Built Capacity (ac-ft)	18.0
Curve Number (SCS)	89
Design Storm Event	100 yr, 6 hr
Peak Discharge (cfs)	7.57
Runoff Volume (ac-ft)	0.31
Max. Permissible Gauge Reading for Water/Sediment (ft)	N/A
Depth at Upstream Toe (ft)	N/A
NRCS Hazard Classification	Low Potential
Spillway Type	N/A
25 yr - 6 hr Peak Discharge (cfs)	N/A
Foundation Soil Type	N/A
Comments	Fed by Irrigation Pipeline, no surface water runoff stored.

Table 22-5 North Sewer Pond

Type of Pond	Sediment
Location	Exhibit 26-9
Purpose	Collect and contain all effluent from sewage facilities in the north industrial area.
Design Information	Appendix 26.C
As-Built Information	Exhibit 11-15 Exhibit 22-7 through 22-14 and 22-15
Intended Life Span	Will be removed in 2025
Watershed Area (ac)	2.2
As-Built Capacity (ac-ft)	8.1
Curve Number (SCS)	100
Design Storm Event	100 yr, 6 hr
Peak Discharge (cfs)	6.43
Runoff Volume (ac-ft)	0.38
Max. Permissible Gauge Reading for Water/Sediment (ft)	N/A, Elev. 5337.5
Depth at Upstream Toe (ft)	N/A
NRCS Hazard Classification	Low Potential
Spillway Type	N/A
25 yr - 6 hr Peak Discharge (cfs)	N/A
Foundation Soil Type	N/A
Comments	Lined with gauge post.

Table 22-6 Area 3 Sewer Pond-2

	Sediment
Location	Exhibit 26-11
Purpose	Collect and contain all effluent from sewage facilities in the Area 3 Complex site.
Design Information	Exhibit 11-107
As-Built Information	Exhibit 22-4
Intended Life Span	Will be removed 2025
Watershed Area (ac)	N/A
As-Built Capacity (ac-ft)	5.0
Curve Number (SCS)	N/A
Design Storm Event	N/A
Peak Discharge (cfs)	N/A
Runoff Volume (ac-ft)	N/A
Max. Permissible Gauge Reading for Water/Sediment (ft)	Elev. 5447.0
Depth at Upstream Toe (ft)	N/A
NRCS Hazard Classification	N/A
Spillway Type	Low Potential
25 yr - 6 hr Peak Discharge (cfs)	N/A
Foundation Soil Type	N/A
Comments	Lined.

Table 22-7 Topdressing Stockpile Approximate Volume/Regolith Stockpiles Capacities

New Stockpile Name ¹	Old Stockpile Name	Approx. Volume (cyds) ³
Airport_TS	Airport 1	9,919
DBR12_TS_E ²	Doby 1	732,845
DBR13_TS_W	Doby R13	412,272
HSR1_TS_S	-	144,865
BBR3_TS_S		36,016
BBR5_TS_S	Barber 5	164,829
LWR1_TS_W2	Lowe 2	250,338
LWR2_TS_E	Lowe 4	17,162
LWR4_TS_N	-	716,713
LWR4_TS_E	Lowe/Dixon 1	118,668
LWR4_TS_S	-	0
DXR1_TS_N	-	0
DXR1_TS_S	-	372,164
DXR2_TS_W	-	413,515
DXR4_TS	-	899,820
TS-401	-	60,333
TS-402	-	71,444
TS-403	-	148,000
IBR_TS_N	-	136,200

Regolith Stockpiles Capacities

New Stockpile Name ¹	Old Stockpile Name	Approx. Volume (cyds) ³
DXR1_RG_W	Dixon 3	475,100
LWR1_RG_N	Lowe 9	1,818,552
LWR4_RG_N	Lowe 10	468,633

¹Topdressing stockpiles are shown on Exhibits 22-1 through 22-3

TS, Topdressing stockpiles. RG, Regolith stockpiles.

²Designates stockpiles that have snow fences installed.

³Volumes were calculated using aerial survey and/or loader count. Volumes do not include 10% rehandling loss so total volume will differ from 12-4 and 12-9.

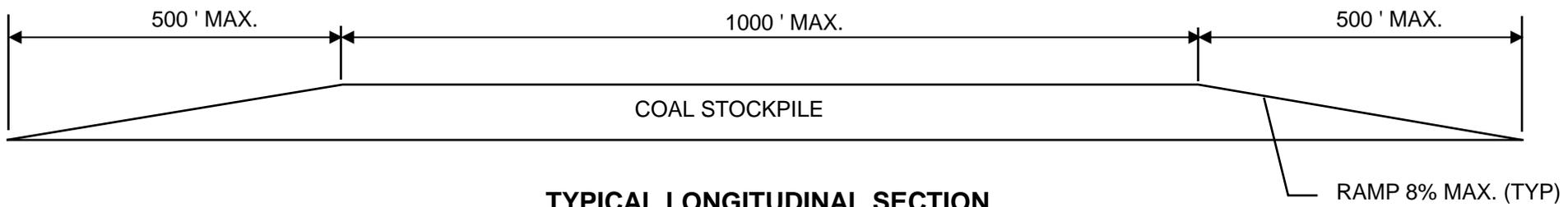
Table 22-8 Miscellaneous Mitigation Area Capacities

Miscellaneous Mitigation Areas^{1,2}

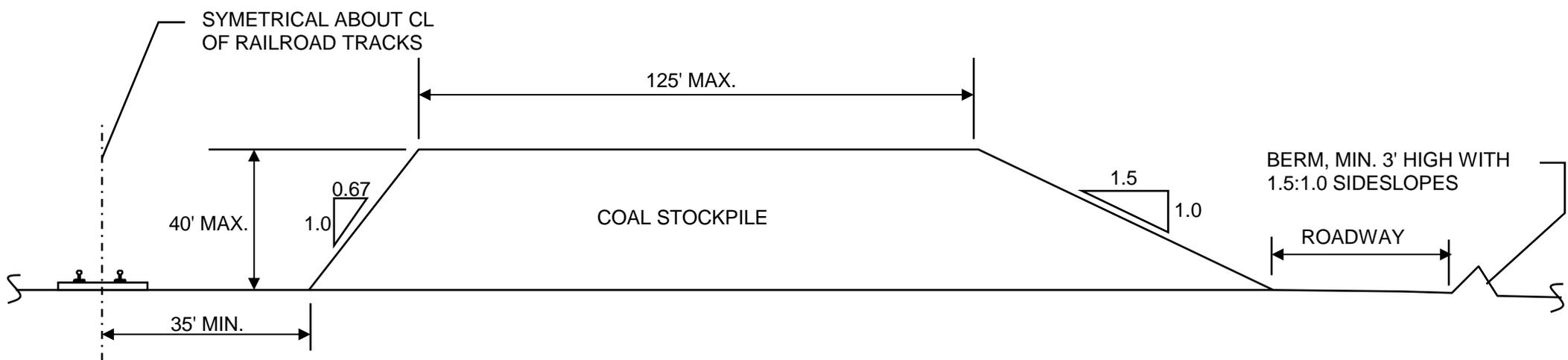
Area Name	Capacities (cyds)
Yazzie Overlook	315,027
North Barber Spoil Cut Area	816,538

1 Areas identified as suitable mitigation material, which is Not Regolith material

2 Areas are shown on Detailed Soils Maps (Section 14 Exhibit 14-1).



**TYPICAL LONGITUDINAL SECTION
NTS**



**TYPICAL TRANSVERSE SECTION
NTS**

- NOTES:
1. THE BERM CONVEYS SURFACE RUNOFF EITHER DIRECTLY INTO A SEDIMENT POND OR TO A DITCH/CHANNEL LEADING TO A SEDIMENT POND.
 2. SEE APPENDIX 23.B FOR THE SUPPORTING DESIGN DATA FOR THE BERM.
 3. SEE FIGURE 22-2 FOR TYPICAL PLAN.

CERTIFICATION STATEMENT

I, LEONARD RAYMOND, HEREBY CERTIFY THAT THIS FIGURE WAS REVIEWED BY ME AND THE INFORMATION SHOWN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

FIGURE 22-1

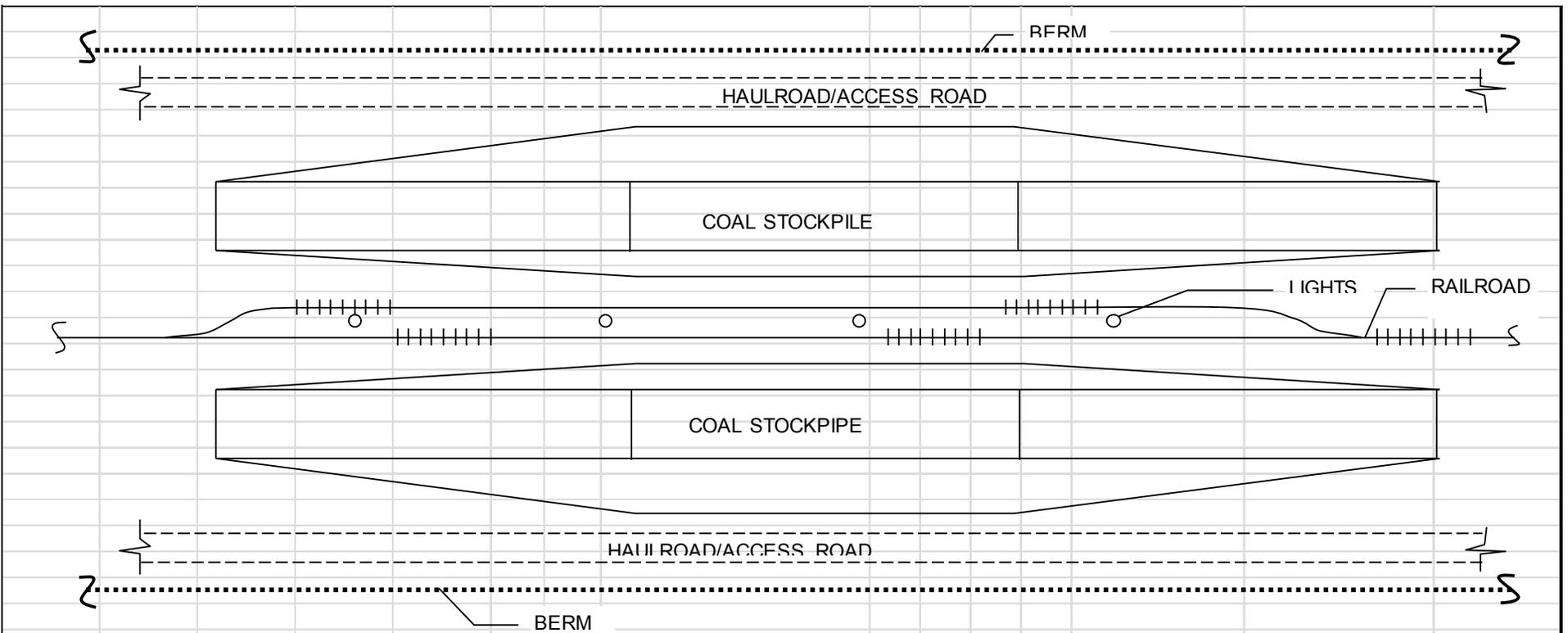
REV. NO.	DATE	REVISIONS:	APPROVALS			
			ENGR.	E.Q.	P.E.	CHIEF ENGR
1	6/4/1998	MIDTERM UPDATES & REVISIONS	LR		LR	

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PO BOX 1717 FRUITLAND, NM 87416

**COAL STOCKPILE AREA
TYPICAL SECTIONS**

Drawn By: LR Approved By: LR Date: 6/3/98



TYPICAL PLAN

NOTES:

1. SEE FIGURE 11-7 FOR TYPICAL CROSS SECTIONS.

CERTIFICATION STATEMENT

I, LEONARD RAYMOND, HEREBY CERTIFY THAT THIS FIGURE WAS REVIEWED BY ME AND THE INFORMATION SHOWN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

FIGURE 22-2

BHP NAVAJO COAL COMPANY

PO BOX 1717 FRUITLAND, NM 87416

**COAL STOCKPILE AREA
TYPICAL PLAN**

REV. NO.	DATE	REVISIONS:	APPROVALS			
			ENGR.	E.Q.	P.E.	CHIEF ENGR
1	#####	MIDTERM UPDATES & REVISIONS	LR		LR	

Draw n By: LR Approved By: LR Date: 6/3/98



LEGEND

- PAVED ROAD
- DIRT ROAD
- HAUL ROAD
- TRAIL
- BUILDING
- FENCE
- IRRIGATION LINE
- CULVERT
- DAM
- DRAINAGE
- RAILROAD
- TREES
- POWERLINE
- SPOT ELEVATION
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- HORIZ. & VERT. CONTROL
- L-30
- LEASE BOUNDARY
- NK-01
- METEOROLOGICAL STATION NO. 1
- TOPSOIL/REGULTE STOCKPILE LOCATION

1000 0 1000 2000
CONTOUR INTERVAL: 10'

NOTE
ADDITIONAL MINE STRUCTURES, INCLUDING ROADS, RAILROAD, PONDS, IMPROVEMENTS AND CULVERTS, ALTHOUGH PRESENT ON THIS EXHIBIT AS PART OF AERIAL BASE MAPPING, ARE NOT INTENDED TO BE CURRENT OR ACCURATE ON THIS EXHIBIT. PLEASE REFER TO THE APPROPRIATE P.A.P. TEXT SECTION FOR A MINE STRUCTURE EXHIBIT REFERENCE.

I, W. BENALLY, HEREBY CERTIFY THAT THE INFORMATION DISPLAYED ON THIS DRAWING, EXHIBIT 22-09, IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.



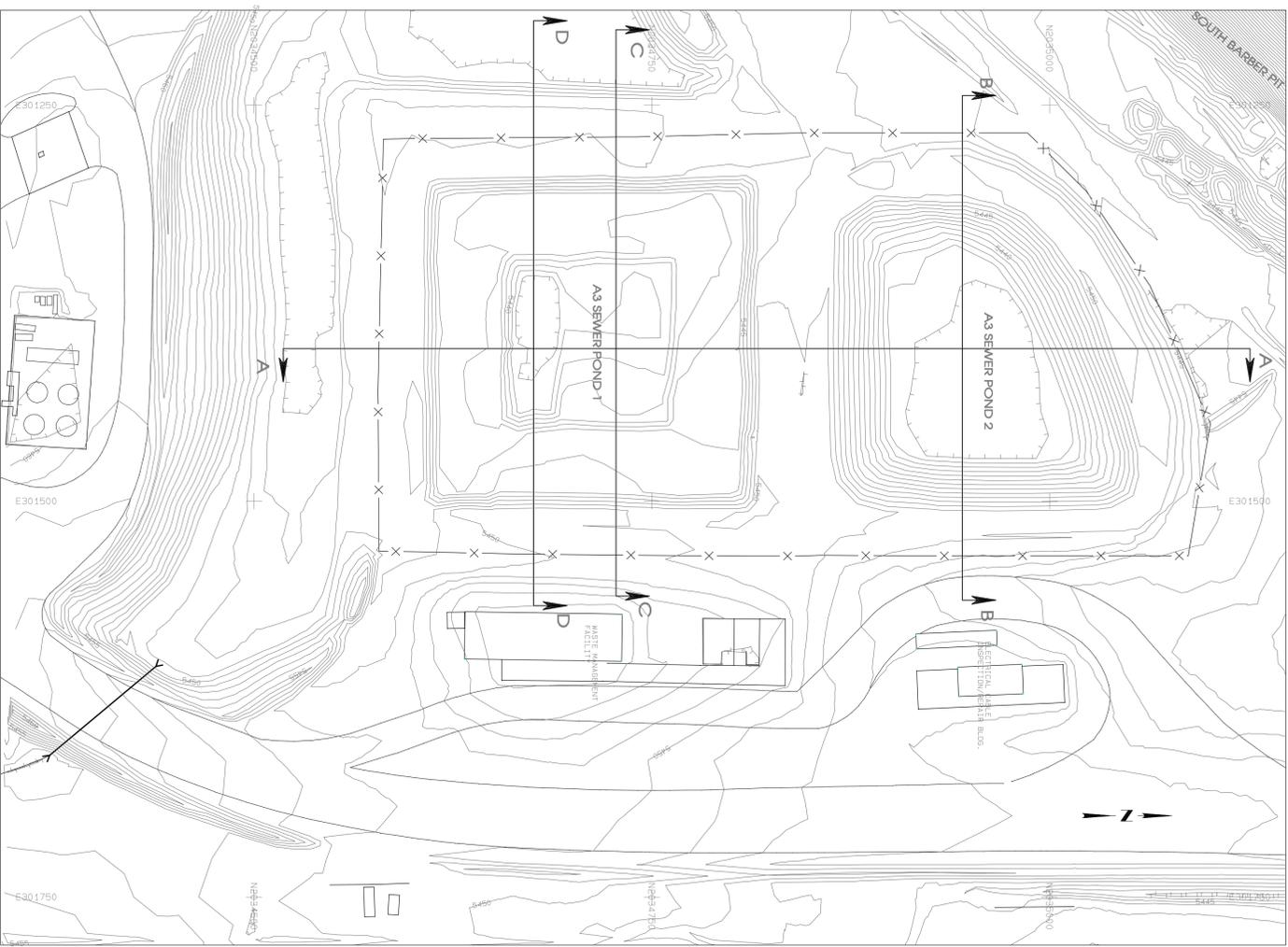
NO.	DATE	BY	REVISION DESCRIPTION	CHK.	APP.
1	12-11-95	PJF	UPDATED NAVAJO STORAGE AREAS AND SUBMITTED TO DSH FOR REVIEW		
2	01-09-96	PJF	REVISED NORTH FACILITIES STORAGE AREA LOCATION AND SUBMITTED TO DSH FOR REVIEW		
3	02-05-96	PJF	REVISED EXHIBIT AND SUBMITTED TO DSH FOR REVIEW		
4	02-05-96	PJF	REVISED THE FOLLOWING NORTH FACILITIES NORTH BLEND AND NORTH BLEND DAM		
5	02-29-96	PJF	THIS DRAWING IS FOR REVIEW AND APPROVAL. IT IS NOT TO BE USED FOR CONSTRUCTION OR ASSESSING THE STOCKPILE LOCATION		
6	01-28-97	PJF	UPDATED EXHIBIT		
7	02-08-97	PJF	ADDED PROPOSED WATER LINE FROM THE NORTH FACILITIES TO WATER DAM		
8	02-09-97	PJF	ADDED NAVAJO STORAGE AREA NORTH FACILITIES		
9	01-17-98	PJF	ADDED METEOROLOGICAL STATION AND AIR QUALITY MONITORING STATION AND REVISED TITLE BLOCK		
10	02-02-98	PJF	REVISED NORTH FACILITIES AREA		
11	02-20-98	PJF	UPDATE PER DSH APPROVAL ON 11-08-98, AS PER PERMIT MAP		

EXHIBIT 22-1
BHP NAVAJO COAL COMPANY

P.O. BOX 1717 FRUITLAND, NEW MEXICO 87416

MINE STRUCTURES
LOCATION MAP

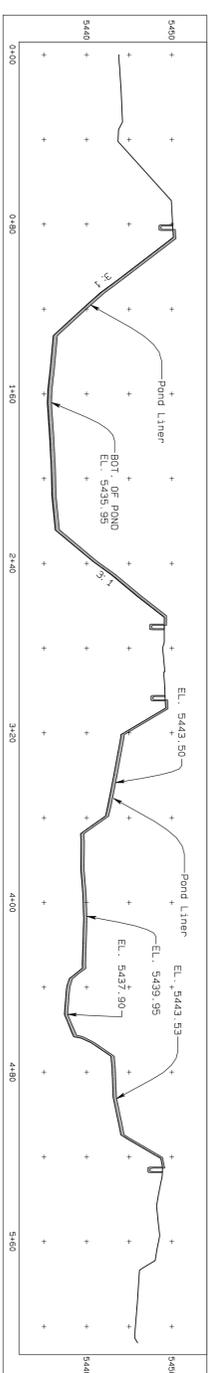
PREPARED BY PJF DRAWN BY PJF SCALE 1" = 1000'
APPROVED BY DATE JUNE 07, 1995



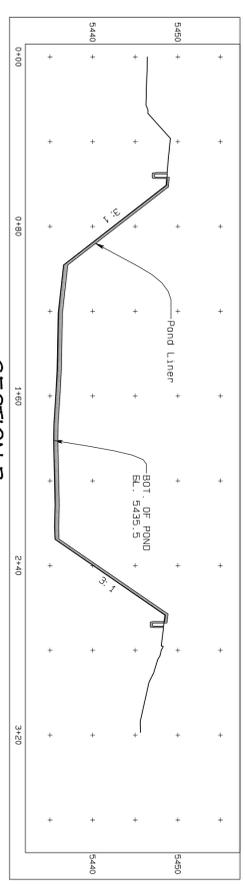
PLAN
1" = 50'

EL.EV.	AREA (AC)	INC. VOL. (AC-FT)	ACCUM. VOL. (AC-FT)
5437.5	0.03	0.01	0.01
5438.0	0.03	0.02	0.03
5438.5	0.09	0.03	0.06
5439.0	0.14	0.06	0.12
5439.5	0.17	0.08	0.20
5440.0	0.22	0.10	0.30
5441.0	0.25	0.12	0.42
5442.0	0.33	0.15	0.57
5442.5	0.42	0.19	0.76
5443.0	0.51	0.23	1.00
5443.5	0.50	0.23	1.23
5444.0	0.76	0.37	1.60
5444.5	0.83	0.40	2.00
5445.0	0.88	0.43	2.45
5446.0	0.90	0.44	3.32
5446.5	0.92	0.45	3.77
5447.0	0.94	0.46	4.54
5448.0 (CRASH)	0.86	0.48	4.71

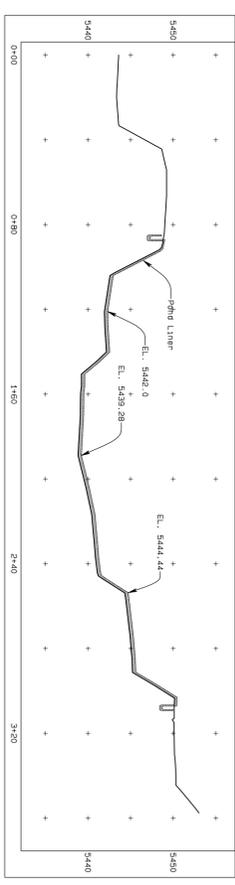
EL.EV.	AREA (AC)	INC. VOL. (AC-FT)	ACCUM. VOL. (AC-FT)
5436.0	0.17	0.00	0.00
5437.0	0.28	0.23	0.53
5438.0	0.32	0.30	0.87
5439.0	0.36	0.34	1.25
5440.0	0.40	0.38	1.66
5441.0	0.42	0.42	2.10
5442.0	0.52	0.50	2.62
5443.0	0.55	0.54	3.16
5444.0	0.60	0.58	3.73
5445.0	0.64	0.62	4.35
5446.0	0.68	0.66	5.02
5447.0	0.73	0.71	5.72



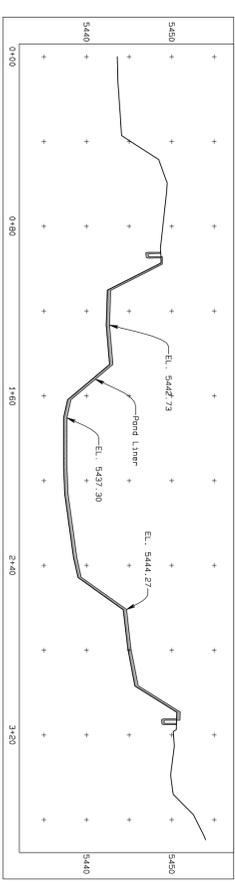
SECTION A



SECTION B

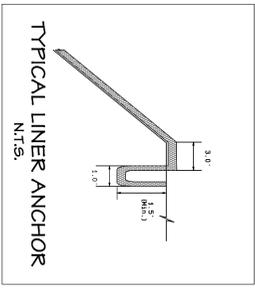


SECTION C



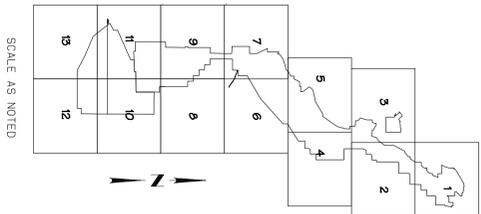
SECTION D

SECTION SCALE:
HORIZ. - 1" = 40'
VERT. - 1" = 10'



LEGEND

- ROAD
- BUILDING
- FENCE
- CULVERT
- DRAINAGE
- POWERLINE
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- PERMIT/LEASE BOUNDARY



SCALE AS NOTED

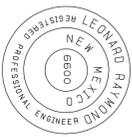
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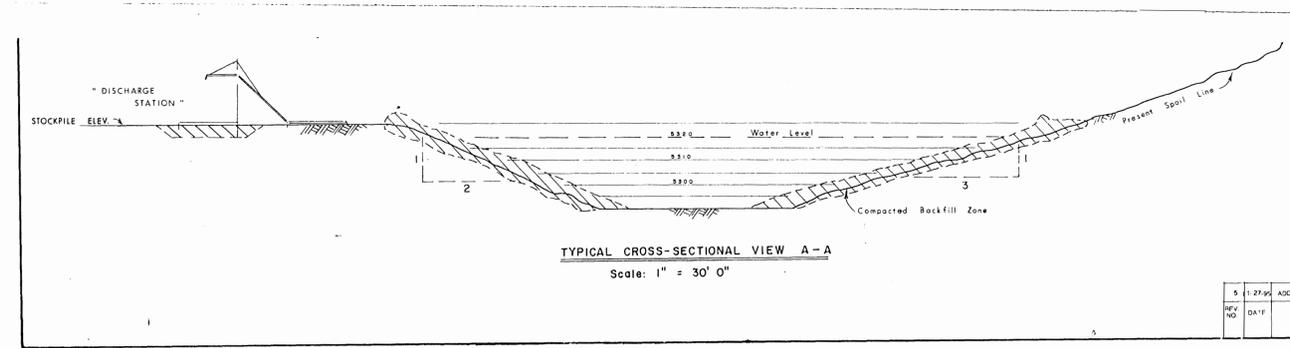
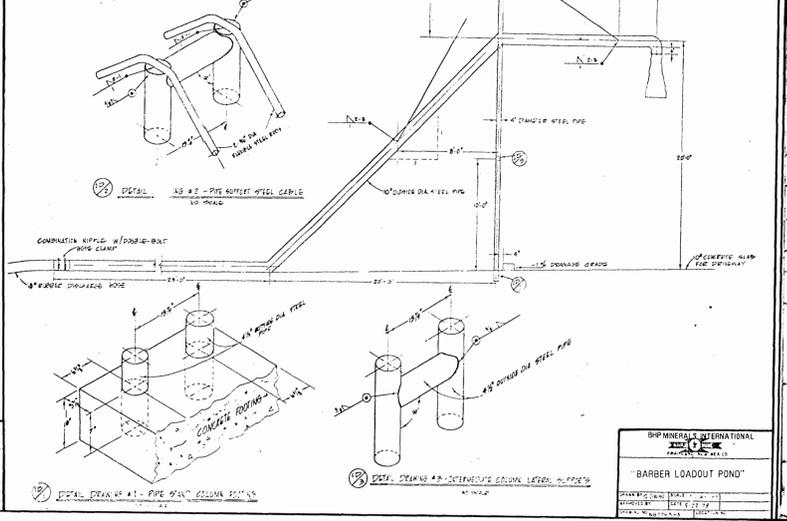
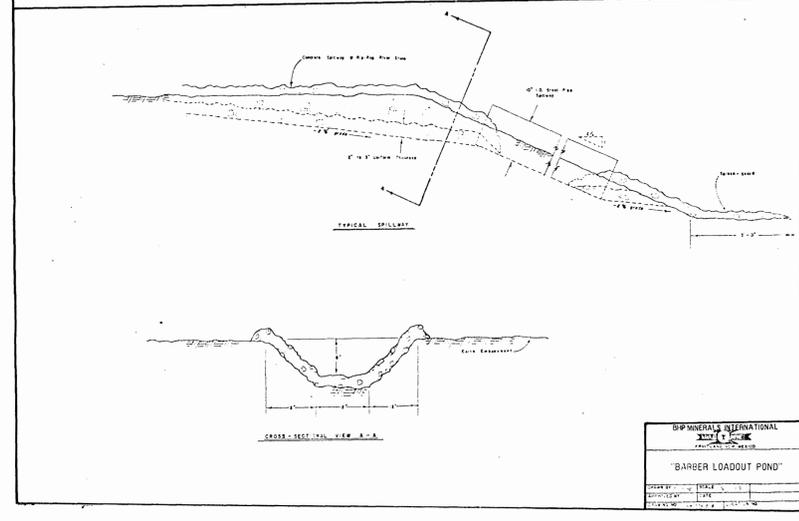
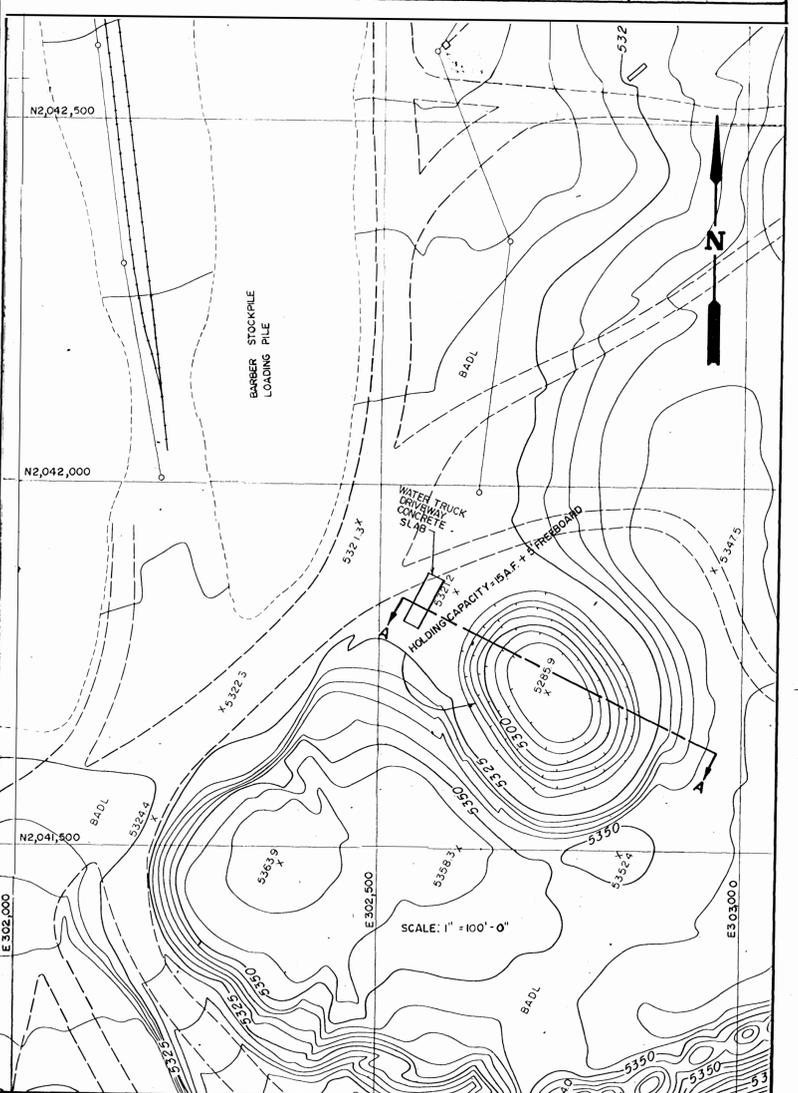
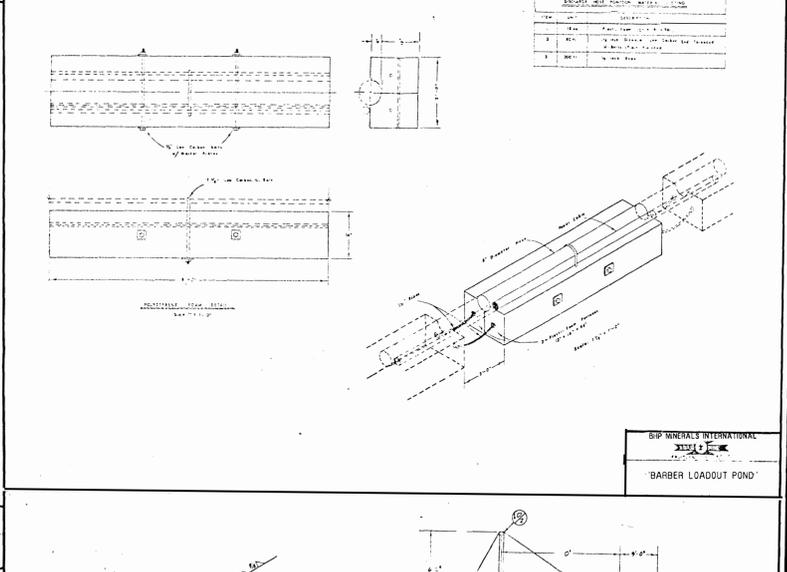
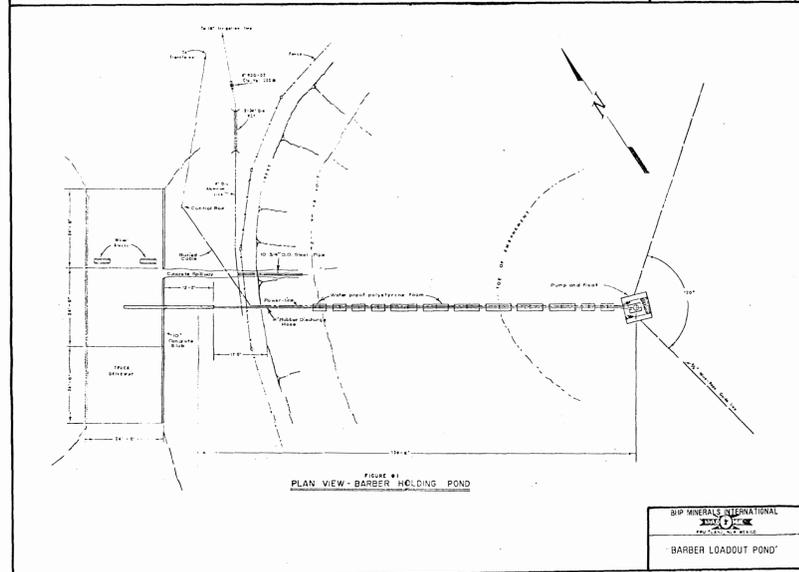
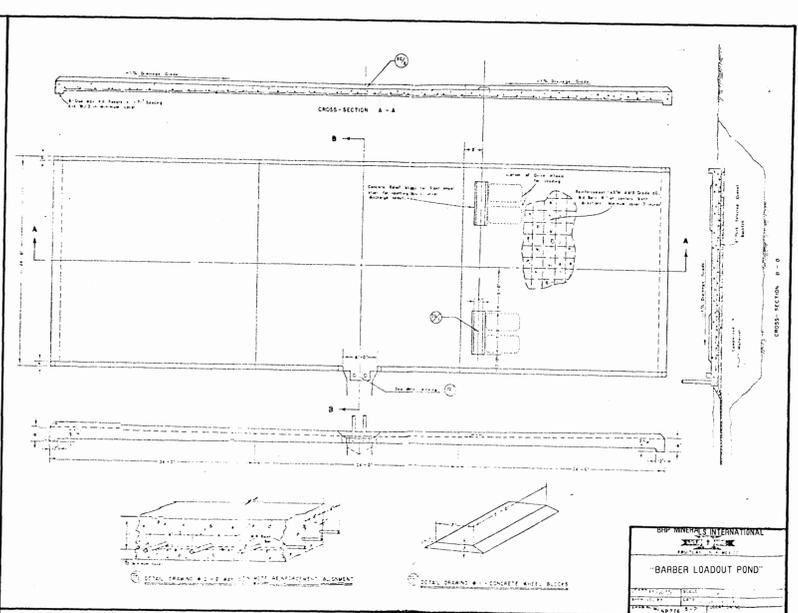
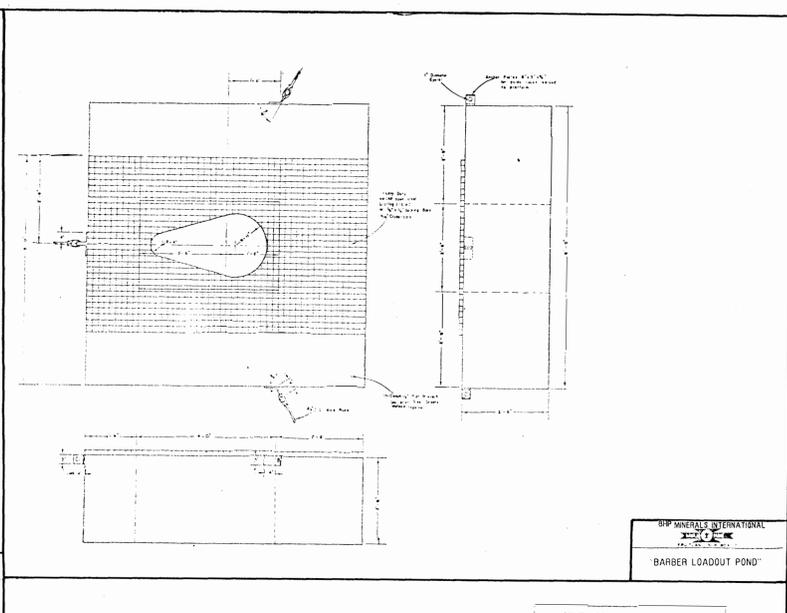
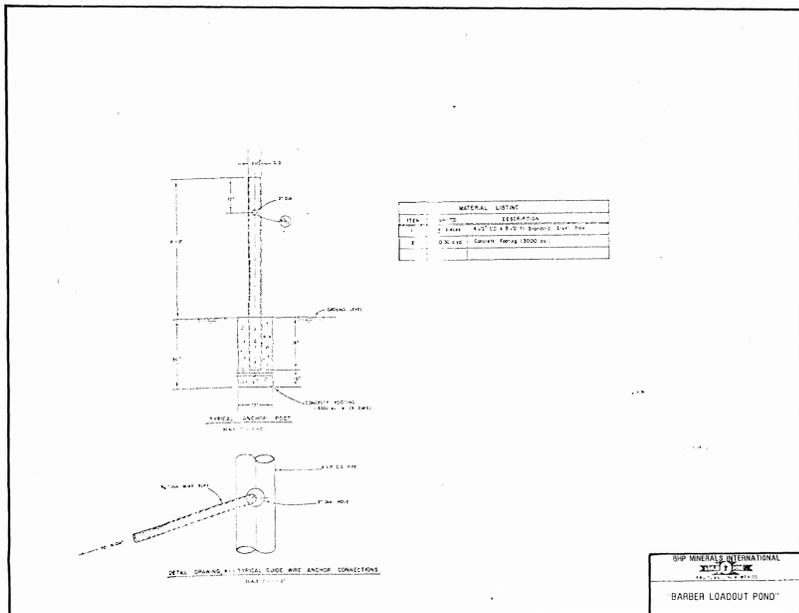
- FOR LOCATION OF DRAINAGE CONTROL STRUCTURES AND MANHOLES, REFER TO EXHIBIT 11-330 FOR THE DRAINAGE CONTROL STRUCTURES REFERENCED ON TABLE 11-5 OF THE NM PAP.
1. THE BOTTOM OF THE A3 SEWER POND 2 IS APPROXIMATELY 1-FEET LOWER THAN THE DESIGN.

CERTIFICATION STATEMENT

I, LEONARD RAYMOND, HEREBY CERTIFY THAT THIS POND HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PERMITS AND ACCURATE TO THE BEST OF MY KNOWLEDGE, EXCEPT AS NOTED BELOW:

1. THE BOTTOM OF THE A3 SEWER POND 2 IS APPROXIMATELY 1-FEET LOWER THAN THE DESIGN.





ELEV (ft)	COMMENTS	AREA (AC)	CUM VOLUME (AC-ft)
5285.9	pond bottom	0.00	0.00
5290.0		0.32	0.35
5295.0		0.49	2.35
5300.0		0.67	5.22
5305.0		0.84	8.99
5310.0		0.99	13.58
5315.0	H.W. level	1.17	18.97
5320.0	pond top	1.42	25.41

REVISIONS

REV NO	DATE	REVISIONS	APPROVALS
1	5/27/87	ADD LEONARD RAYMOND, MINE P.G. STAMP FOR MINE OPERATIONAL PERMIT	J.G. [Signature]
2	11/18/87	CHANGE TO BARBER HOLDING POND DRAWINGS TO BE CHANGED TO BARBER HOLDING POND DRAWINGS	J.G. [Signature]
3	8/20/93	CHANGED CAPACITY & CHANGED LOADOUT FROM 11-28 TO 11-28	J.G. [Signature]

APPROVALS

ENGR. [Signature]

CHIEF PROJECT MGR. [Signature]

DATE 10-17-1985

LOCATION NO. MF-01a

LEONARD RAYMOND
MINE P.G. STAMP
NOV 18 1987

LEONARD RAYMOND
MINE P.G. STAMP
NOV 18 1987

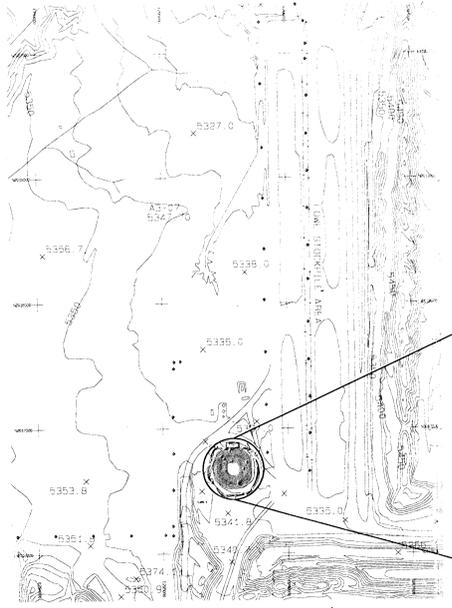
LEONARD RAYMOND
MINE P.G. STAMP
NOV 18 1987

BHP MINERALS INTERNATIONAL
NAVAJO MINE
FRUITLAND, NEW MEXICO

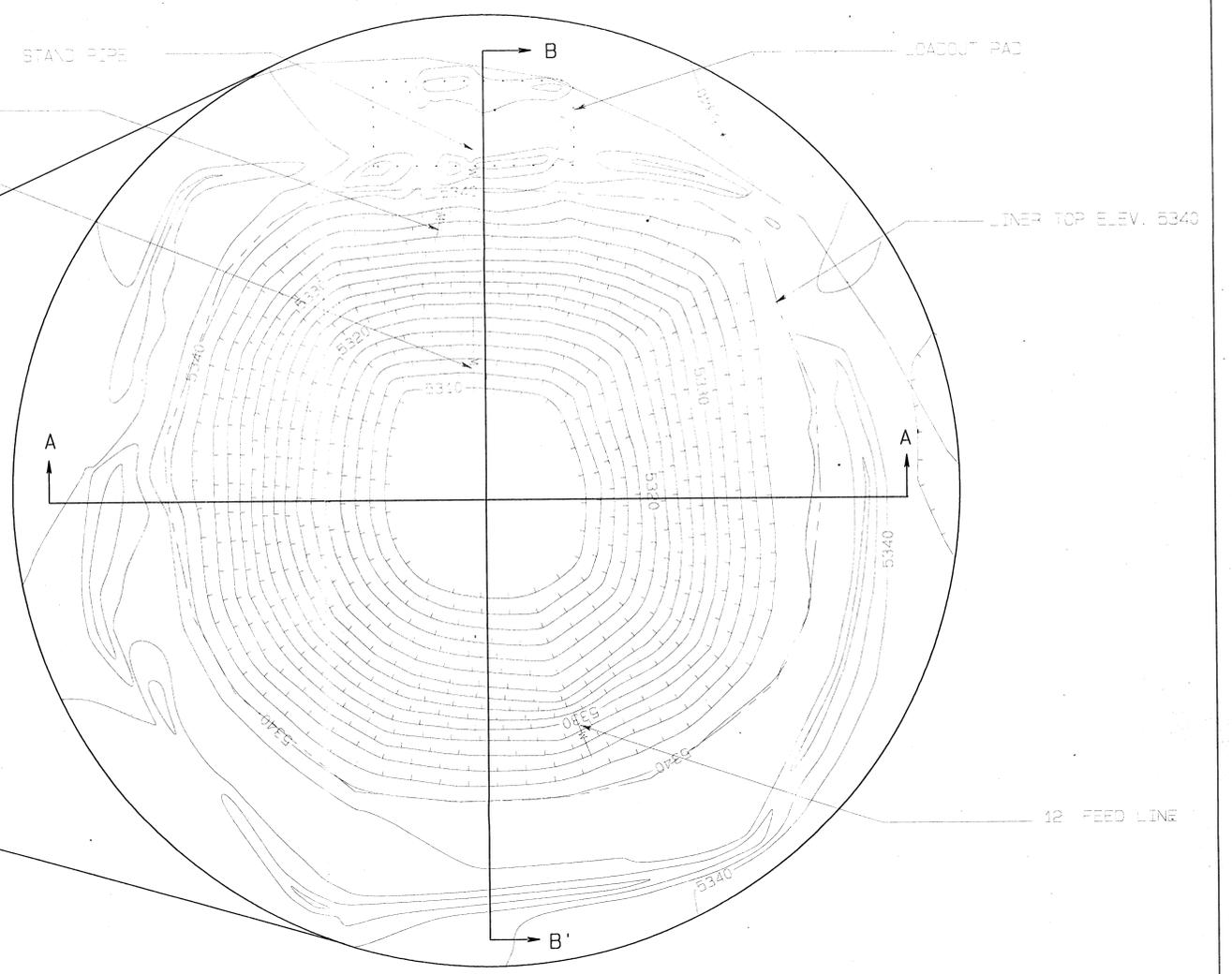
EXHIBIT 22-5
BARBER LOADOUT POND

SAN JUAN COUNTY, NEW MEXICO
SCALE AS NOTED

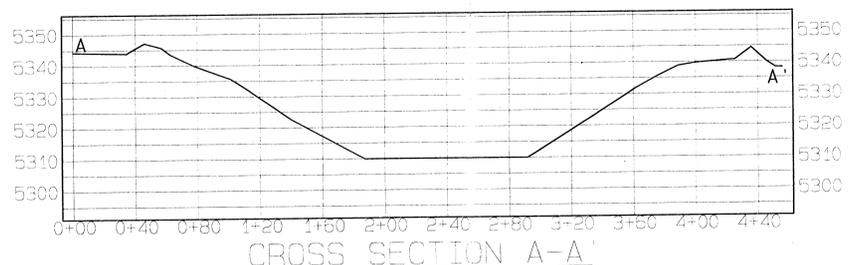
APPROVED BY J. SORRELL
DATE 10-17-1985
DRAWING NO. [Blank] LOCATION NO. MF-01a



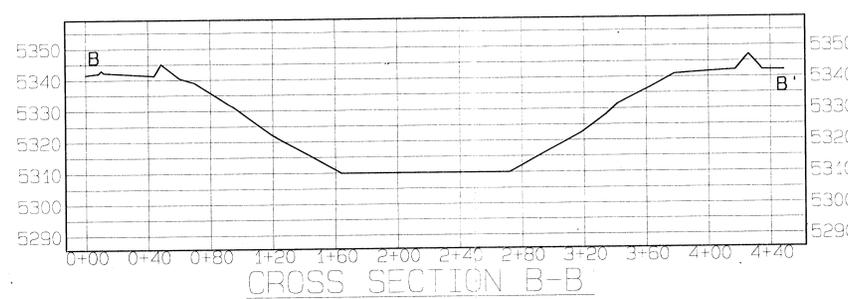
LOWE LOADOUT POND
GENERAL LOCATION - 10' CONTOURS



LOWE LOADOUT POND
EXPLODED PLAN VIEW - 2' CONTOURS



CROSS SECTION A-A



CROSS SECTION B-B

- LEGEND**
- W — PIPELINE
 - - - - - TOP EDGE OF LINER
 - LOADOUT PAD
 - DEPRESSION CONTOUR
 - RAILROAD
 - GRID MARK WITH COORDINATES
 - ⊙ POWER POLE

LOWE LOADOUT		
STAGE (elev. ft.)	AREA (AC.)	CAPACITY (AC. FT.)
5310.0	0	0
5312.0	0.29	0.51
5314.0	0.35	1.15
5316.0	0.44	1.97
5318.0	0.53	2.84
5320.0	0.63	4.10
5322.0	0.73	5.47
5324.0	0.82	7.04
5326.0	0.92	8.90
5328.0	1.03	10.76
5330.0	1.14	12.93
5332.0	1.26	15.34
5334.0 (H.W. level)	1.41	18.00
5336.0	1.59	20.98
5338.0	1.74	24.32

Note: H.W. level = high water level.
B.L. level = ordinary level.

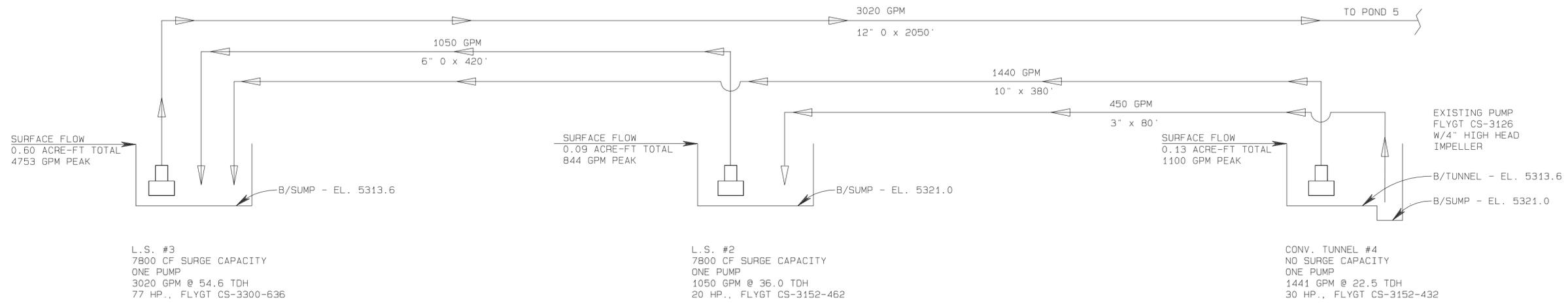
EXHIBIT 22-6

BHP MINERALS INTERNATIONAL INC.

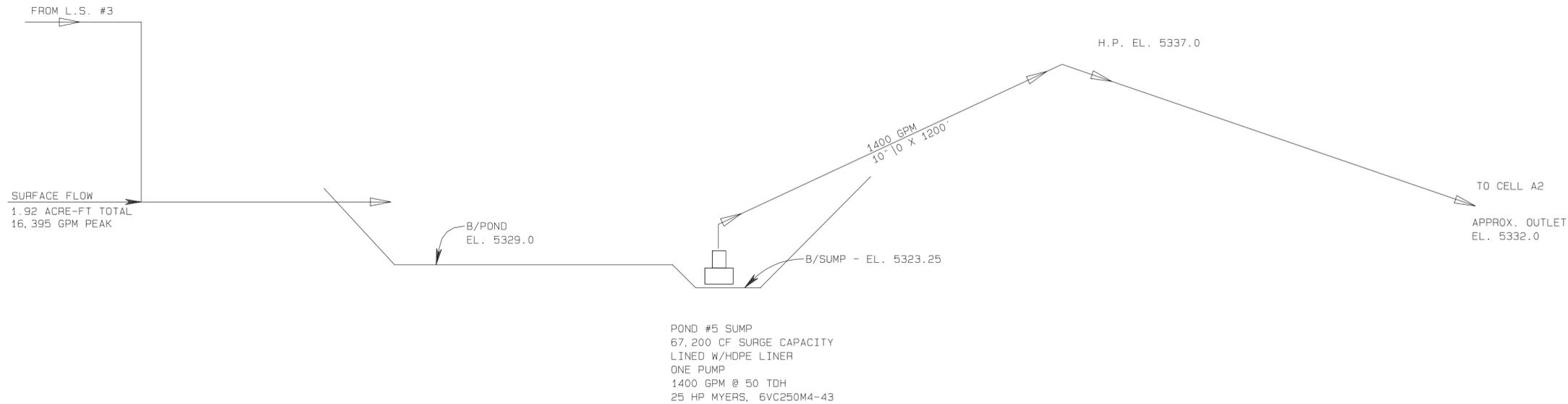
P.O. BOX 155 FRUITLAND, NEA MEXICO 87415

LOWE LOADOUT POND "AS-BUILTS"

PREPARED BY: DJR	DRAWN BY: DJR	SCALE: AS NOTED
APPROVED BY:	DATE: 11-28-95	DWG. LOC.
DWG. NO.:	EXHIBIT 11-108	REF. DWG.



NORTH SIDE



SOUTH SIDE

NOTES :

1. PUMPS-SIZE TO HANDLE 100 YR-6 HR RUNOFF VOLUME
2. PUMPS ARE SUBMERSIBLE TYPE EQUIPPED W/AIR SPARING DEVICE, EXCEPT No. 1
3. PIPE IS 65 PSI RATED, (MINMUM) HDPE PIPE (QUAL) W/DESIGN'C'=155.
4. PIPE LAID ABOVE GROUND WHERE POSSIBLE.
5. REFER TO APPENDIX 11-AA FOR HYDOLOGY DATA.

CERTIFICATION STATEMENT
 I, Leonard Raymond, hereby certify that this drawing was reviewed by me and that the information shown is accurate and complete to the best of my knowledge.



REV. No.	DATE	DRAFT. BY	REVISION DESCRIPTION	ENG.	ED.	P.E.	APPROVALS
C	7-7-10	PJF	UPDATED AND SUBMITTED TO OSM FOR REVIEW	LR	YB	LR	
B	7-29-98	PJF	MID TERM SUBMITTAL TO OSM FOR REVIEW AND APPROVAL.	KB	MC	LR	
A	5-27-97	PJF	THIS EXHIBIT SUPERCEDED EXHIBIT 11-15 AND SUBMITTED TO OSM FOR APPROVAL	LR		LR	

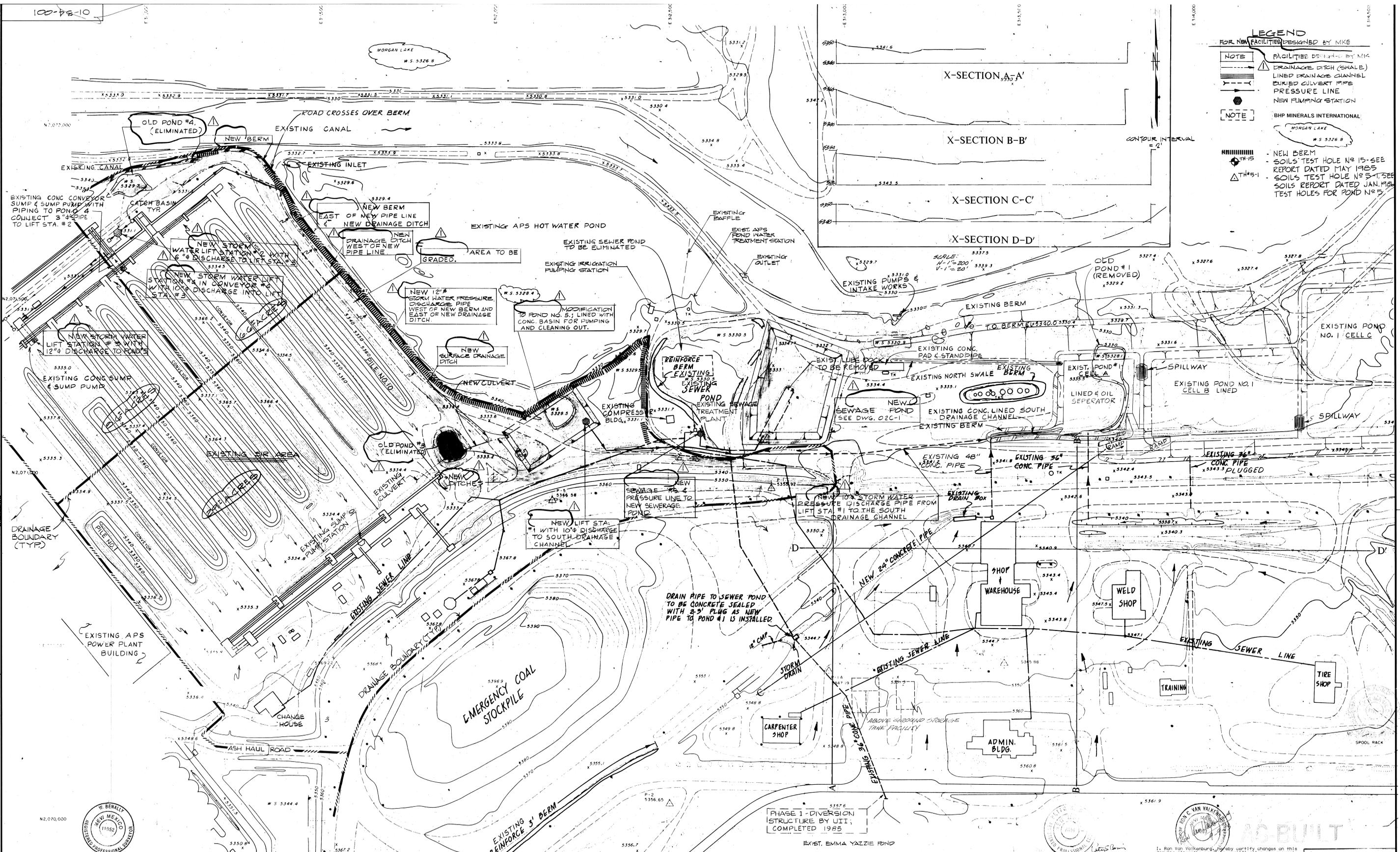
EXHIBIT 22-7
BHP NAVAJO COAL COMPANY

 P.O. BOX 1717 FRUITLAND, NEW MEXICO 87416

COAL STOCKPILE
RUNOFF CONTROL PLAN

PREPARED BY PJF	DRAWN BY PJF	SCALE AS SHOWN
APPROVED BY	DATE MAY 22, 1997	DWG. LOC.

G:\Gs\Permit F\Ch 11\Exhibit 11-015\exh 11-15_Coal Stkpl Runoff_R610.pro

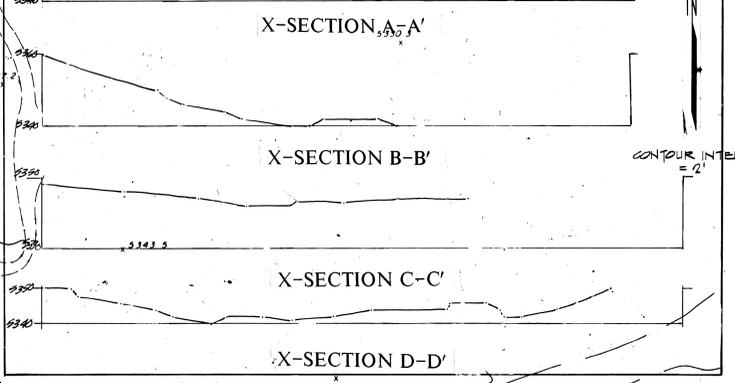


LEGEND
FOR NEW FACILITIES DESIGNED BY MIKE

- NOTE: FACILITIES DESIGNED BY MIKE
- NOTE: DRAINAGE DITCH (SWALE)
- NOTE: LINED DRAINAGE CHANNEL
- NOTE: CURBED CULVERT PIPE
- NOTE: PRESSURE LINE
- NOTE: NEW PUMPING STATION
- NOTE: BHP MINERALS INTERNATIONAL

MORGAN LAKE
M.S. 5326.8

- NEW BERM
- SOILS TEST HOLE NO. 15-SEE REPORT DATED MAY 1985
- SOILS TEST HOLE NO. 5-SEE REPORT DATED JAN. 1985
- SOILS TEST HOLE NO. 5-SEE REPORT DATED JAN. 1985



I, W. BENALLY HEREBY CERTIFY THAT REV. NO. IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

PHASE 1 - DIVERSION STRUCTURE BY UII; COMPLETED 1985

PHASE 1 - PINTO IMPOUNDMENT POND BY UII; COMPLETED 1985

- NOTES:
1. BASE MAP PROVIDED BY OWNER - TAKEN FROM DRAWING NO. 01-1000-34 DATED 5-26-84.
 2. THE PHASE 2 WORK INCLUDES 3 DIFFERENT DESIGN TASKS:
 - a) POND #1 EXPANSION - (COMPLETED 1985)
 - b) SURFACE WATER IMPROVEMENTS
 - c) SANITARY SEWAGE TREATMENT POND AND PUMPING FACILITIES.
 3. MORE DETAILS ON BERMS, GRADING, ETC. CAN BE SEEN ON THE REFERENCED DRAWINGS.
 4. DRAINAGE BOUNDARIES ARE SHOWN FOR PUMP STATIONS #1-#4 AREA HYDROLOGY DESIGN IS BY UII. BASED ON 100 YR. - 24 HR. STORM, CURVE #75. SEE DWG. 01-34-000 "COAL STOCKPILE RUNOFF CONTROL PLAN" FOR MORE DETAILS.

REFERENCE DWS	NO.	BY	DATE	CHKD	DESCRIPTION
01-34-002	01C-2	W.B.	12-8-78	W.B.	ISSUE FOR CONSTRUCTION - PLOT #2
01-34-003	01C-3	W.B.	12-8-78	W.B.	ISSUE FOR CONSTRUCTION - PLOT #3
01-34-006	01C-6	J.P.	10-13-83	P.B.	AS BUILT BUL. #0-007
01-34-007	01C-7	D.D.	4/01/86	M.A.	ISSUE FOR CONSTRUCTION - BUL. #0-008
01-34-001	01P-1	D.D.	4/13/86	M.A.	ISSUE FOR BIDS - TL #022
01-34-001	01C-1	K.B.	2/4/86	M.A.	ISSUE FOR OWNER APPROVAL - POND #1 EXPANSION WORK - TL #021
01-34-000	-	K.D.	4/12/85	M.A.	REVISED AS PER MTA W/OWNER
		A.R.U.	4/1/85	M.A.	FOR OWNER APPROVAL - TL-001

NO.	BY	DATE	CHKD	DESCRIPTION
1	W.B.	12-8-78	W.B.	ISSUE FOR CONSTRUCTION - PLOT #2
2	W.B.	12-8-78	W.B.	ISSUE FOR CONSTRUCTION - PLOT #3
3	J.P.	10-13-83	P.B.	AS BUILT BUL. #0-007
4	D.D.	4/01/86	M.A.	ISSUE FOR CONSTRUCTION - BUL. #0-008
5	D.D.	4/13/86	M.A.	ISSUE FOR BIDS - TL #022
6	K.B.	2/4/86	M.A.	ISSUE FOR OWNER APPROVAL - POND #1 EXPANSION WORK - TL #021
7	K.D.	4/12/85	M.A.	REVISED AS PER MTA W/OWNER
8	A.R.U.	4/1/85	M.A.	FOR OWNER APPROVAL - TL-001

DEPT	REV	A	B	C	D	O	I
ARCH							
CIV/STRL							
MECH							
ELECT							
JNSTM							
PIPING							
SAFETY							
MINING							
DEPT MGR							
PROJECT							

SCALE	DATE	DATE
1" = 100'	APRIL 85	2/18/86
	DESIGNED BY M. THORNE	2/18/86
	CHECKED BY M. THORNE	2/18/86
	CLIENT APPROVALS	
REV	BY	DATE
C	W.B.	2/18/86
D	W.B.	2/18/86
O	W.B.	4/1/86
I	W.B.	10/10/86

MORRISON-KNUDSEN ENGINEERS, INC.
A AMERICAN-KNUDSEN COMPANY

SCALE 1" = 100'

DATE APRIL 85

DESIGNED BY M. THORNE

CHECKED BY M. THORNE

CLIENT APPROVALS

REV BY DATE

C W.B. 2/18/86

D W.B. 2/18/86

O W.B. 4/1/86

I W.B. 10/10/86

CONTRACT NO. 1724-30

30 x 42

NAVajo MINE PROJECT-AREA I
FRUITLAND, NEW MEXICO

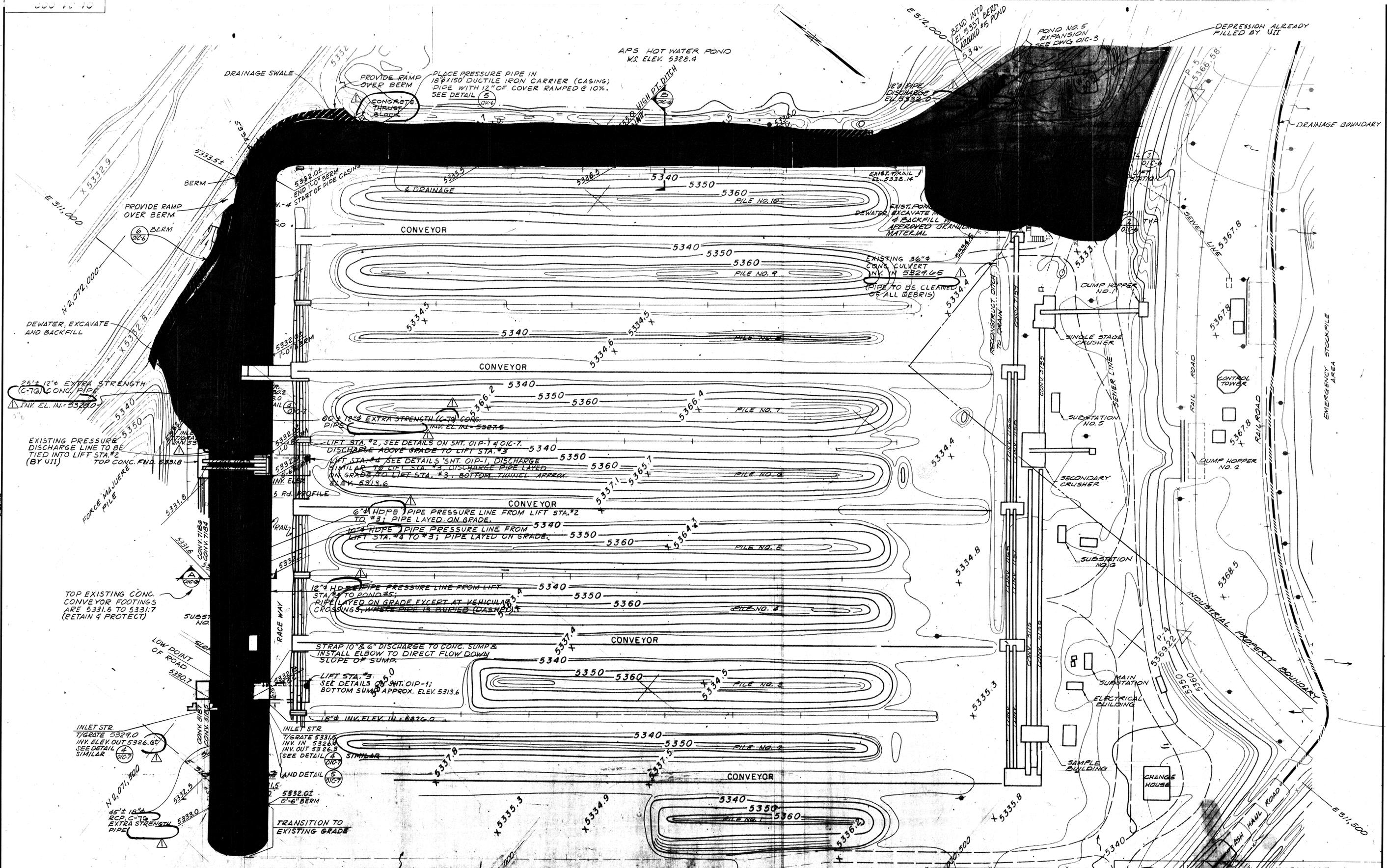
BHP MINERALS INTERNATIONAL

DRAWING TITLE PHASE 2 LAYOUT

DRAWING NO. 01-34-001

REFERENCE NO. 01C-1

EXHIBIT 22-8



NOTES:
 1. ALL PIPE ON GRADE SHALL BE ANCHORED AS PER DET. OR AS OTHERWISE APPROVED BY THE ENGINEER.
 2. ALL LINES SHALL BE LAYED ON A STRAIGHT LINE & GRADE UNLESS OTHERWISE APPROVED BY THE ENGINEER.
 3. SHADED AREA IS THE PROPOSED AREAS REQUIRING GRADING & DRAINAGE 2' CONTOUR INTERVALS.

NOTES (CONT.):
 ALL NEW DISCHARGE LINES FROM LIFT STATIONS SHALL HAVE FLANGED CONNECTIONS APPROXIMATELY 200' O.C. AS PER DETAIL.

APPROXIMATION OF EARTHWORK
 EXCAVATION 1000 CY
 EMBANKMENT 5500 CY

AS BUILT

NO.	BY	DATE	CHKD	DESCRIPTION
1	JB	10-15-86	RB	AS BUILT BUL. # D-007
2	DL	4-08-86	RB	ISSUE FOR CONSTRUCTION
3	DL	2/13/86	RB	FOR BIDS ONLY
4	C.F.	4/6/86	RB	FOR OWNER APPROVAL

DEPT.	REV.	A	B	C	D
ARCH					
CIV/STR					
MECH					
ELECT					
INSTR					
PIPING					
SAFETY					
MINING					
DEPT MGR					
PROJECT					

SCALE	DATE	
1"=50'	1-20-86	
DRAWN BY C. FELT	1-20-86	
DESIGNED BY M. THORNE	1-20-86	
CHECKED BY M. THORNE	2/86	
CLIENT APPROVALS		
REV.	BY	DATE
A	RB	2/18/86
B	RB	2/17/86
C	RB	10/10/86

MORRISON-KNUDSEN ENGINEERS, INC.
 A MORRISON-KNUDSEN COMPANY

NAVajo MINE PROJECT - AREA I
FRUITLAND, NEW MEXICO

BHP MINERALS INTERNATIONAL

DRAWING TITLE: **PHASE 2 WASTEWATER COLLECTION/TREATMENT PLOT, GRADING & DRAINAGE PLAN SHEET NO. 1**

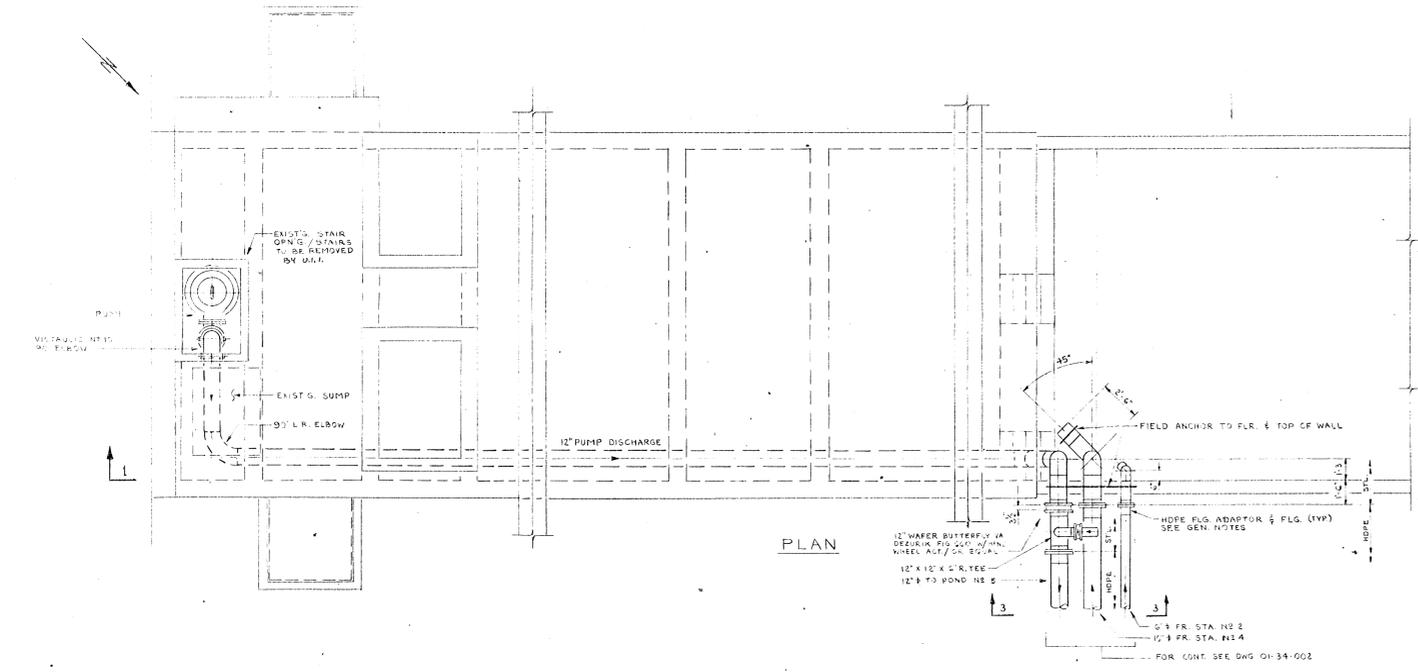
CONTRACT NO. **1724-30**

DRAWING NO. **01-34-002**

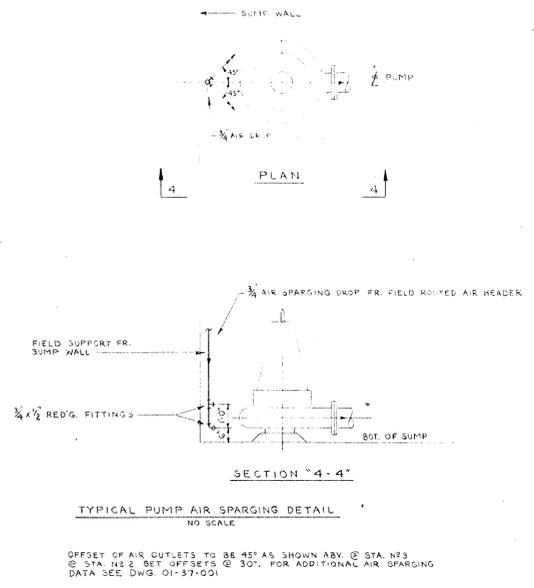
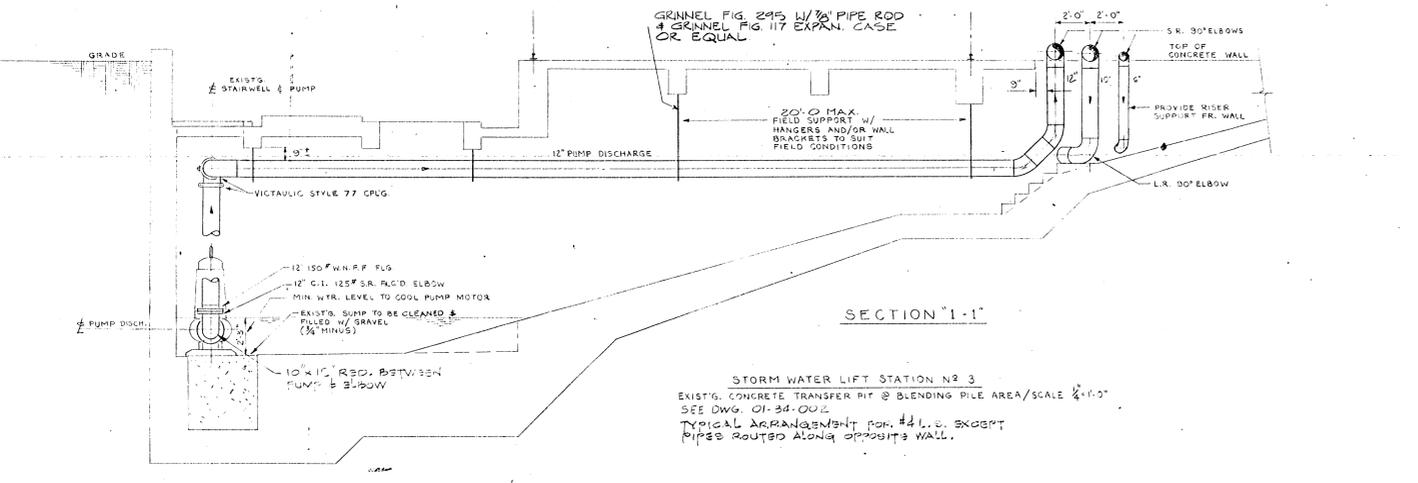
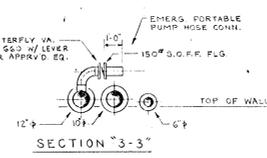
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REV. **1**

EXHIBIT 22-9
 Sheet 1 of 2



SEE DWG. 01-34-007 FOR SURFACE DRAINAGE TRENCH INLET



PUMP SPECIFICATIONS:

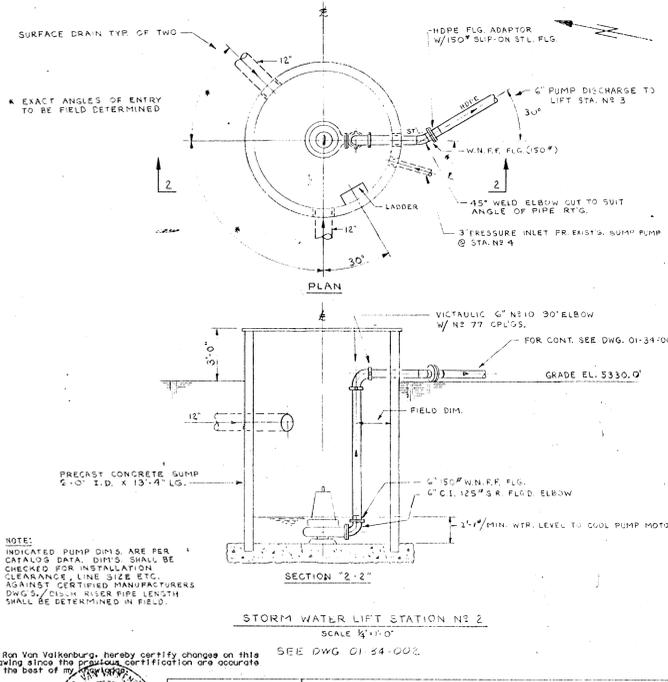
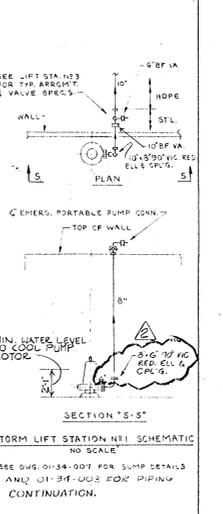
LIFT STATION N# 1	LIFT STATION N# 2	LIFT STATION N# 3	LIFT STATION N# 4
12" C.I. SUBMERSIBLE PUMP MODEL CS-310-402 DISCHARGE: 20 HP, 2" SOLIDS HANDLING CAPABILITY: 1450 GPM @ 21.5 TDH COH# 32, 460V, TEFC	12" C.I. SUBMERSIBLE PUMP MODEL CS-310-402 DISCHARGE: 20 HP, 2" SOLIDS HANDLING CAPABILITY: 1450 GPM @ 21.5 TDH COH# 32, 460V, TEFC	12" C.I. SUBMERSIBLE PUMP MODEL CS-310-402 DISCHARGE: 20 HP, 2" SOLIDS HANDLING CAPABILITY: 1450 GPM @ 21.5 TDH COH# 32, 460V, TEFC	12" C.I. SUBMERSIBLE PUMP MODEL CS-310-402 DISCHARGE: 20 HP, 2" SOLIDS HANDLING CAPABILITY: 1450 GPM @ 21.5 TDH COH# 32, 460V, TEFC

NOTE:
PUMPS SHALL BE AS SPECIFIED ABV. OR APPROVED EQUALS BY OTHER MANUFACTURERS. SUPPLIER SHALL FURNISH FOLLOWING ITEMS W/ PUMPS PURCHASE: SPARE PARTS KIT, THREE (3) COPIES OF OPERATING & MAINTENANCE MANUALS, START-UP & TESTING PROCEDURES & ONE (1) YEAR WARRANTY FROM TIME OF FINAL ACCEPTANCE. STANDARD DISCH. ELBOWS SHALL BE EXCLUDED WHERE NORMALLY SUPPLIED W/ PUMPS. LIQUID LEVEL CONTROL SYSTEMS & AIR SPARGING SHALL BE AS OUTLINED ON DWG. 01-37-001. ALL PUMPS SHALL BE PROVIDED W/ CREDS. & INTAKE.

GENERAL NOTES AND SPECIFICATIONS

STEEL PIPE & FITTINGS CALLED FOR @ LIFT STAS. SHALL BE AS FOLLOWS:
PIPE - ALL SIZES ASTM A53, GR. A OR B, SCH. 40 OR STD. WT.
FITTINGS - SCH. 40, SMLS. STL, ASTM 234, 408 PER ANSI B16.3, BUTT-WELD FLANGES - 150# W.N. OR S.O. R.F. ASTM A181, CL. 60 PER ANSI B16.5, BORE TO MATCH PIPE
TRANSMISSION PIPING FR. LIFT STAS. SHALL BE HIGH DENSITY POLYETHYLENE (HDPE) PIPE & FITTINGS. 45 PSI SDR 26, FUSION WELD JOINTS, FLGD. WHERE NOTED OR AS MAY BE REQ'D. USE FLG. ADAPTOR IN LIEU OF HOLED STUB ENDS. FLG'S SHALL BE SUP-ON AS SPECIFIED ABV. OR FABRICATED IN FLG'S.
SUBMERSIBLE PUMPS SHALL ALL HAVE S.R. 125° FLGD. 30° C.I. ELBOWS IN LIEU OF HOSE CONNECTOR TYPE DISCHARGE ELBOWS NORMALLY FURNISHED W/ PUMPS.

PIPE SUPPORTS, HANGERS, ANCHORS & PIPE ROUTING GUIDES SHALL BE PROVIDED BY CONTRACTOR TO SUIT ACTUAL FIELD REQUIREMENTS.
FOR TRANSMISSION PIPE ROUTING SEE DWG. 01-34-002
FOR PUMP DETAILS SEE DWG. 01-34-007
FOR PUMP CONTROL DATA & ELECT. DETAILS SEE DWG. 01-37-001
MIN. WATER DEPTH IN SUMPS UNLESS PUMP MANUFACTURER'S RECOMMENDATION.
PUMP ON/OFF AND HIGH-WATER ALARM ELEVATIONS FOR EA. SUMP SHALL BE SET BY O.U.I.



STORM WATER LIFT STATION N# 4

A NEW SUMP PUMP SHALL BE INSTALLED IN EXIST'G. 6'-0" DEEP SUMP LOCATED @ LIFT STA. N# 4 DIRECTLY BELOW EXIST'G. ACCESS CUTOUT ABOVE SUMP APPROX. 30" W. X 24" L.S. EXIST'G. SUMP PUMP UTILIZED FOR DAILY WASHDOWN ACTIVITY SHALL REMAIN IN THE SAME SUMP. MOVING OF EXIST'G. PUMP & ASSOCIATED ITEMS TO ACCOMMODATE NEW INSTALLATION SHALL BE PERFORMED BY U.I., INCLUDING PIPING FROM EXIST'G. PUMP TO LIFT STA. N# 3.

NEW WORK SHALL INCLUDE INSTALLING NEW SUMP PUMP, LIQUID LEVEL CONTROL & PIPING FR. NEW PUMP TO LIFT STA. N# 3. PUMP DISCHARGE PIPE SHALL BE ROUTED ALONG STA. N# 3 WALL SIMILAR TO SHOWN FOR L. STA. N# 3 ON THIS DWG. DISCHARGE PIPE SHALL BE STL. UP TO BF VA AS SHOWN @ L. STA. N# 3 & HDPE MATERIAL FR. THIS POINT TO STA. N# 3. BUTTERFLY VALVE & AUXILIARY HOSE CONN. MANIFOLD ARE NOT REQ'D @ L. STA. N# 4. PROVIDE ANCHOR @ L. STA. AS SHOWN FOR STA. N# 3. 8" ID PIPE BULK HEAD FITTING SIZE TRANSITION SHALL BE 1/4" AS 3" OWN FOR STA. N# 1; SEE DWG. 01-34-002 FOR PIPING LAYOUT.

DEPT	REV	A	B	C	1	2
ARCH						
CIV/STRL						
MECH						
ELECT						
INSTM						
PIPING						
SAFETY						

SCALE AS NOTED
DATE 1-14-86
DRAWN BY JVM
DESIGNED BY JVM
CHECKED BY M.C.F. 2/86
CLIENT APPROVALS

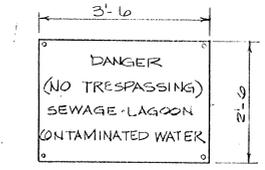
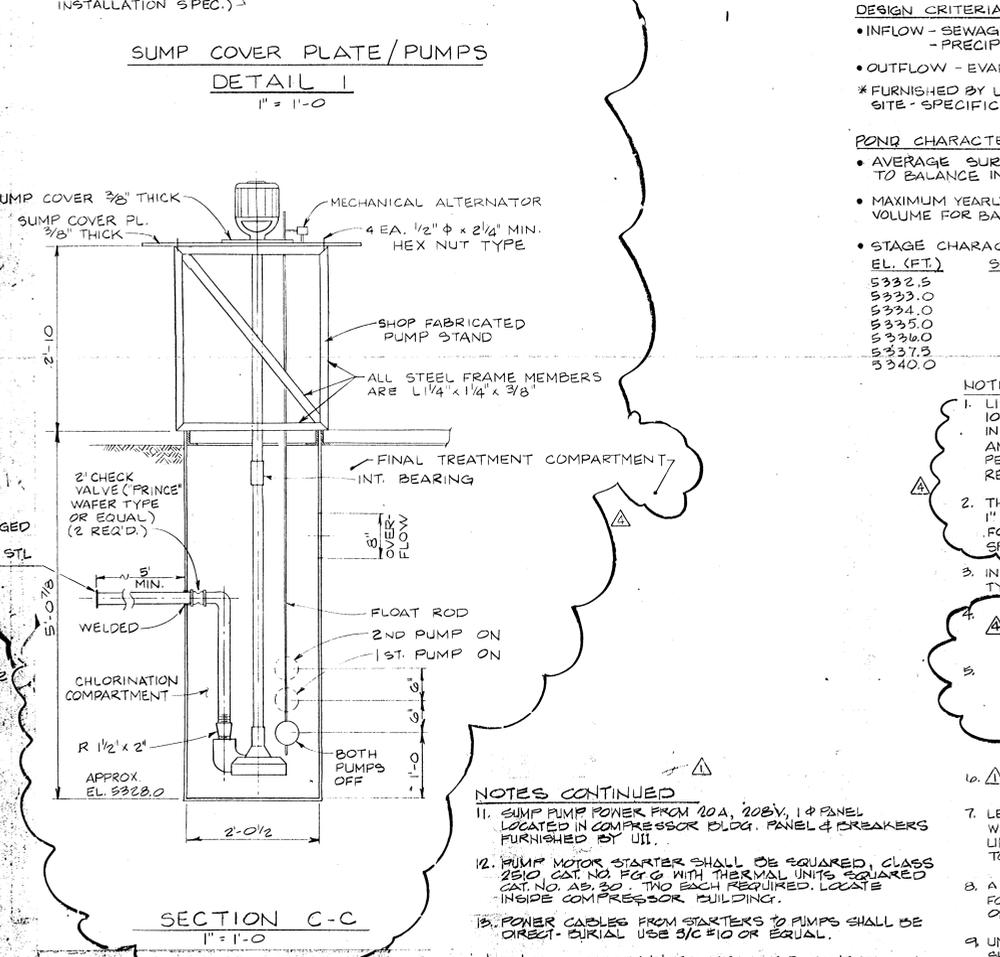
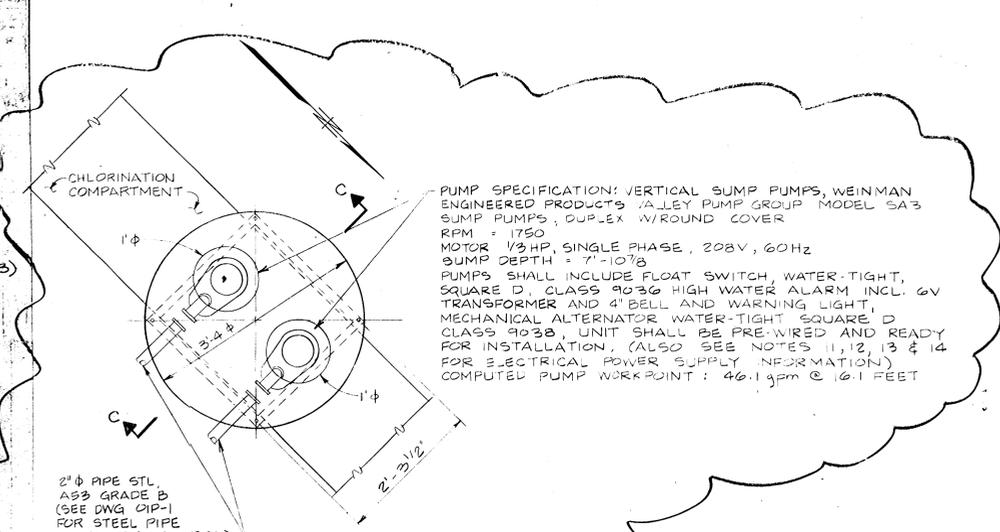
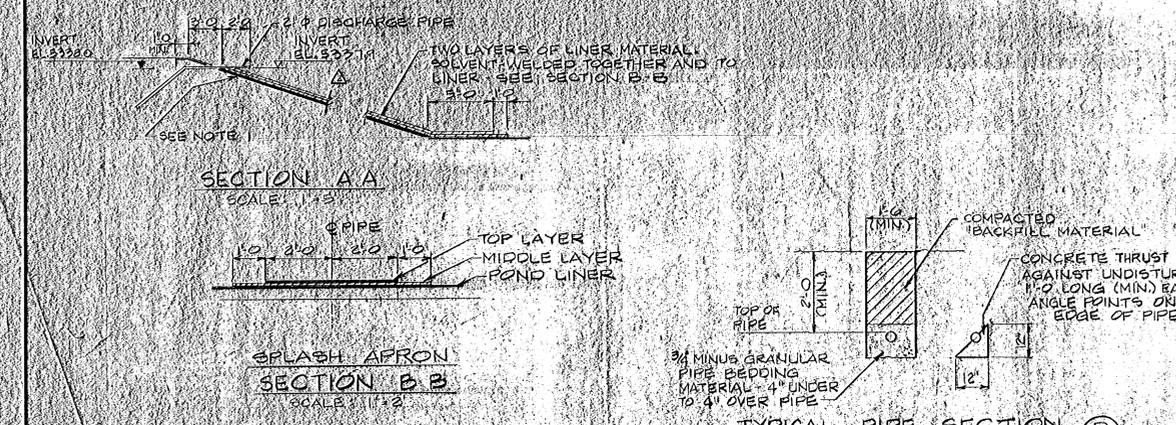
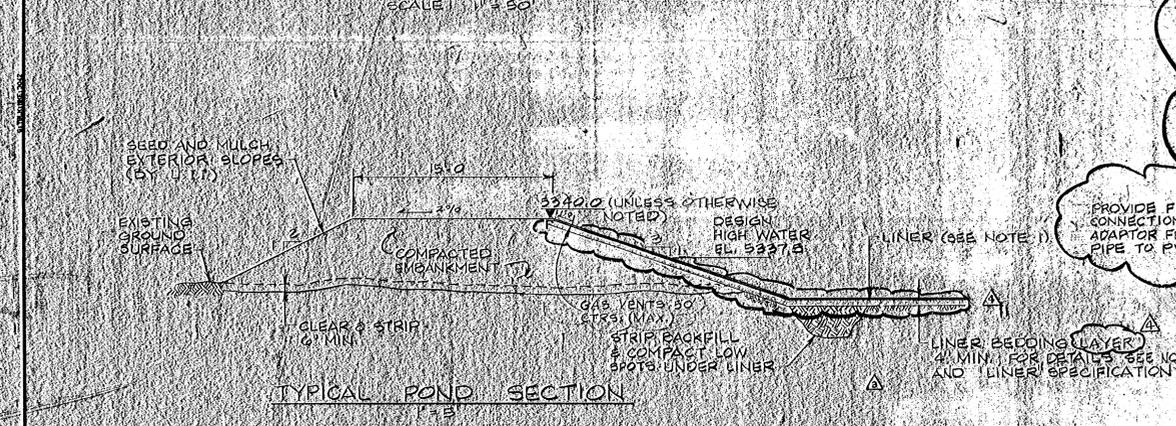
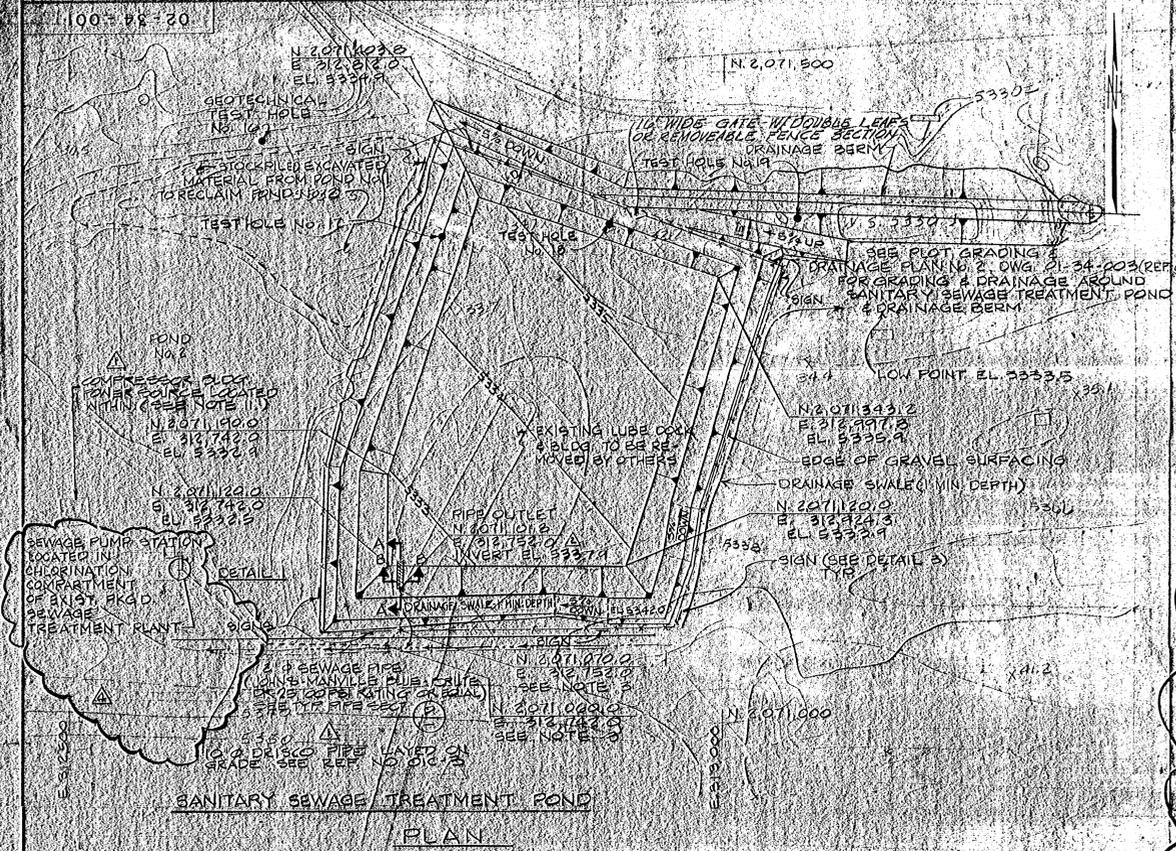
MORRISON-KNUDSEN ENGINEERS, INC.
A MORRISON-KNUDSEN COMPANY

EXHIBIT 22-10

NAVAJO MINE PROJECT - AREA 1
FRUITLAND, NEW MEXICO
BHP MINERALS INTERNATIONAL

CONTRACT NO. 1724-30
DRAWING NO. 01-36-001
REFERENCE NO. OIP-1
REV 2

PHASE 2
WASTEWATER COLLECTION/TREATMENT
GENERAL ARRANGEMENT & MECHANICAL FOR
LIFT STATIONS N# 1, 2, 3 & 4



1/2" EXTERIOR PLYWOOD (SEE NOTE 7)
 DETAIL 3
 N.T.S.
 (SIGN BY U.I.I.)

DESIGN CRITERIA*

- INFLOW - SEWAGE EFFLUENT - PRECIPITATION: 100,000 GALLONS/MONTH @ 6.03 INCHES/YEAR
- OUTFLOW - EVAPORATION: 2.10 STORM IN AUGUST @ 2.75 INCHES TOTAL @ 4.5 INCHES/YEAR

* FURNISHED BY UTAH INTERNATIONAL BASED ON SITE-SPECIFIC DATA

POND CHARACTERISTICS

- AVERAGE SURFACE AREA REQUIRED TO BALANCE INFLOW/OUTFLOW: 57,560 SF.
- MAXIMUM YEARLY VARIATION IN STORED VOLUME FOR BALANCED INFLOW/OUTFLOW: 80,270 C.F.

STAGE CHARACTERISTICS

EL. (FT.)	SURFACE AREA (SF)	STORAGE VOLUME (CF)
5332.5	0	0
5333.0	2,600	650
5334.0	20,600	12,250
5335.0	46,000	45,550
5336.0	57,300	97,300
5337.5	62,100	192,800
5340.0	69,800	331,900

- NOTES:**
- LINER SHALL BE 30-MIL HYPALON LWA REINFORCED W/ 10X10 1000D POLYESTER SKRM. INSTALLATION DETAILS INCLUDING ANCHORING OF EDGES AND SEALS AROUND PENETRATIONS SHALL BE PER MANUFACTURER'S RECOMMENDATIONS & APPROVED BY THE ENGINEER.
 - THE TOP 4" OF SUBGRADE UNDER LINER SHALL BE 1"-INCH MINUS MATERIAL COMPACTED IN CONFORMANCE WITH "SITE PREPARATION AND GRADING" SPECIFICATIONS.
 - INSTALL THRUST BLOCKS AT ANGLE POINTS PER TYPICAL SECTION "D".
 - LETTERING TO BE RED (EXTERIOR) PAINTED ON OFF-WHITE BACKGROUND. LETTERS TO BE 3" HIGH AND LINES TO BE 1/2" WIDE, NEATLY LETTERED. SIGNS TO BE ANCHORED TO THE FENCE. (BY U.I.I.)
 - A COPY OF A SOILS ENGINEER'S REPORT IS AVAILABLE FOR THE CONTRACTOR'S REVIEW AT THE OWNERS OR ENGINEER'S OFFICE.
 - UNLESS OTHERWISE INDICATED, ALL WOOD SURFACES SHALL BE PAINTED WITH AN APPROVED PAINT (BY U.I.I.) SYSTEM CONSISTING OF 1 COAT OF EXTERIOR PRIMER AND 2 COATS OF FLAT-OFF-WHITE FINISH.
 - ALL DISTURBED AREAS SHALL BE RECLAIMED IN ACCORDANCE WITH OSM-APPROVED STD. NAVAJO MINE PROCEDURES.

- NOTES CONTINUED**
- SUMP PUMP POWER FROM 20A, 208V, 1Φ PANEL LOCATED IN COMPRESSOR BLDG. PANEL & BREAKERS FURNISHED BY U.I.I.
 - PUMP MOTOR STARTER SHALL BE SQUARED, CLASS 2510 CAT. NO. F01 G WITH THERMAL UNITS SQUARED CAT. NO. AS 30. TWO EACH REQUIRED. LOCATE INSIDE COMPRESSOR BUILDING.
 - POWER CABLES FROM STARTERS TO PUMPS SHALL BE DIRECT-BURIAL USE 3/4" OR EQUAL.
 - IF LOCAL DISCONNECT IS REQUIRED, CONTROL WILL BE FURNISHED & INSTALLED BY U.I.I.
- SITE PREPARATION/GRADING QUANTITIES**
- CLEAR, GRUB & STRIP 6 INCHES
 - EXCAVATION
 - EMBANKMENT
 - LINER
 - FENCING: 5' HEIGHT W/ 4' WOVEN WIRE W/ 2 STRANDS OF BARBED WIRE AT TOP 1/2" O/C METAL FENCE POSTS SET 8' O/C & DRIVEN 2'-3" DEPTH AS PER U.I.I. SPECIFICATIONS.
- 2.6 ACRES
 8,292 BANK CY
 5,823 IN-PLACE CY
 76,510 SF
 1232 L.F. PLUS GATE AS PER U.I.I. SPECS.

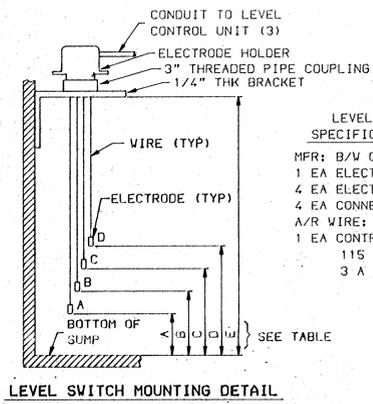
NO.	BY	DATE	CHKD.	DESCRIPTION	NO.	BY	DATE	CHKD.	DESCRIPTION
01-34-22				LAYOUT	30	8/21/83			CHANGE REVISION NO. 10 TO TIE IN AND CHANGE OF NAME
01-34-23				WASTEWATER COLLECTION TREATMENT	31	8/21/83			30 AS BUILT BUILD 007
01-34-24				STOT GRADING & DRAINAGE SUMP NO. 3	32	4/17/84			RE REINFORCED TEXTILE UNDER POND CONSTRUCTION
01-34-25				MUSE CIVIL DETAILS	33	4/17/84			UNREPAIRED FOR CONSTRUCTION BUL 009
01-34-26				PIPE 2" WASTEWATER COLLECTION TREATMENT	34	2/13/84			MULTI-PHASE SOILS DRILLING FEB 022-24 812
01-34-27				MECHANICAL FOR LIFT STATIONS NO. 12 & 14	35	8/21/83			REB AS22 BUILT 102 2114 PIPE TYPE 3022
01-34-28					36	7/3/83			REB ISSUE FOR CONSTRUCTION
01-34-29					37	6/4/83			ULT FOR OWNERS APPROVAL BUL 002

MORRISON-KNUDSEN ENGINEERS, INC.
 A MORRISON-KNUDSEN COMPANY

NAVAJO MINE PROJECT - AREA
 FRUITLAND, NEW MEXICO
 BHP MINERALS INTERNATIONAL

CONTRACT NO. 1724-10
 DRAWING NO. 02-34-001
 DRAWING TITLE: SANITARY SEWAGE TREATMENT POND AND PUMPING FACILITIES
 REFERENCE NO. 02C-1
 REV 4

EXHIBIT-22-11

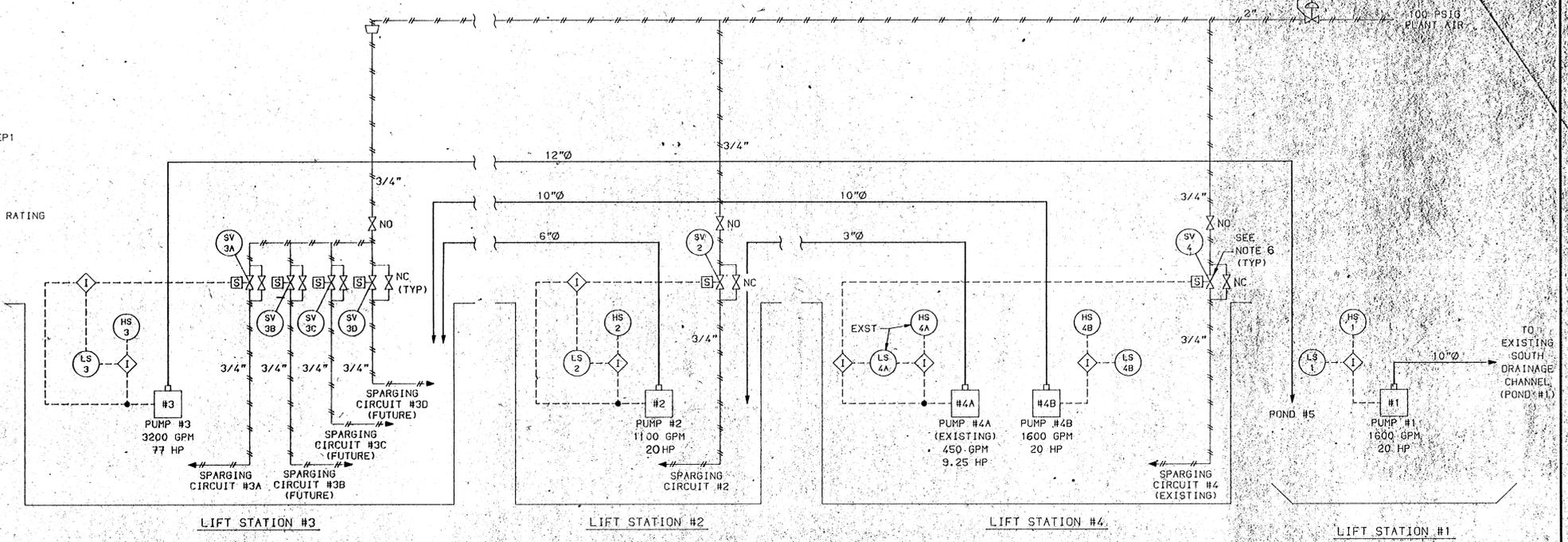


LEVEL SWITCH SPECIFICATIONS **
 MFR: B/V CONTROLS
 1 EA ELECTRODE HOLDER: 6012-E4-CI-EP1
 4 EA ELECTRODES: 6013-W5
 4 EA CONNECTORS: 6013-C-BR
 A/R WIRE: 6013-SV
 1 EA CONTROL UNIT: 5300 S-V-OC
 115 VAC OPERATION
 3 A INDUCTIVE @ 120 V CONTACT RATING

TABLE OF ELEVATION (INCHES) ABOVE SUMP BOTTOM

PUMP NO.	2	3	** 4A	** 4B	1	FUNCTION
DIST A	12	12	12	12	12	GROUND ELECTRODE
DIST B	27	27	27	27	48	PUMP OFF
DIST C	75	75	57	NOT USED	60	PUMP ON
DIST D	NOT USED	NOT USED	NOT USED	84	NOT USED	PUMP ON
DIST E	132	132	108	108	84	BRACKET HEIGHT

ALL DISTANCES ±1"
 ** = EXISTING SET OF ELECTRODES ARE SHARED BY PUMPS #4A & #4B. HOWEVER, EACH PUMP HAS A SEPARATE CONTROL UNIT.

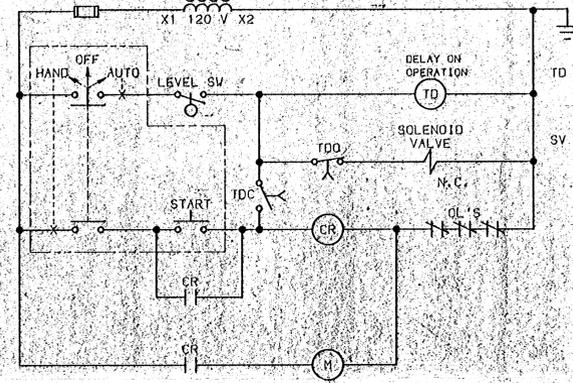
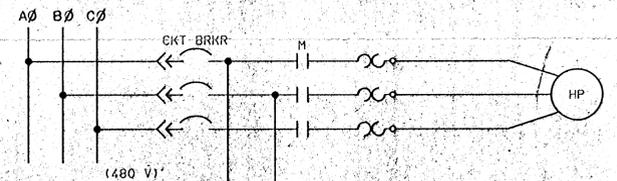


LEGEND:

- AIR LINE
- ELECTRICAL SIGNAL
- ◇ ELECTRICAL INTERLOCK
- LS 4B LEVEL SWITCH #4B
- HS 2 HAND SWITCH #2

NOTES:

1. ADJUSTABLE INSTANTANEOUS MAGNETIC TRIP ONLY CIRCUIT BREAKER. * AI - INDICATES ADJUSTABLE INSTANTANEOUS TRIP SETTING. * A - INDICATES CONTINUOUS RATING.
2. MOTOR STARTER VENDOR SHALL SIZE COMBINATION STARTERS TO MEET NEC REQUIREMENTS.
3. SHORT CIRCUIT RATING OF EXISTING MCC'S SHALL BE PROVIDED BY UII.
4. UII SHALL PROVIDE THE HAZARDOUS AREA CLASSIFICATION FOR THE ELECTRICAL EQUIPMENT.
5. STATED HP OF PUMPS IS PRELIMINARY. IT SHALL BE FINALIZED AT THE ARRIVAL OF VENDOR DATA.
6. SOLENOID VALVE DE-ENERGIZES (SHUTTING OFF AIR) WHEN CORRESPONDING PUMP TURNS ON.
7. UNDERGROUND CONDUIT TO HAVE RED CONCRETE ENCASUREMENT. CONDUIT SHALL BE BURIED 36" BELOW GROUND LEVEL. CONTRACTOR SHALL USE ANY EXISTING AVAILABLE CONDUIT RUN AS DIRECTED BY OWNER.
8. ALL ELECTRICAL WORK SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE (NEC) AND ALL LOCAL CODES.
9. THE FINAL WIRING ARRANGEMENT AND CONDUIT SIZE SHALL BE VERIFIED BY UII.

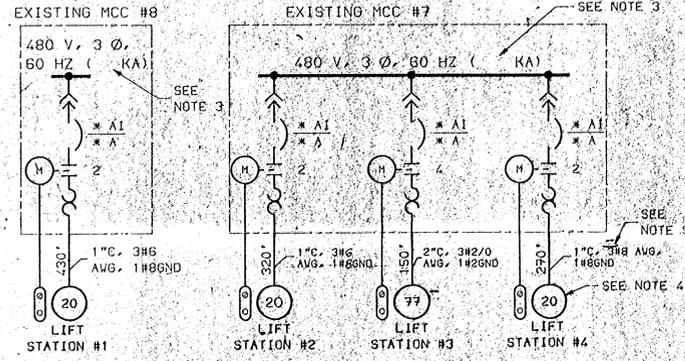


TD SPEC: P&B #CGB-38-7000SM, OR EQUAL, 120 VAC, 3 VA COIL, 10 A CONTACT, 0.5-5 MINUTE ADJ DELAY
 SV SPEC: ASC0821103 OR EQUAL, EXPL PROOF, WATER-TIGHT ENCL, 3/4" BRASS, 120 VAC, 6 V COIL

TYPICAL SCHEMATIC FOR PUMPS #2, #3, #4A

TYPICAL SCHEMATIC FOR PUMPS #1 & #4B

NOTE: PUMP #4A WIRING IS EXISTING, BUT MUST BE MODIFIED TO AGREE WITH ABOVE SCHEMATIC



DEPT	REV	A	B	O	A	SCALE	NO.	DATE
ARCH								02/05/99
CIV/STR								02/05/99
MECH								02/06/99
ELECT								
INSTN								
PIPING								
SAFETY								

NO.	BY	DATE	CRD	DESCRIPTION
1	JMC	01/06/98		ISSUED FOR CLIENT APPROVAL TLR021
2	JMC	02/03/99		ISSUED FOR CLIENT APPROVAL TLR022
3	JMC	02/07/99		ISSUED FOR CONSTRUCTION BUL #0-001
4	JMC	02/07/99		CHANGE EXISTING TO 11-23 AND CHANGE CA NAME

REV	BY	DATE
1	JMC	01/06/98
2	JMC	02/03/99
3	JMC	02/07/99
4	JMC	02/07/99

NO.	BY	DATE	CRD	DESCRIPTION
1	JMC	01/06/98		ISSUED FOR CLIENT APPROVAL TLR021
2	JMC	02/03/99		ISSUED FOR CLIENT APPROVAL TLR022
3	JMC	02/07/99		ISSUED FOR CONSTRUCTION BUL #0-001
4	JMC	02/07/99		CHANGE EXISTING TO 11-23 AND CHANGE CA NAME

DEPT	REV	A	B	O	A
DEPT MGR					
PROJECT					

SCALE	NO.	DATE
		02/05/99
		02/05/99
		02/06/99

REV	BY	DATE
1	JMC	01/06/98
2	JMC	02/03/99
3	JMC	02/07/99
4	JMC	02/07/99

CLIENT APPROVALS
REV: _____ BY: _____ DATE: _____

DEPT	REV	A	B	O	A
DEPT MGR					
PROJECT					

EXHIBIT 22-12

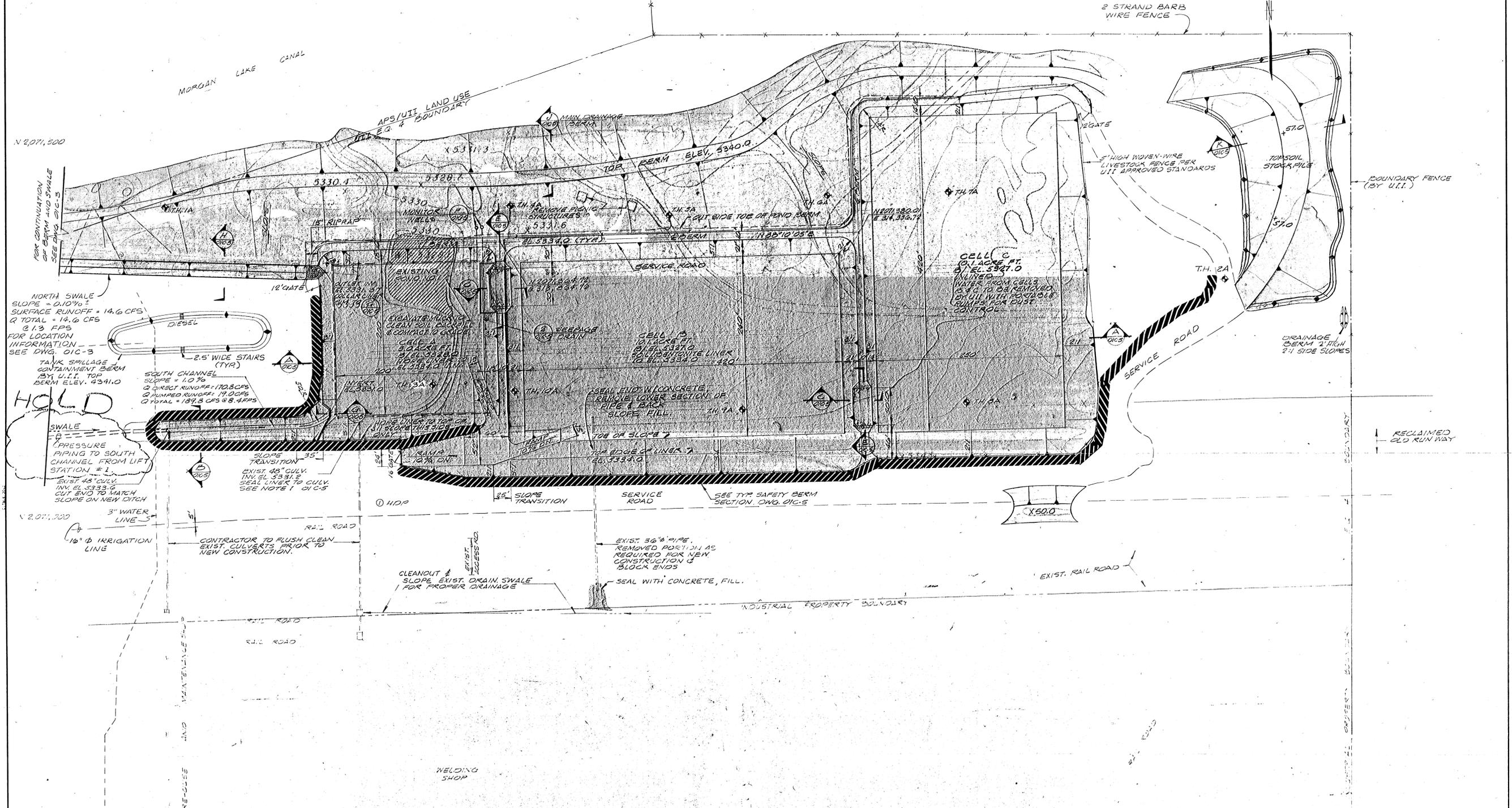
NAVAJO MINE PROJECT - AREA 1
 FRUITLAND, NEW MEXICO
 BHP MINERALS INTERNATIONAL

CONTRACT NO. 1724-30
 DRAWING NO. 01-37-001
 REFERENCE NO. E1-1

PHASE 2
 WASTE WATER COLLECTION/TREATMENT
 ELECTRICAL INSTALLATION

200.45.10

MORGAN LAKE
WS. 5326.8



POND NO. 1 ESTIMATED SITE PREPARATION & GRADING QUANTITIES

CLEAR, GRUB & STRIP & TOPSOIL & STOCKPILE	111 ACRES
EXCAVATION	110,000 C.Y.
EMBANKMENT	35,000 C.Y.
LINER MATERIAL, FABE & BLANKET:	
CELL A	6,400 S.Y.
CELL B	15,000 S.Y.
SOUTH CHANNEL	370 S.Y.
1/4 PERFORATED SEEPAGE DRAIN PIPE	800 L.F.
1/4 PVC SEEPAGE DRAIN PIPE	90 L.F.
RIPRAP	200 C.Y.

NOTE: FLOWS (CFS) ARE ACTUAL CALCULATED FLOWS (BY U.I.) BASED ON THE FOLLOWING HYDROLOGICAL DATA:

POND NO. 1 EXPANSION HYDROLOGICAL DESIGN DATA *

AREA = 108 ACRES
 LENGTH = 2400 FT.
 CONCENTRATION TIME = 0.44 HRS.
 CURVE NO. 97
 PRECIPITATION (100 YR. - 24 HR.) = 2.7 INCHES
 RUNOFF = 2.38 INCHES
 RUNOFF VOLUME (100 YR.) = 21.42 ACRES FEET

* SEE UTAH INTERNATIONAL DWG. UT-09-2000-08

I, Rolf Von Valtenburg, hereby certify changes on this drawing since my previous certification are accurate to the best of my knowledge and belief.

Rolf Von Valtenburg
 REGISTERED PROFESSIONAL ENGINEER
 STATE OF UTAH
 NO. 10000

01-34-003 OIC-3 PLOT, GRADING & DRAINAGE NO. 2
01-34-005 OIC-5 POND #1 EXP. & CHANNEL SECT. & DET.
01-09-2000-08 UTAH INTER. PROP. POND #1 EXPANSION

6	10	8/20/99	CHANGE EXHIBIT TO 11-24 AND CHANGE CO. NAME
5	KD	7-11-85	ISSUE FOR AS-BUILT FOLLOWING OWNER REVIEW & REV. OF NORTH SWALE
4	KD	7-11-85	ISSUE FOR AS-BUILT CHANGES FOLLOWING UTI REVIEW BUL.D-005
3	KD	8/27/85	ISSUE FOR AS-BUILT BUL.D-004
2	KD	7/19/85	ISSUE FOR AS-BUILT BUL.D-002

DEPT.	REV.	2	3	4	5
ARCH.					
CIV. STR.					
MECH.					
ELECT.					
INSUM.					
PLUMB.					
SAFETY					
MINING					
DEPT. MGR.					

SCALE: 1" = 20'

DESIGNED BY: R. JEWELL JUNE '85
 DESIGNED BY: P. BOAR JUNE '85
 CHECKED BY: M. ALVAREZ JULY '85
 I. GENT ANIMILLA

J. Skye 7/1/85

MORRISON-KNUDSEN ENGINEERS, INC.
 A WASHINGTON GROUP COMPANY

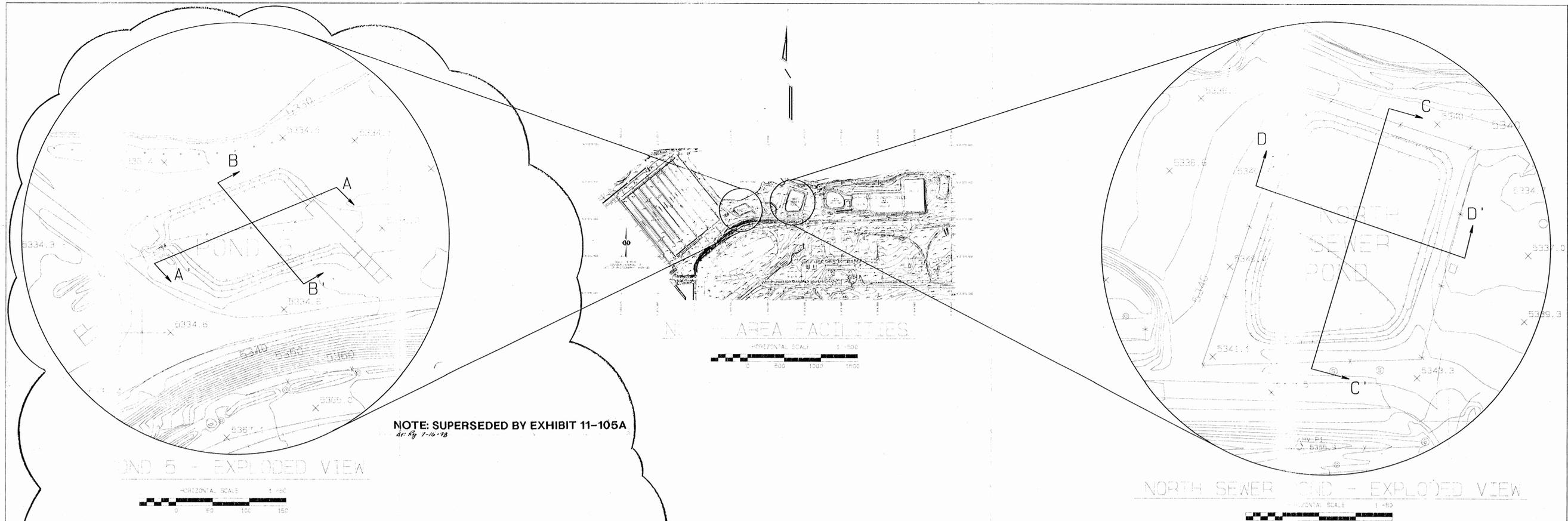
NAVAJO MINE PROJECT - AREA I
 FRUITLAND, NEW MEXICO
 BHP MINERALS INTERNATIONAL

PHASE 2
 WASTEWATER COLLECTION/TREATMENT
 PLOT, GRADING & DRAINAGE PLAN
 NO. 3

1724-10
 01-34-004
 OIC-4

30
 42
 5

SEP 17 1999

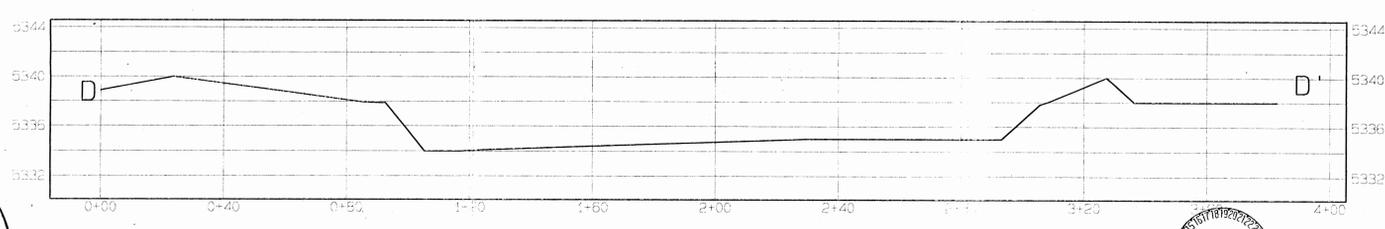
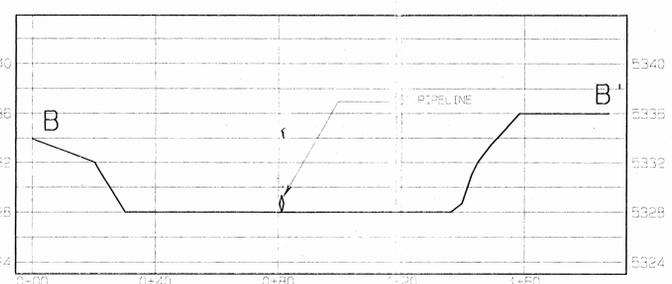
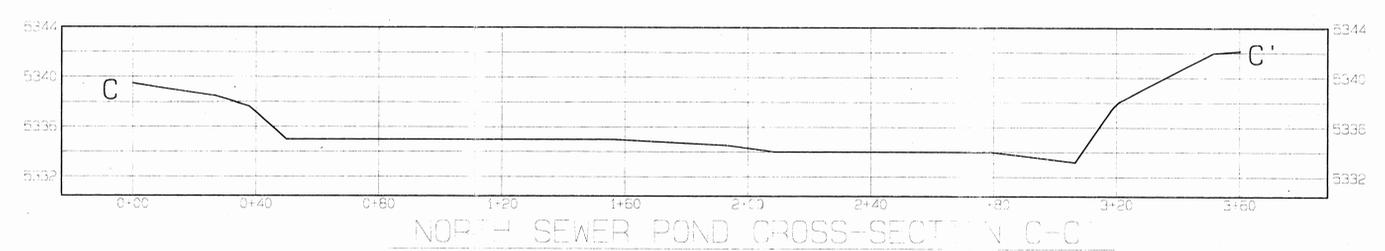
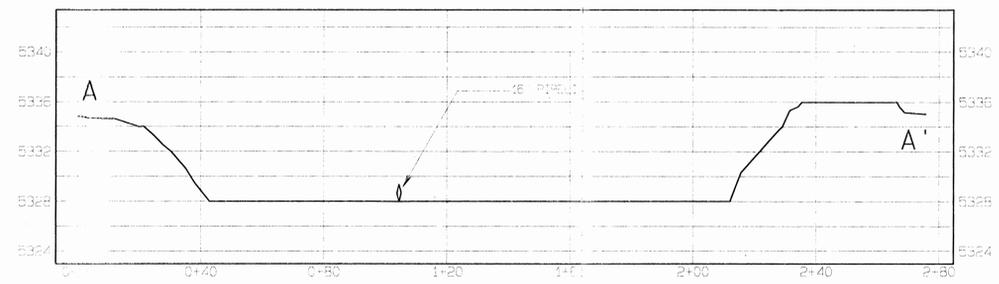
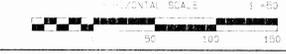


NOTE: SUPERSEDED BY EXHIBIT 11-105A
dr. Ety 1-10-78

POND 5 - EXPLODED VIEW



NORTH SEWER POND - EXPLODED VIEW



LEGEND

- DEPRESSION CONTOUR
- x-x-x- FENCE LINE
- - - RAILROAD
- - - 16" PIPELINE
- x 5334.2 SPOT ELEVATION
- 5330.0 CONTOUR LABEL
- o POLE
- o SIGN
- o POST

POND 5		
STAGE (elev. ft.)	AREA (AC.)	CAPACITY (AC.-FT.)
5329.0	0.00	0.00
5329.0 (B.L. level)	0.44	0.41
5330.0	0.47	0.74
5331.0	0.59	1.20
5332.0	0.55	1.77
5333.0	0.80	2.33
5334.0 (H.W. level)	0.58	1.70
5335.0	0.77	1.82

NORTH SEWER		
STAGE (elev. ft.)	AREA (AC.)	CAPACITY (AC.-FT.)
5332.5	0.00	0.00
5333.0	0.06	0.02
5334.0	0.47	0.28
5335.0	1.06	1.05
5336.0	1.32	2.23
5337.5 (B.L. level)	1.43	4.43
5340.0 (H.W. level)	1.80	8.08

Note: H.W. level = high water level
 B.L. level = 'baseline' level

STAGE-AREA-CAPACITY TABLES

CERTIFICATION STATEMENT
 Leonard Raymond, hereby certify that this impoundment has been constructed in accordance with the approved design plans and that the information shown is complete and accurate to the best of my knowledge.



C-1-9 ~~Pond Deleted Pond 5 from the Title Block.~~
 11-20-95 SUBMITTED TO DWR FOR APPROVAL
 11-20-95 DATE 11-20-95 REVISION DESCRIPTION

BHP MINERALS INTERNATIONAL INC.
 P.O. BOX 155 FRUITLAND, NEW MEXICO 87416

EXHIBIT 22-15
NORTH SEWER POND
AS-BUILT

PREPARED BY DJR DRAWN BY DJR SCALE AS NOTED
 APPROVED BY DATE 11-20-95 DWG. LOC
 DWS, INC. REF. DWG.

ARIZONA PUBLIC SERVICE
HOT POND

COOLING WATER
DISCHARGE CANAL

PROPOSED BERM
CONSTR.

EXISTING BERM

PERMIT BOUNDARY

EXISTING BERM

WATERSHED BOUNDARY

PROPOSED
V-DITCH

PROPOSED
SILT FENCE

WATERSHED
BOUNDARY

WNS

5336

5338

FUEL TANKS

NORTH SEWAGE POND

FLOW
PATH

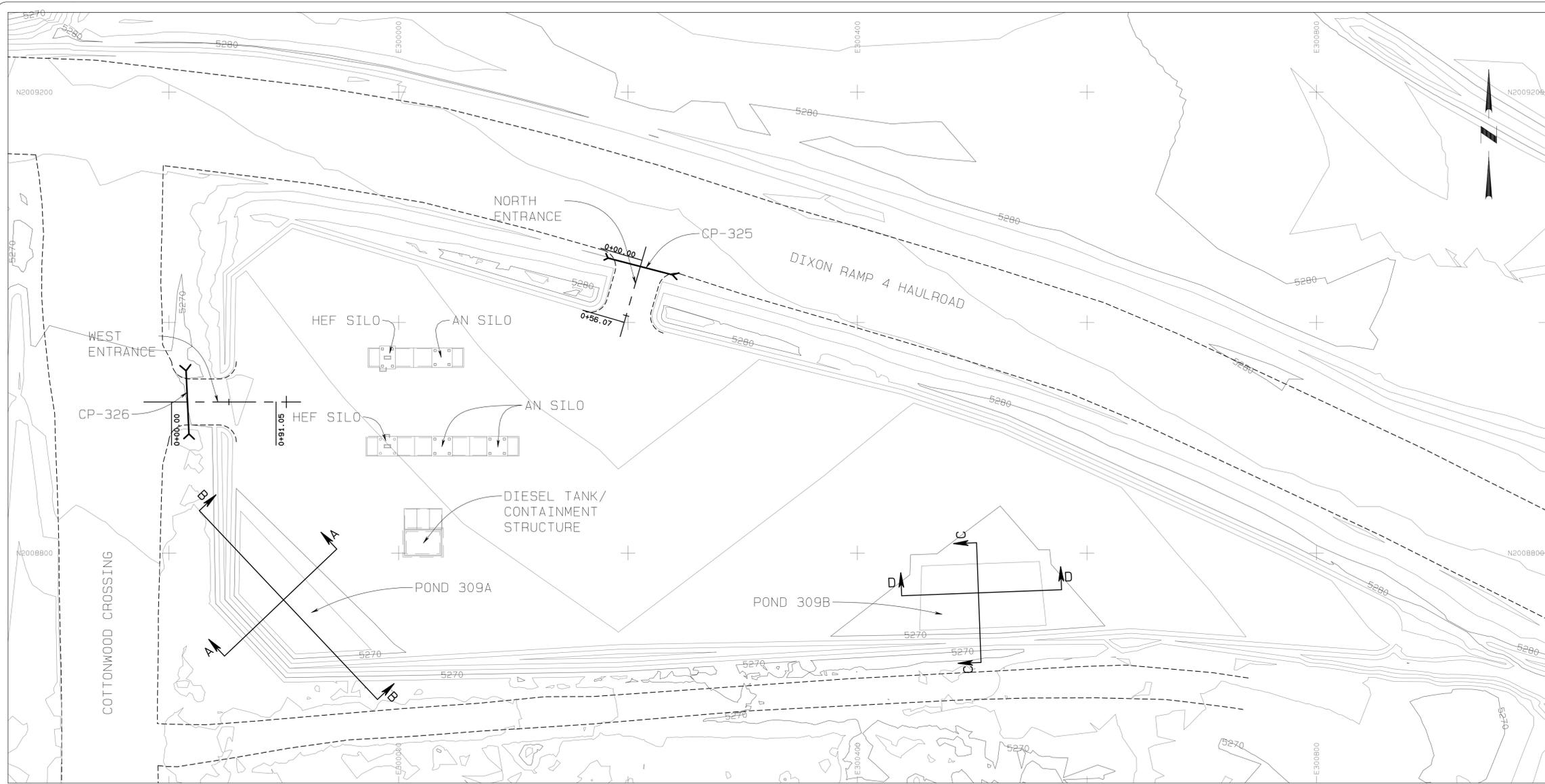


BHP MINERALS INTERNATIONAL INC.
NAVAJO MINE
FRUITLAND, NEW MEXICO

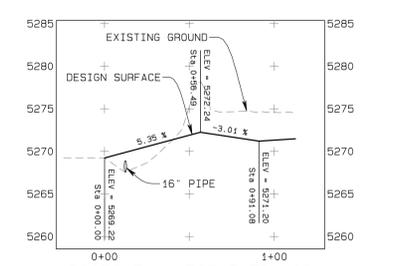
NORTH INDUSTRIAL AREA
PUMP HOUSE
SITE EXHIBIT 22-17

CERTIFICATION STATEMENT
THE AREAS DEPICTED ON THIS EXHIBIT REFLECT TOPOGRAPHIC CONDITIONS TO BEST OF MY KNOWLEDGE AND THAT THE BERM CONTAINMENT AT THE PUMP SITE WILL CONTAIN THE DESIGN STORAGE VOLUME.

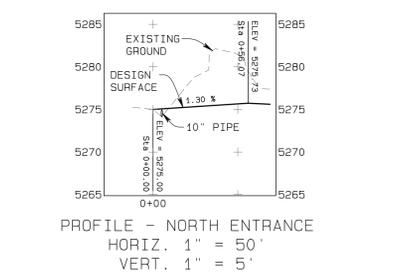
REV. NO.	DATE	REVISIONS	DRAWN BY	ENGR.	CHEF. ENGR.	PROJ. MGR.	APPROVED BY	SCALE	DATE	DWG. LOC.
1	2/1/93	Add revision block and change exhibit no. to EXHIBIT 22-17	BC				BC	1"=30'	JAN. 15, 1993	MF-B7
			DRAWING NO. 20-200-93-0115							



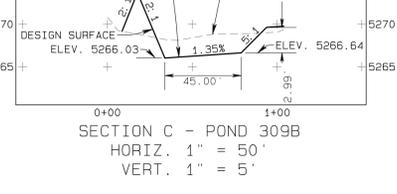
PLAN
1" = 50'



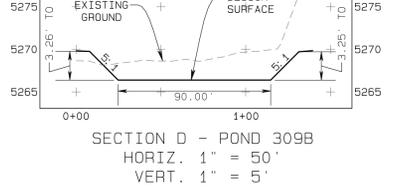
PROFILE - WEST ENTRANCE
HORIZ. 1" = 50'
VERT. 1" = 5'



PROFILE - NORTH ENTRANCE
HORIZ. 1" = 50'
VERT. 1" = 5'



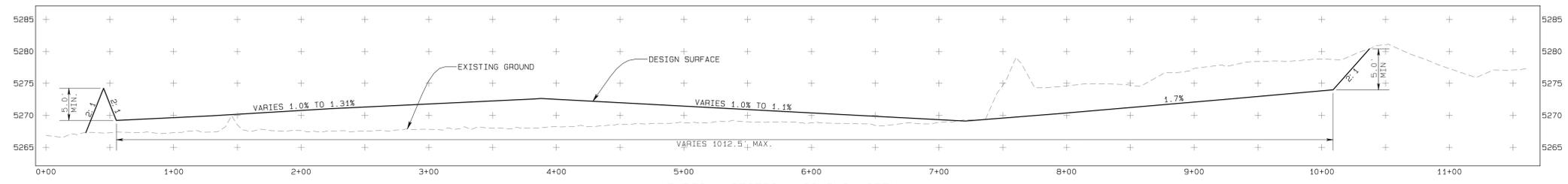
SECTION C - POND 309B
HORIZ. 1" = 50'
VERT. 1" = 5'



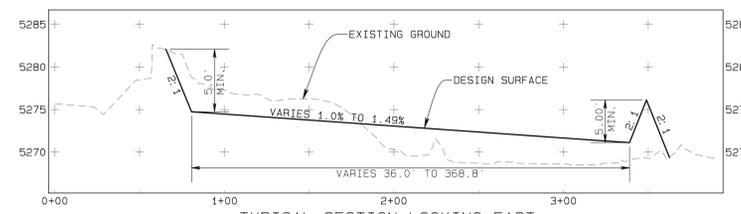
SECTION D - POND 309B
HORIZ. 1" = 50'
VERT. 1" = 5'

POND 309B
STAGE STORAGE DATA

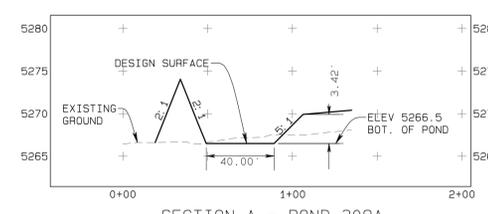
ELEV. (ft)	AREA (ac)	VOLUME (ac-ft)	CUM. VOLUME (ac-ft)
5266.1	0.01	0.00	0.00
5266.5	0.08	0.02	0.02
5267.0	0.11	0.05	0.06
5268.0	0.14	0.12	0.19
5269.0	0.17	0.15	0.34
5269.3	0.18	0.05	0.38



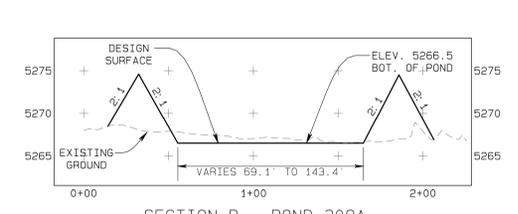
TYPICAL SECTION LOOKING NORTH
HORIZ. 1" = 50'
VERT. 1" = 5'



TYPICAL SECTION LOOKING EAST
HORIZ. 1" = 50'
VERT. 1" = 5'



SECTION A - POND 309A
HORIZ. 1" = 50'
VERT. 1" = 5'



SECTION B - POND 309A
HORIZ. 1" = 50'
VERT. 1" = 5'

POND 309A
STAGE STORAGE DATA

ELEV. (ft)	AREA (ac)	VOLUME (ac-ft)	CUM. VOLUME (ac-ft)
5266.5	0.10	0.00	0.00
5267.0	0.11	0.05	0.05
5268.0	0.14	0.12	0.18
5269.0	0.17	0.15	0.33
5269.8	0.19	0.14	0.47

- NOTES:
- The hydrology and design data for ponds and culverts are provided in Appendix 11-AA and Appendix 11-V, respectively.
 - The watershed areas for ponds and culverts are shown on Exhibit 11-13E and 11-12E, respectively.

CERTIFICATION STATEMENT

I, Leonard Raymond, hereby certify that this drawing was reviewed by me and that the information shown is accurate and complete to the best of my knowledge.



bhpbillion
BHP NAVAJO COAL COMPANY
NAVAJO MINE

PLAN, SECTIONS
AND PROFILES

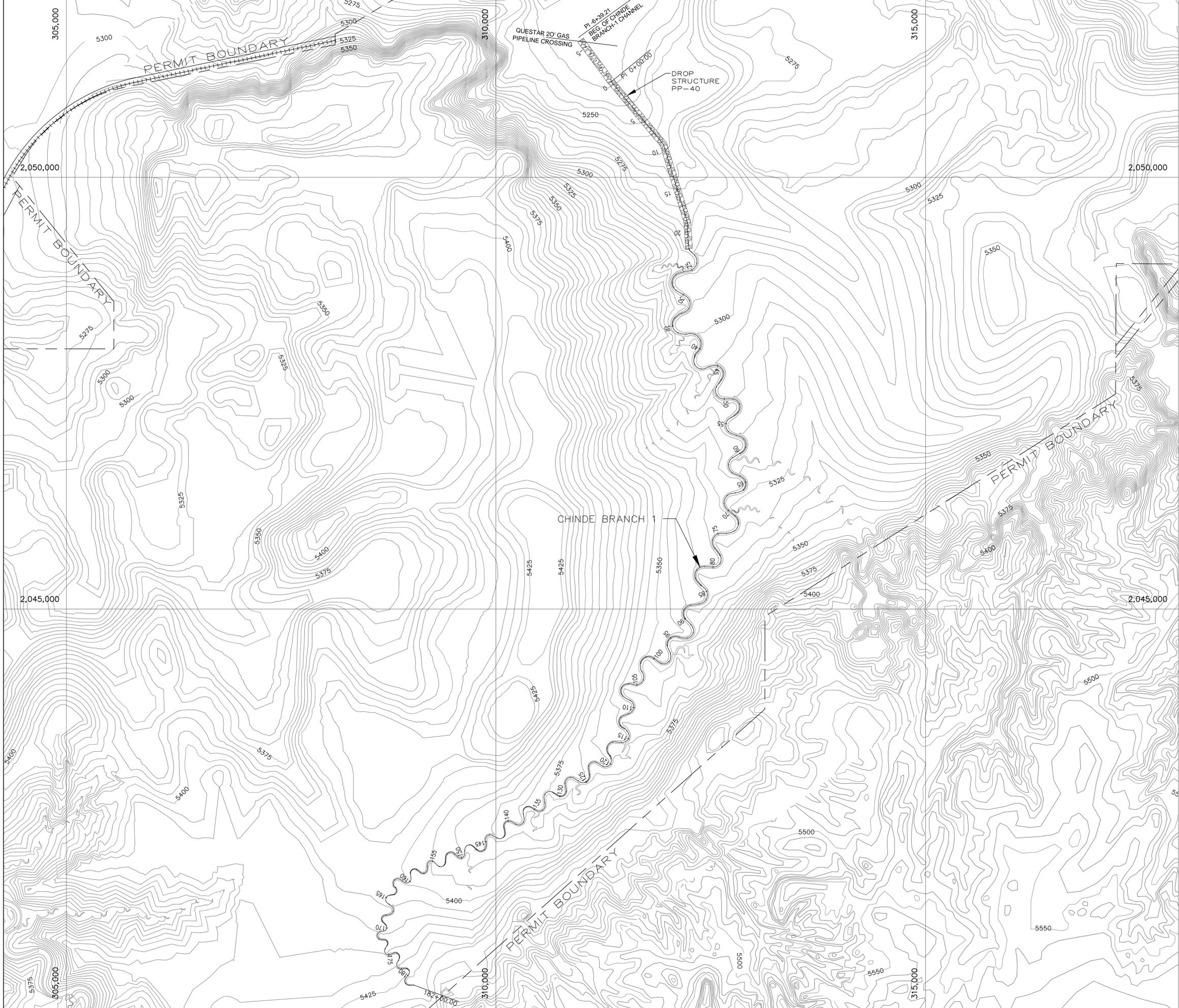
Exhibit 22-18
GILMORE SILOS (CAN & HEF)

DRAWING
SHEET 1
OF 1

DATE: 10-16-12
REVISION: 12-1 SUBMITTED TO OSM FOR REVIEW AND APPROVAL.
PROJECT MANAGER: Ben Heiste
ENR. of RECORD: Leonard Raymond
DRAWN BY: Shawn of RECORD: M. Jason Bergby
CHECKED BY: L. Raymond
APPROVED BY: L. Raymond

PO BOX 1717, FRUITLAND, NEW MEXICO, 87415 / PHONE 505-598-4200/FAX 505-598-3361

G:\Mining\Silos\Gilmore_Silos_Sep12012.dwg
Mon Oct 15 2012 / 11:42:36



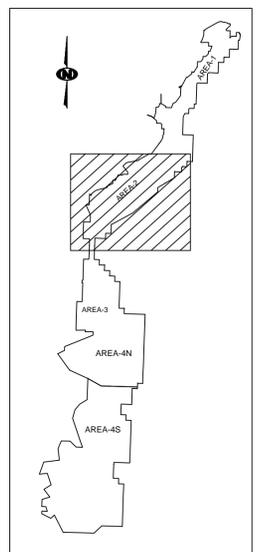
SCALE: 1"=500

NOTES:

- FOR LOCATION DETAIL DESIGN OF DROP STRUCTURE PP-40 SEE APPENDIX 11-GG, EXHIBIT 11-761, AREA II POST-MINE DROP STRUCTURE & RIPRAP CHANNEL LOCATION.

LEGEND

- ROAD
- WATERSHED
- BUILDING
- FENCE
- IRRIGATION LINE
- CULVERT
- DAM
- DRAINAGE
- RAILROAD
- TREES
- POWERLINE
- SPOT ELEVATION
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- LEASE CORNER
- LEASE/PERMIT BOUNDARY
- CHANNEL



CERTIFICATION STATEMENT

I, George A. Madrid, P.E., hereby certify that this drawing was reviewed by me and that the information shown is complete and accurate to the best of my knowledge.



GEOMAT inc.
915 Malta Avenue • Farmington, NM 87401 • (505) 327-7928

REV.	DATE	BY	DESCRIPTION	CHK.	APP.
4	01-04-13	BMF	Updated for FSC revision and submitted to OSM for Review	revision	ready
3	08-14-12	BMF	SUBMITTED TO OSM FOR REVIEW	revision	ready
2	08-08-08	PJF	SUBMITTED TO OSM FOR REVIEW	revision	ready
1	10-31-08	PJF	SUBMITTED TO OSM FOR REVIEW	revision	ready



BHP Navajo Coal Company
P.O. Box 1717 • Farmington, New Mexico, 87416 Phone: 505-588-6200 Fax: 505-588-3361

Exhibit 41-5

AREA-II RECLAIMED CHANNEL
CHINDE BRANCH-1

PREPARED BY: BAT	DRAWN BY: BAT	SCALE: 1"=500'
APPROVED BY: CB	DATE: 08.14.2012	SHEET: 1 OF 5