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file I/M/015/002

Western States Minerals Corporation

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Wheat Ridge, Colorado 80033
(303) 425-7042
TELEX NO. 450186 West States

RECEIVED
NOV 24 1986
DIVISION OF
OIL, GAS & MINING

November 19, 1986

Mr. John Whitehead
Permit Supervisor/Reclamation Hydrologist
Division of Oil, Gas and Mining
3 Triad Center #350
Salt Lake City, Utah 84180-1203

Re: Repair Maintenance Items,
J.B. King Mine

Dear Mr. Whitehead:

Attached to this cover you will find the proposal plan for repair and maintenance of the following items:

1. The main channel between stations 5 + 50 and 8 + 00.

2. The feeder ditch to the south of the main channel.

3. Rills formed on and in the vicinity of the reclaimed refuse pile.

Western States awaits a response from the DOGM on these proposed erosion control measures. As soon as final approval is obtained the earth work, and placement of rock portions of the program could begin. It is recommended that no seeding be attempted until spring.

Respectfully submitted,

WESTERN STATES MINERALS CORPORATION

Michael H. O'Donnell

Michael H. O'Donnell
Governmental Relations Manager

MOD/djs

Enclosure

cc: w/ enclosures
A.S. Gordon
A.B. Morrow
O.E. Powers

Proposed repair and maintenance plan for erosion control at the J.B. King Mine.

1. Main Channel Erosion Control Measures

Excessive vertical erosion from Station 5 + 30 to 8 + 30 of the main channel will be corrected by reshaping and grading of the banks to restablish the post reclamation topography of October 1985.

This will be accomplished utilizing a small track mounted dozer (D-6 or less) and or a medium sized backhoe.

Upon achieving the desired reconstructed topography of the side slopes the channel itself will receive rip rap protection in the erosional segments. The side slopes will not be greater than 2 feet horizontal to an 1 foot vertical. No rip rap will be placed in depositional areas. All areas to receive rip rap will have a geotextile fabric filter blanket in place prior to rock placement. Rip rap will be placed on the ditch side slopes for a lenial distance up to twice the width of the ditch bottom where feasible.

At station 5 + 00 of the main channel a rock check dam is proposed. This dam would be constructed to the same design criteria as set forth in UMC 817.44 as Addendum 10/10/85. A base width of 4 feet and a maximum spillway heigth not to be within 1 foot of the existing ditch heigth is proposed.

The rock used in these dams will be gathered from the nearby area. If insufficient volumes of rock are not available then the

material will be imported. An attempt will be made to construct this dam with the following rock consist:

Diameter (in.)	Percent
4.0 - 5.5	25
6.0 - 7.5	20
8.0 - 12.0	25
12.5 - 18.0	30

The dam will be keyed into the embankments by using a pick and shovel to embed the rock into side slopes and bottom of the ditch.

The rock and boulders which are naturally embedded along the ditch bottom and to some extent the sides, will be used as much as possible. The sides of the dam will be reinforced with extra rock extending upstream a foot or so to prevent the water from eroding around the dam on the inflow side of the dam. A filter blanket of geotextile fabric will be installed prior to the placement of any rock.

At station 5 + 30 on the main ditch which is the approximate location of the advancement of ditch head cutting, it is proposed that the ditch slopes be layed back to a slope of 2h to 1v and rip rap placed as on a filter blanket.

Rock to be placed as rip rap will be gathered from the nearby area. If inadequate supplies exist then the material will be imported. The material size specification will be the same as those utilized in the check dam construction.

To augment the existing vegetation around the ditch area, hand seeding will be done. Seed will be raked into place so as

not to disturb the existing vegetation. The permanent seed mixture will be used as described in the attachment. (J.B. King Mine Seed Mix-Planting Rates.)

2.0 Feeder Ditch Erosion Control Measures

The feeder ditch to the south of the main channel has experienced similar erosional problems as the main ditch. It is noted that the disturbance is not as severe as the main ditch. This is due primarily to the characteristics of the material in which the ditch has been developed. The ditch is constructed in a reogolith and in places bedrock is exposed.

It is proposed that the feeder ditch maintenance be addressed in the following manner:

Replace the three rock check dams as detailed in UMC 817.44, Addendum 10/10/85. Those dams are located at Stations 50 foot, 100 foot and 150 foot. (See attachment). These check dams would be installed with a filter blanket of geotextile fabric as a base. Minimal to no reshaping or regrading of the feeder ditch is recommended. The lateral erosion of the ditch is minimal with vertical erosion of 2 to 3 feet being the general rule. At several localities within the ditch the downward erosion has advanced to bedrock. It is recommended that in addition to reconstructing the three check dams, that areas' of erosion in the ditch where bedrock or other rock armour is non existant that rip rap be placed. A filter blanket of geotextile would be installed and rip rap placed on the fabric.

A further recommendation for the feeder ditch is to construct a new check dam at a point near its' discharge into the

main channel. This check dam would be near the locality where the head cutting has advanced. Referencing Map No. 4050-514R the proposed station of 5 + 50 is given as the new check dam location on the feeder ditch.

This dam is to be constructed to the same criteria as specified in UMC 817.44, Addendum submitted 10/10/85. Two variances being the base which will be the entire width of the existing channel at that station and the height of the spillway not to be within one foot of the existing ditch heigth.

To augment the existing vegetation around the ditch area, hand seeding will be done. Seed will be raked into place so as not to disturb the existing vegetation. The permanent seed mixture will be used as described in the attachment "J.B. King Mine Seed Mix-Planting Rates."

3. Rill Erosion Control Measures

Numerous rill type erosion features have become evident on the side slopes of the reclaimed refuse pile and those side slope areas from the reclaimed refuse pile to the main drainage channel. It would be impractical, due to rill frequency, to attempt and identify the actual locality of those rills requiring the maintenance in this document.

A general plan of maintenance and repair is proposed as follows:

1- Where possible run-off waters will be channeled into existing planned and constructed drainages.

2- Where rill erosion is establishing itself an overview of the topography and the natural drainage courses being established

by the rills will be evaluated. Only those rills or portions of rills which are designated primary and are essential to run-off management, will be allowed to remain.

3- Rills or portions of rills that are designated as secondary will be eliminated by back filling.

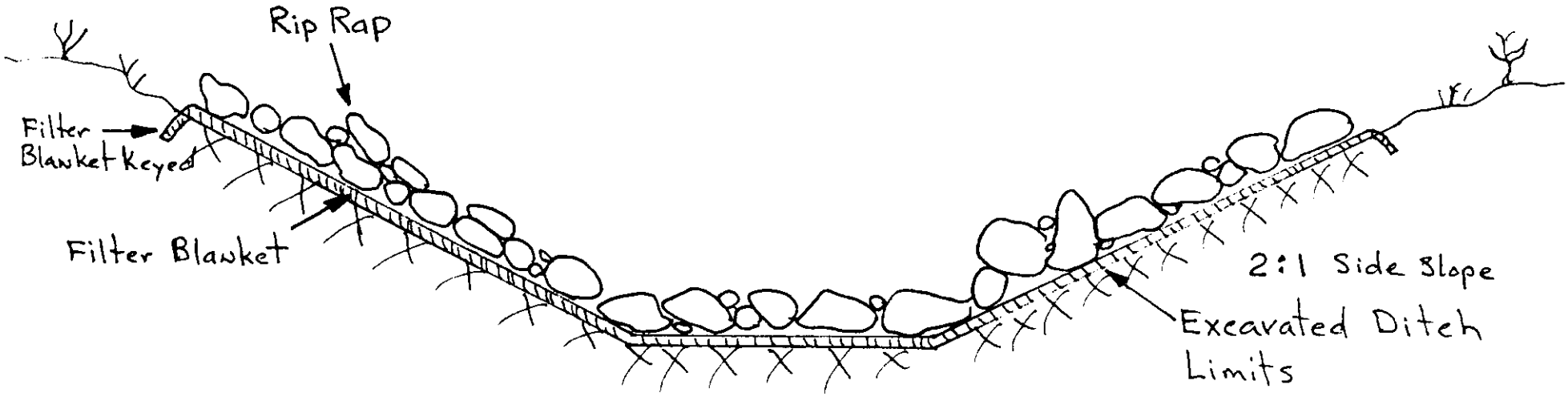
4- Emphasis will be given to maintaining the integrity of the reclaimed refuse pile and to the diverting run-off prior to its' advancement onto the side slopes.

5- Primary rills which are allowed to remain will be directed into the established drainage ditch network. The use of silt filter blankets will be encorporated into the directional control of rills. These silt filters will be constructed with an ultra violet resistant geotextile fabric.

6- Existing side hill contour furrows will be maintained by hand repair of breached furrows and hand cleaning of those portions filled with sediment.

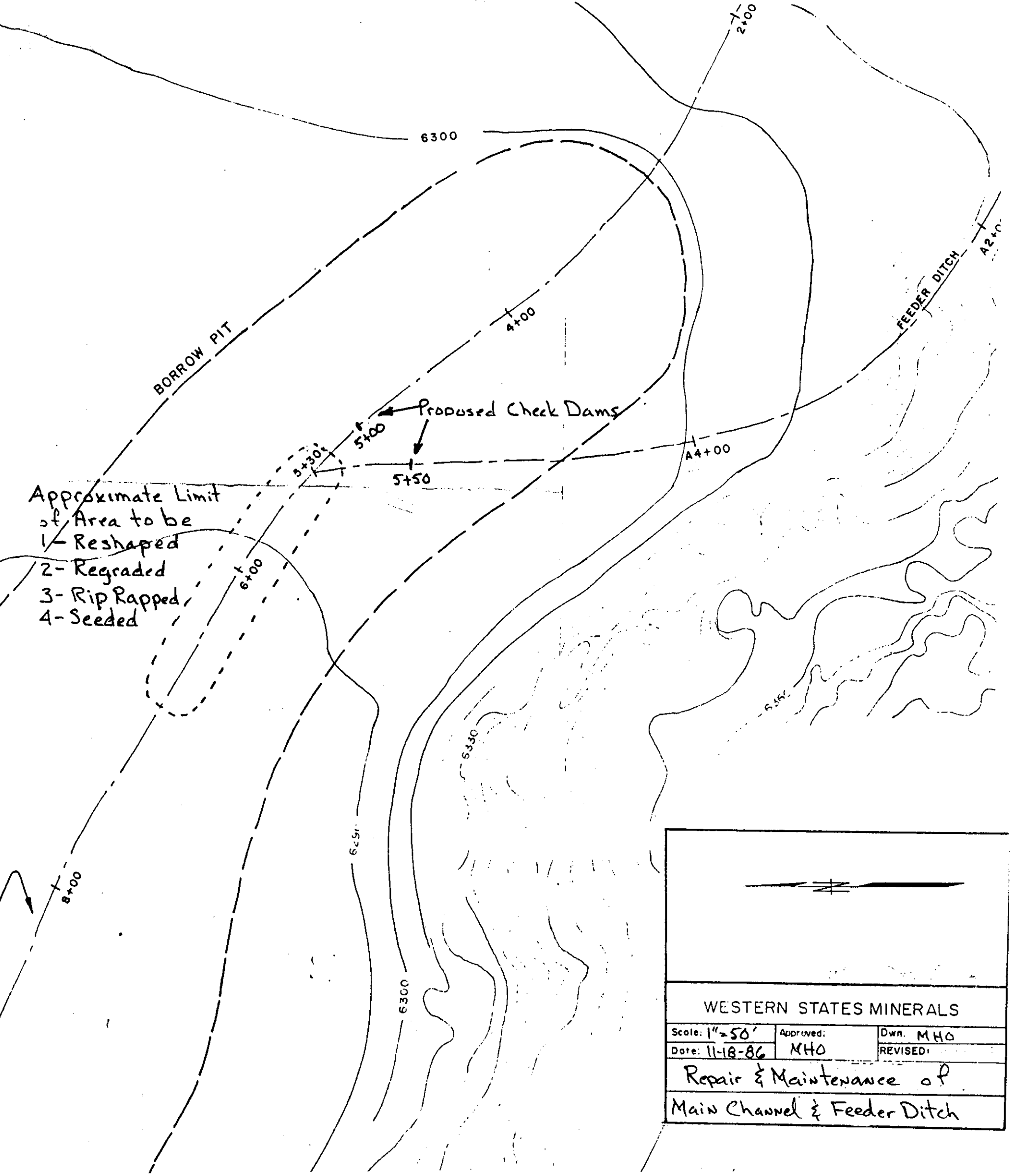
7- Disturbed areas caused by maintenance and repair of rills and the rills themselves will be hand seeded. Seed will be raked into place so as not to disturb the existing vegetation. The permanant seed mixture will be used as described in the attachment ("J.B. King Mine Seed Mix-Planting Rates").

Western States Minerals
J.B. King Mine

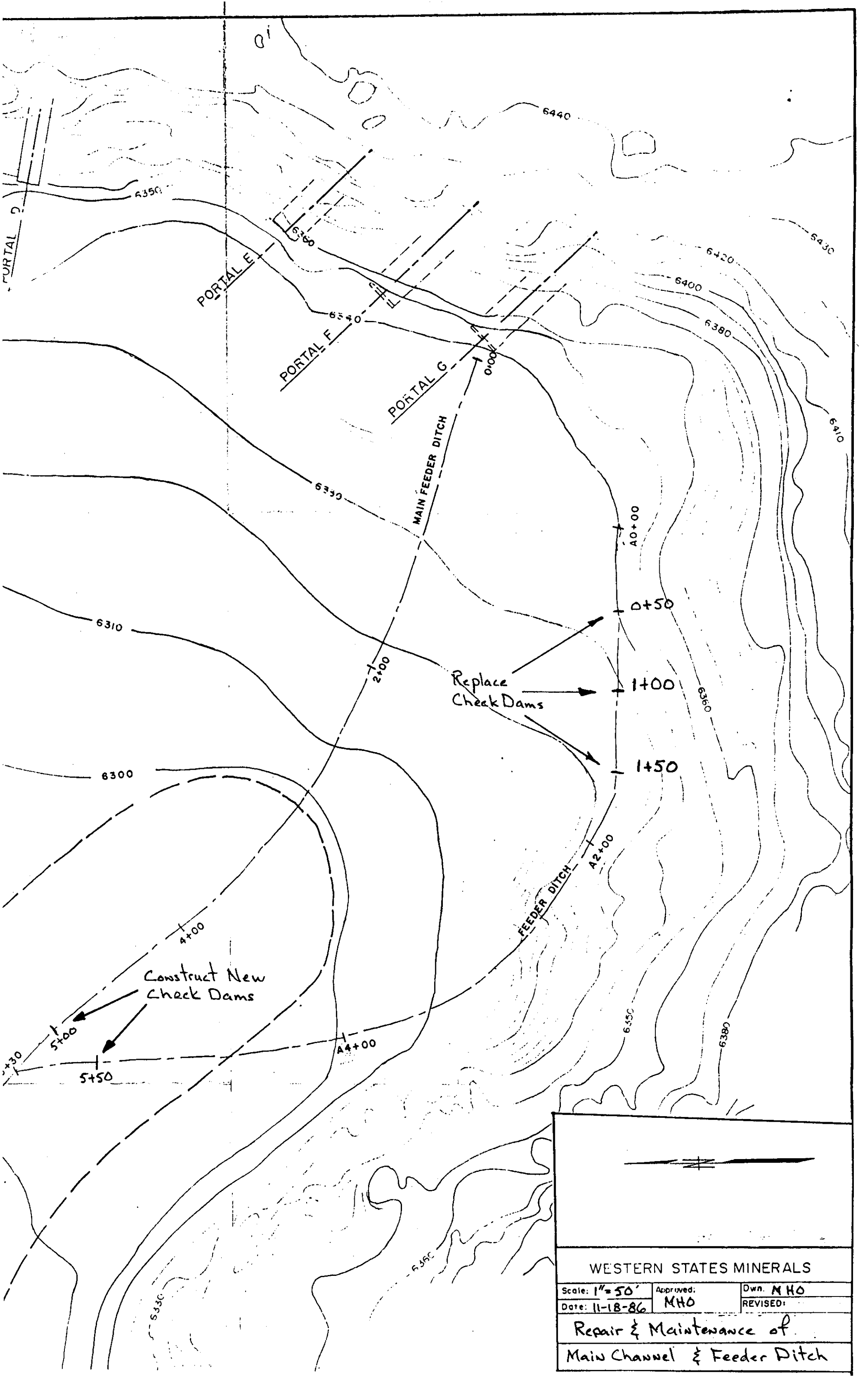


Typical Section
Main Channel Repair

Scale 1"=2'
11-18-86
by M.H.O



6300
2+00
BORROW PIT
4+00
FEEDER DITCH
A2+00
Proposed Check Dams
5+00
5+30
5+50
A4+00
Approximate Limit of Area to be
1- Reshaped
2- Regraded
3- Rip Rapped
4- Seeded
6+00
6330
6300
8+00
WESTERN STATES MINERALS
Scale: 1"=50'
Approved: MHO
Dwn. MHO
Date: 11-18-86
REVISED:
Repair & Maintenance of
Main Channel & Feeder Ditch


6440
6350
6360
6430
6420
6400
6380
6410
PORTAL E
PORTAL F
PORTAL G
6340
0+00
MAIN FEEDER DITCH
6330
A0+00
0+50
6310
2+00
Replace
Check Dams
1+00
6360
1+50
6300
A2+00
FEEDER DITCH
4+00
Construct New
Check Dams
5+00
6350
6380
A4+00
5+50
6350
6330
WESTERN STATES MINERALS
Scale: 1"=50'
Approved:
Dwn. MHO
Date: 11-18-86
MHO
REVISED:
Repair & Maintenance of
Main Channel & Feeder Ditch

UMC 817.44 HYDROLOGIC BALANCE: STREAM CHANNEL DIVERSIONS

ADDENDUM
(Submitted 10/10/85)

FEEDER DITCH EROSION CONTROL MEASURES

To provide a measure of erosion control along the feeder ditch which trends N30W and is located in the southwest corner of the disturbed area, the following plan is proposed.

Check dams will be installed along the ditch at the 50 ft., 100 ft., and 150 ft. marks when measuring 0 ft. from the toe of the ditch. These check dams are designed in compliance with the recommendations and formulas outlined by Richard H. Heede in his article, Gully Control Structures and Systems.

The initial design parameters upon which the dam construction is based are:

Ditch Length	=	200 ft.
Grade	=	21%
Average Depth	=	4 ft.
Average Width	=	4 ft. (at crest)
Maximum Flow	=	75 cfs
Condition	-	Ditch has formed in sandy material. The embankments are steep and the bottom is lined with rocks and boulders.

The check dams will have the following specifications:

Spillway Height	=	3 ft.
Total Height	=	3.5 to 4 ft.
Apron Length	=	5 ft.
Base Width (B)		
B (50)	=	3 ft.
B (100)	=	3.5 ft.
B (150)	=	4 ft.

The rock used in these dams will be gathered from the nearby area. An attempt will be made to construct these dams with the following rock consist:

DIAMETER (in.)	PERCENT
4.0 - 5.5	25
6.0 - 7.5	20
8.0 - 12.0	25
12.5 - 18.0	30

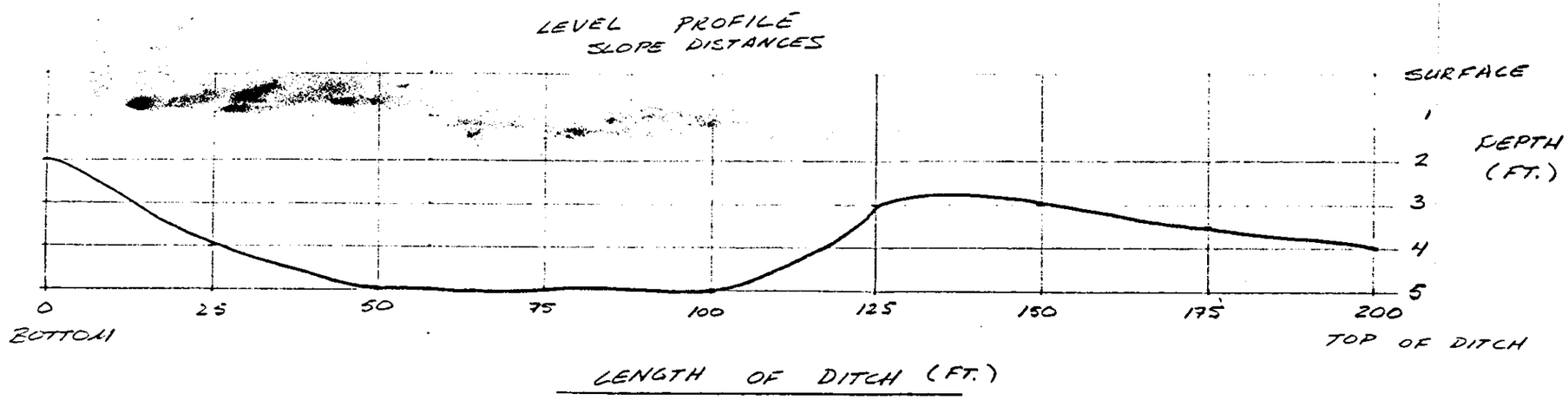
The dams will be keyed into the embankments by using a pick and shovel to embed some of the rock into side slopes and bottom. This will be done, however, only to a limited extent.

The rock and boulders which are naturally embedded along the ditch bottom and to some extent the sides, will be used as much as possible. The sides of the dams will be reinforced with extra rock extending upstream a foot or so to prevent the water from eroding around the dams on the inflow side of the dams.

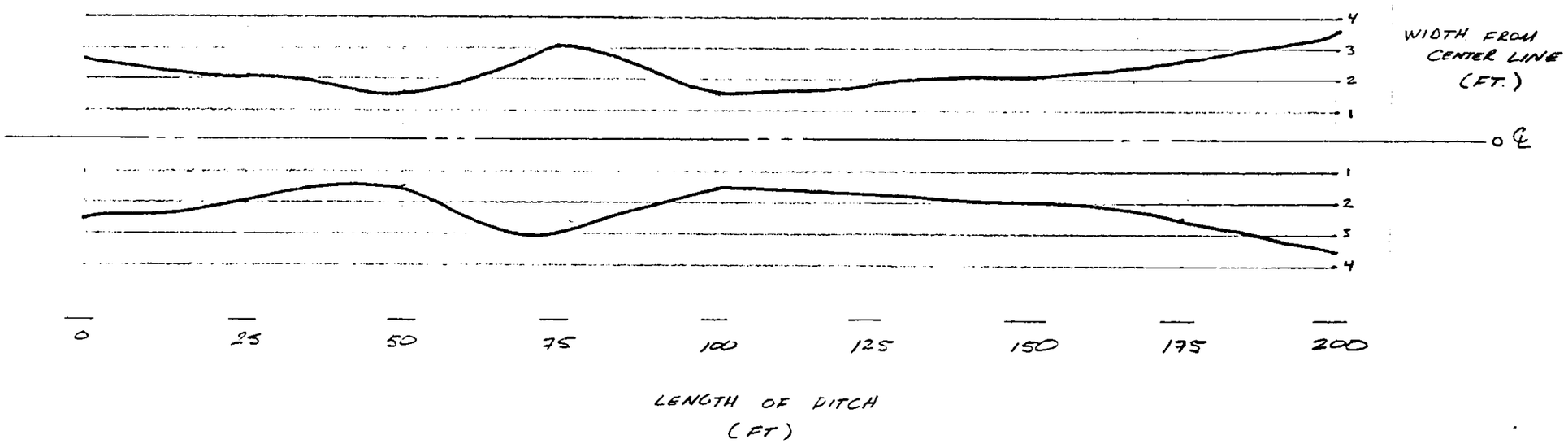
These dams will be monitored and maintained regularly to insure their long-term effectiveness.

To augment the existing vegetation around the ditch area, hand seeding will be done. Seed will be raked into place so as not to disturb the existing vegetation. The permanent seed mixture will be used as described in UMC 783.19.

See Figures 1 and 2 and photos for additional design details.



PLAN VIEW



UMC 817.44

DITCH DETAILS

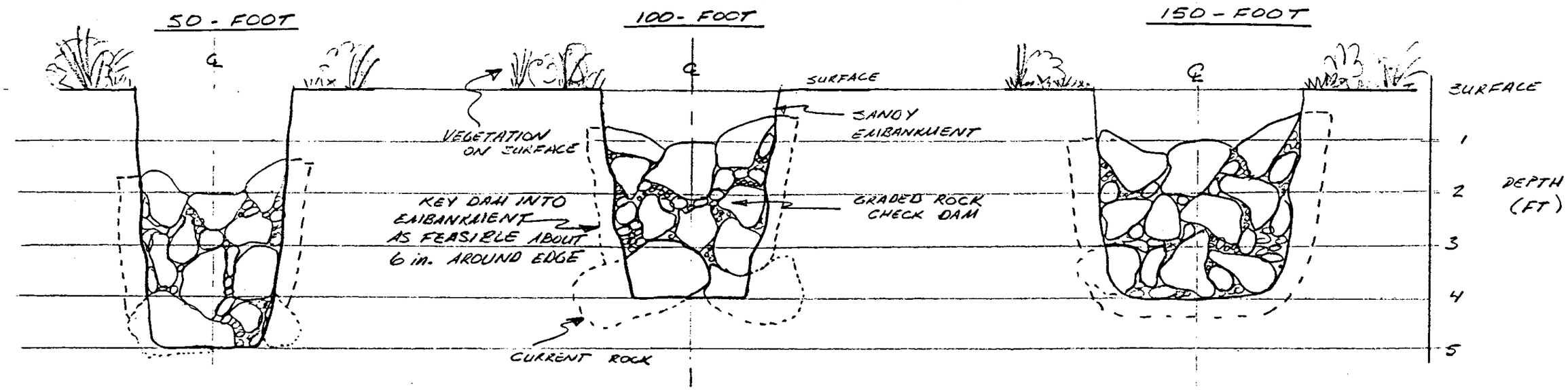
LENGTH = 200'
GRADE = 21%
SLOPE = 12°

CONDITION:
GENERALLY STEEP SLOPED EMBANKMENTS WITH SOME LARGE AND SMALL ROCKS LINING BOTTOM. SANDY MATERIAL.

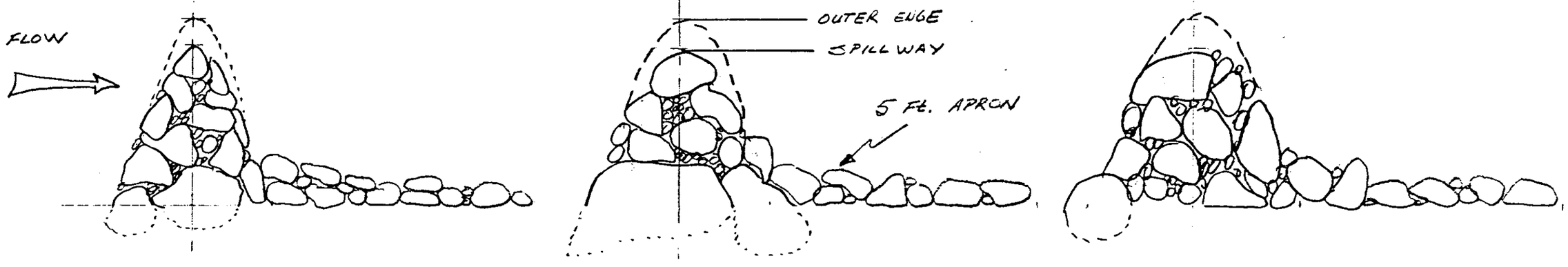
WESTERN STATES MINERALS CORP.		
SCALE: VARIABLE	APPROVED BY:	DRAWN BY E.D.H.
DATE: 10/8/85		REVISED
PLAN AND PROFILE VIEWS OF DITCH		
COAL SYSTEMS, INC. S.L.C.		DRAWING NUMBER FIGURE 1

11X17 PRINTED ON NO. 1000H CLEARPRINT

CROSS-SECTION VIEW OF CHECK DAMS



PROFILE VIEW OF DAMS



DAM CONSTRUCTION DETAILS

ROCK CONSIST:

DIAMETER	PERCENT
4" - 5.5"	25
6" - 7.5"	20
8" - 12"	25
12.5" - 18"	30

ALL CHECK DAMS WILL BE CONSTRUCTED USING AVAILABLE ROCK FOUND NEAR DITCH. AN ATTEMPT TO ACHIEVE DESIRED SIZE CONSIST WILL BE MADE. SPILLWAYS WILL BE 2 FT. HIGH. DAMS WILL BE KEYED IN USING EXISTING ROCK AND DIGGING INTO SIDES.

UMC 817.44

WESTERN STATES MINERALS CORP.

SCALE: 1 in. = 2 Ft	APPROVED BY: L.G.H.	DRAWN BY E.D.H.
DATE: 10/8/85		REVISED

CHECK DAM CONSTRUCTION

COAL SYSTEMS, INC. S.L.C.

DRAWING NUMBER FIGURE 2

11X17 PRINTED ON NO. 1000H CLEARPRINT

G. Prairie Sage: 1.2# applied at rate of 0.1# PLS/A over 12 Acres (primarily along borrow pit ditch banks).

II. RATE OF APPLICATION

A. 5 ACRES @ ≈20#/ACRE; drill seeding was attempted but discontinued due to un-even, rocky surface in many areas and because range in size of seeds was too great which prevented uniform feeding of the mix.

B. 23 ACRES @ ≈39#/ACRE; the remaining acreage was seeded using a broadcast seeder at a doubled application rate.

III. SEED SUPPLIER - Maple Leaf Industries, Inc., Ephraim, Utah

IV. PLANTING TECHNIQUE - Approximately 5 acres/day were seeded, mulched and crimped. The seed was broadcast during the calm morning hours; mulching and crimping the 5 acres required the rest of the day.

V. MULCHING - A barley straw mulch was blown over the entire seeded area at a rate of 3000#/A. The straw was inspected by a District Agricultural Inspector and determined to be reasonably weed free.

VI. CRIMPING - The straw was crimped into the soil using a double-gang farm disc with the gangs adjusted to prevent furrowing by the discs.

VII. FERTILIZER - As noted in an earlier memo (5/19/86 to D. Duce, copy to K. Mutz) fertilizer was applied prior to planting at a rate of 200#/A (150# Urea, 50# Double superphosphate)

This letter is a re-statement of the actual experience and supercedes any prior information relayed on this subject. I hope it provides the information you requested.

Sincerely,

COAL SYSTEMS, Inc.

L. G. Manwaring, P.E.
President

LGM/bm

cc: M. O'Donnell, WESTERN STATES MINERALS CORPORATION

RECEIVED JUL 21 1986

COAL SYSTEMS, Inc.
CONSULTANTS/ENGINEERS

L. G. MANWARING, P.E.
President

P.O. BOX 17117
SALT LAKE CITY, UTAH 84117

Area Code 801
261-4500

July 17, 1986

Ms. Kathy Mutz, Biologist
DIVISION OF OIL, GAS, & MINING
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Re: J. B. King Mine
Seed Mix - Planting Rates

Dear Ms. Mutz:

Per your recent request for information on the seed planting at the J. B. King Mine Site in the fall of 1985, please note the following:

I. MIX

		%
A.	Grasses	
	Western Wheatgrass	10.1
	Thickspike Wheatgrass	4.5
	Streambank Wheatgrass	4.5
	Beardless Wheatgrass	4.5
	Blue Grama	6.8
	Galleta	4.5
	Indian Ricegrass	9.1
	Needle and Thread	4.5
	Big Bluegrass	2.3
B.	Forbs	
	Gooseberry Globemallow	1.1
	Yellow Sweet Clover	6.8
	Palmer Penstemon	1.1
C.	Shrubs	
	Fringed Sage	1.1
	Fourwing Saltbush	4.5
	Shadscale	4.5
	Winterfat	4.5
	Rubber Rabbitbrush	1.1
D.	Inert	21.6
E.	Crop	2.2
F.	Weed	0.7
		100.0