



Cyprus Plateau Mining Corporation  
 P.O. Drawer PMC  
 Price, Utah 84501  
 (801) 637-2875  
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Ben Grimes direct - 636-2227

April 11, 1994

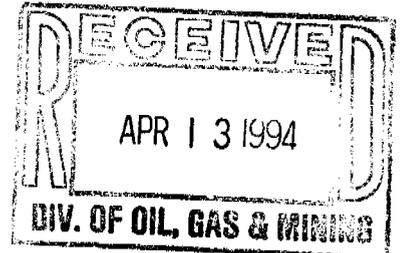
Utah Coal Regulatory Program  
 Division of Oil, Gas and Mining  
 355 West North Temple  
 3 Triad Center, Suite 350  
 Salt Lake City, Utah 84180-1203

Attn: Mr. Lowell Braxton

Dear Mr. Braxton,

RE: 1993 ANNUAL REPORTS SUBMITTAL AND REQUEST FOR EXTENSION OF TIME

*File cover letter in  
 ACT/007/006 #6 (and log in)  
 Copy cover Put Annual report  
 letter and*



Enclosed are the following annual reports for 1993:

- Coal production.
- ☉ Subsidence Monitoring - includes areas mined in 1993 and areas to be mined in 1994.
- ☉ Vegetation monitoring - interim reclaimed areas.
- ☉ Precipitation at CPMC.
- ☉ Annual sediment pond certification.
- ☉ First quarter 1994 refuse pile certification.
- ☉ Macroinvertebrate monitoring in Nuck Woodward Canyon.

We have a consultant working on evaluating the color infrared photography of the U.S. Forest Service lands above mining for vegetation impacts. This consultant will be finished with the report on about May 2nd. We would like to ask for an extension of time until May 5 to submit this report.

Ben Grimes  
Page 2  
April 11, 1994

Because of problems finalizing our hydrology database system we do not have the annual hydrology report completed. We would like to ask for a 45 day extension to submit this report. We will submit this report on May 30.

Please let me know as soon as possible if these extensions are acceptable.

Respectfully,



Ben Grimes  
Sr. Environmental Engineer

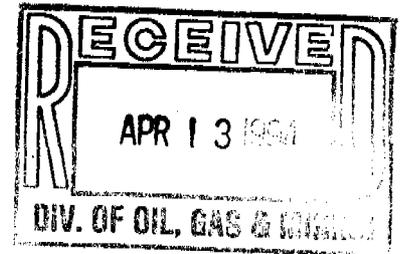
Enclosures

File: ENV 2.5.2.1.8  
Chron: BG940404

COAL MINING AND RECLAMATION OPERATIONS FOR 1993

(Must be submitted to the Division by April 15, 1994)

State of Utah  
Department of Natural Resources  
Division of Oil, Gas and Mining  
3 Triad Center, Suite 350  
355 West North Temple  
Salt Lake City, Utah 84180-1203  
(801) 538-5340



Permittee: CYPRUS PLATEAU MINING CORP.  
Mine Name: STAR POINT MINES  
Mailing Address: P.O. DRAWER PMC PRICE, UT 84501  
Company Representative: BEN GRIMES  
Resident Agent: C.T. CORPORATION 50W. BROADWAY, SALT LAKE CITY, UT.  
Permit Number: ACT/007/006  
MSHA ID Number: 52-00171  
Date of Initial Permanent Program Permit: JAN 27, 1982  
Date of Permit Renewal: JAN 27, 1992  
Quantity of Coal Mined (tonnage) 1993: 3,020,000

Attach Updated Mine Sequence Map(s) showing mine development through December 31, 1993.  
(Same as Lease Royalty Payment Map and/or MSHA Progress Map)

All monitoring activities during the report period to be submitted with this report (including, but not limited to):

A. General

1. Discuss anomalies, missing data and monitoring changes made throughout the year.
2. Summarize any corrective actions and the results that may have occurred during the year.

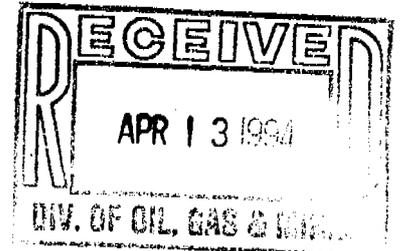
B. Water Monitoring Data:  
Groundwater Summary

1. Mine Discharge
  - a. Summarize the total annual discharge from mine water discharge points and breakdown on a monthly basis for each site.
  - b. Discuss the past five years of data comparing changes in discharge. Elements such as mining rate, location of faults or large in-mine flows during the year should be discussed.
  - c. Discuss trends and exceedence in water quality parameters. A correlation with flow could provide additional information.

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**CYPRUS-PLATEAU MINING COMPANY**  
**STAR POINT MINES**  
**1993 ANNUAL RECLAMATION MONITORING REPORT**

**Submitted to**

**Cyprus-Plateau Mining Company**  
**P.O. Box Drawer PMC**  
**Price, Utah 84501**

**Prepared by**

**IME**  
**P.O. Box 270**  
**Yampa, CO 80483**

**December 7, 1993**

## INTRODUCTION

This annual reclamation monitoring report is submitted by Cyprus-Plateau Mining Company, here after referred to as Plateau or CPMC, in accordance with their approved Mining and Reclamation Plan, which requires that all previously reclaimed sites be monitored to determine the relative degree of revegetation success on all temporarily and permanently reclaimed sites. The specific revegetation monitoring schedule is found on Table 356.100a on page 300-153 of their current permit. This submittal contains the results of all areas which required monitoring according to this approved schedule. This report contains the results of field sampling data collected on August 26 and 27, 1993. These data were collected by Kent Crofts and Katie Crofts. The reclamation monitoring program conducted in 1993 employed the same observers and data evaluation techniques with all previously collected reclamation monitoring data collected at this site since 1985.

Plateau has collected revegetation success data since 1981 from all previously reclaimed sites, the results of which have been submitted annually to the Division. Due to the voluminous nature of these previous submittals, it is not practicable to provide a complete comparison of all of this monitoring data for the sites monitored during the 1993 sampling effort. Therefore, in order to more fully understand the history and results obtained from previous monitoring efforts, the reviewer is referred to these previous submittals. Where it is possible, summaries of these previously collected information are compared with the data collected in 1993 to determine possible revegetation trends.

### SAMPLING METHODOLOGIES

The data collected in the 1993 monitoring effort utilized identical sampling methodologies, equipment, observers and methods of data collection and analysis which has previously been approved by the Division. The only vegetative parameter sampled in 1993 was total plant cover. Due to the similarity of previous sampling methodologies,

CPMC believes that a comparison of the 1993 data with previously collected data is possible to determine the revegetation trends with respect to the successfulness of current and previous revegetation efforts.

Cover. Total plant cover was measured using a 2 x 5 dm rectangular quadrat. Transects 14.52 feet in length were randomly placed throughout the areas which needed sampling. Along each transect a total of five quadrats were evaluated by ocularly estimating the amount of foliar plant cover present on each quadrat. All foliar plant cover less than one meter in height was sampled. At each sample point, the observation was recorded by plant species, or whether litter, bare ground, rock or lichens were present. Plant material that had drier prior to sampling (such as annuals), but which was a product to the 1993 growing season was counted as plant cover. Litter was defined as that plant material that had been on the ground or portions of the plant material which had been dead for approximately one year prior to sampling. The five quadrat values obtained from each transect were then averaged into a single observation which was used for subsequent data analysis and statistical comparisons. To the extent that the site configuration allowed, all transects were randomly located with respect to orientation and location using random numbers generated from a hand held calculator where orientation and distance between transects was randomly determined.

Data Analysis. All of the field data were summarized using hand held calculators to determine transect and site values. Sample adequacy equations recommended by the Division were calculated on all data collected from each sample location. Total plant cover sample adequacy calculations were made in the field using hand held calculators prior to terminating the sampling effort. Statistical analyses of these data were made using the NCSS statistical software package on an AT personal computer. Statistical tests performed included two tailed *t tests*. All mean comparisons were completed using a 0.10 statistical confidence interval.

Revegetation Success Criteria. Since none of the corresponding Reference Areas were

sampled during this evaluation, absolute comparisons regarding revegetation success on each individual reclaimed site to its corresponding Reference Area could not be made. Therefore, in order to determine the apparent degree of revegetation success of each reclaimed area sampled in the 1993 monitoring effort was compared to the total plant cover values obtained from the initial sampling of the approved Reference Areas. These data, collected in 1981-3 are summarized into the following comparison.

REFERENCE AREA	% TOTAL PLANT COVER
Mountain Shrub	45.3
Sagebrush	42.1
Douglas Fir	15.1
Mountain Grassland	43.6
Pinyon Juniper - West	12.8
Pinyon Juniper - East	32.5
Saltbush	17.5

## RESULTS

The only reclaimed area at the Star Point Mines which required sampling according to the approved monitoring schedule was the 1983 Reclamation Seedings. Examination of the reclamation maps reveals that a total of six different reclaimed areas were reseeded in 1983. These areas include the 4.29 acre tract immediately to the east of the Lion Deck Portal Maintenance Shop on a large fill slope; a 0.55 acre tract located on the north side of the Lion Deck Access road located approximately 2500 feet east of the Lion Deck Portal Employee Parking Lot located on an exposed road cut; another small 0.32 acre tract located approximately 300 feet east of the 0.55 acre tract also located on an exposed road cut area; a 1.00 acre tract located on the north side of the Lion Deck Portal Access Road, just to west of the sharp hairpin turn and located on an exposed road cut slope; a 1.10 acre tract located on the north side of the Lion Deck Portal Access Road, just to the southwest of the sharp hairpin turn located on an exposed road cut slope; and a 1.15 acre tract of land located on the north side of the Lion Deck Portal Access road immediately to southwest of the 1.10 acre track located on an exposed road cut slope.

A total of 40 sample transects representing 200 sample quadrats was sampled in this monitoring effort. This sample size equals the maximum sample plot size found in the Utah Division of Oil, Gas and Mining's Vegetation Guidelines. A summary of these data are presented in Table 1, Plateau 1983 Reclamation, Total Plant Cover, Composition and Frequency.

## DISCUSSION

1983 Reclamation Seedings. When all of the six reclaimed sites were averaged, the average percent cover was found to equal 22.39 percent (Table 1, Plateau 1983 Reclamation, Total Plant Cover, Composition and Frequency). Examination of the baseline vegetation types found on these six reclaimed areas reveals that a total of four reference areas correspond to the 1983 reclaimed sites: Douglas Fir; Mountain Grassland; Pinyon - Juniper West; and Mountain Shrub. Using a weighted average percent cover value of these four different reference areas, wherein the percent cover is weighted against the acreage of each plant community type, an approximate plant cover standard of 26.22 percent can be determined, with a standard deviation of 12.07 percent based upon a total of 163 samples.

A statistical comparison of this weighted average reference area value with the weighted average plant cover value from the six reclaimed areas sampled (Table 1, Plateau 1983 Reclamation, Total Plant Cover, Percent Composition and Frequency) yields a *t-test* value of 1.8527. Since this value is less than the corresponding tabular value of 1.960, which corresponds to the 202 degrees of freedom value, it can be concluded that when all of the 1983 reclaimed sites are averaged against the weighted averaged reference area plant cover value corresponding to these reclaimed sites that the total plant cover values between the two areas are not significantly difference. This means that the total average plant cover across all of the 1983 reclaimed sites is equal to that associated with the undisturbed reference areas. Therefore, if CPMC were applying for final bond release on these areas, these evidence suggest that the 1983 reclaimed sites can be deemed to be successful in terms of total plant cover.

4.29 Acre Tract. The 4.29 acre reclaimed tract sampled immediately to the east of the Lion Deck Portal Maintenance Shop area corresponds to the Douglas Fir and Mountain Grassland Plant Communities (Permit Map 341.100a Revegetation Plan Sheet 5). Using the original vegetation sampling information for the two corresponding reference areas,

(Permit Table 321.100e, 1981 Sample Adequacy Calculations), the plant cover characteristics for the Douglas Fir Reference Area were calculated, based upon a sample size of 50 samples, to have a mean average total cover of 15.2 percent, with a standard deviation of 16.2 percent. The Mountain Grassland Reference Area (Permit Table 321.100e, 1981 Sample Adequacy Calculations) was found to have an average total plant cover of 43.6 percent with a standard deviation of 16.0 percent based upon the 40 samples originally collected. When these two reference areas are averaged, the resulting revegetation success standard equals 29.4 percent total plant cover, with a standard deviation of 16.1 percent based upon a sample size of 90 samples.

Based upon the 12 samples collected from this site, the average reclaimed total plant cover was calculated to equal 26.0667 percent with a standard deviation of 7.6155 percent. Application of the *t-test* comparison to these two data sets results in a calculated *t-value* of 0.7044, which is less than the corresponding *t-value* at 101 degrees of freedom of 1.982. The conclusions to be drawn from comparing the total plant cover on the 4.29 acre 1983 reclaimed tract with its corresponding reference areas is that statistically there is no difference in plant cover between the two sites.

0.55 Acre Tract. The 0.55 acre 1983 reclaimed tract is located approximately 2500 feet east of the Lion Deck Employee Parking Lot on the north side of the Lion Deck Portal Access Road, on an exposed south facing road cut. According to the Permit Document (Permit Map 341.100a Revegetation Plan Sheet 5) this site corresponds to the Pinyon - Juniper West Reference Area. The resulting total plant cover characteristics for the Pinyon - Juniper West Reference Area (Permit Table 321.100p, Subsoil Stockpile Pinyon - Juniper West Aspect Reference Area Plant Cover) was found to have an average total plant cover of 12.83 percent with a standard deviation of 3.52 percent based upon the 23 samples originally collected.

Based upon the 8 samples collected from this site, the average reclaimed plant cover was calculated to equal 25.7000 percent with a standard deviation of 8.9065 percent.

Application of the *t-test* comparison to these two data sets results in a calculated *t-value* of -5.8685, which is greater than the corresponding *t-value* at 30 degrees of freedom of 2.042. The conclusions to be drawn from comparing the total plant cover on the 0.55 acre 1983 reclaimed tract with its corresponding reference areas is that statistically the plant cover on the reclaimed site is significantly greater than is the plant cover on the corresponding reference area site.

0.32 Acre Tract. The 0.32 acre 1983 reclaimed tract is located approximately 300 feet east of the 0.55 acre tract on the north side of the Lion Deck Portal Access Road, on an exposed south facing road cut. According to the Permit Document (Permit Map 341.100a Revegetation Plan Sheet 5) this site corresponds to the Pinyon - Juniper West Reference Area. The resulting total plant cover characteristics for the Pinyon - Juniper West Reference Area (Permit Table 321.100p, Subsoil Stockpile Pinyon - Juniper West Aspect Reference Area Plant Cover) was found to have an average total plant cover of 12.83 percent with a standard deviation of 3.52 percent based upon the 23 samples originally collected.

Based upon the 6 samples collected from this site, the average reclaimed total plant cover was calculated to equal 23.7000 percent with a standard deviation of 7.3001 percent. Application of the *t-test* comparison to these two data sets results in a calculated *t-value* of -5.3069, which is greater than the corresponding *t-value* at 28 degrees of freedom of 2.048. The conclusions to be drawn from comparing the total plant cover on the 0.32 acre 1983 reclaimed tract with its corresponding reference area is that statistically the plant cover on the reclaimed site is significantly greater than is the plant cover on the corresponding reference area site.

1.00 Acre Tract. The 1.00 acre 1983 reclaimed tract is located on the north side of the Lion Deck Portal Access Road, on an exposed south facing road cut just to the west of the sharp hairpin turn. According to the Permit Document (Permit Map 341.100a Revegetation Plan Sheet 5) this site corresponds to the Pinyon - Juniper West Reference

Area. The resulting plant cover characteristics for the Pinyon - Juniper West Reference Area (Permit Table 321.100p, Subsoil Stockpile Pinyon - Juniper West Aspect Reference Area Plant Cover) was found to have an average total plant cover of 12.83 percent with a standard deviation of 3.52 percent based upon the 23 samples originally collected.

Based upon the 6 samples collected from this site, the average reclaimed total plant cover was calculated to equal 7.5667 percent with a standard deviation of 9.4263 percent. Application of the *t-test* comparison to these two data sets results in a calculated *t-value* of -2.2282, which is greater than the corresponding *t-value* at 28 degrees of freedom of 2.048. The conclusions to be drawn from comparing the total plant cover on the 1.00 acre 1983 reclaimed tract with its corresponding reference area is that statistically the plant cover on the reclaimed site is significantly less than is the plant cover on the corresponding reference area site.

1.10 Acre Tract. The 1.10 acre 1983 reclaimed tract is located on the north side of the Lion Deck Portal Access Road, on an exposed south facing road cut just southwest of the sharp hairpin turn. According to the Permit Document (Permit Map 341.100a Revegetation Plan Sheet 5) this site corresponds to the Pinyon - Juniper West Reference Area. The resulting plant cover characteristics for the Pinyon - Juniper West Reference Area (Permit Table 321.100p, Subsoil Stockpile Pinyon - Juniper West Aspect Reference Area Plant Cover) was found to have an average total plant cover of 12.83 percent with a standard deviation of 3.52 percent based upon the 23 samples originally collected.

Based upon the 6 samples collected from this site, the average reclaimed total plant cover was calculated to equal 21.1667 percent with a standard deviation of 7.7412 percent. Application of the *t-test* comparison to these two data sets results in a calculated *t-value* of 3.9503, which is greater than the corresponding *t-value* at 28 degrees of freedom of 2.048. The conclusions to be drawn from comparing the total plant cover on the 1.10 acre 1983 reclaimed tract with its corresponding reference area is that statistically there the plant cover on the reclaimed site is significantly greater than is the plant cover on the

corresponding reference area site.

1.15 Acre Tract. The 1.15 acre 1983 reclaimed tract is located on the north side of the Lion Deck Portal Access Road, on an exposed south facing road cut southwest of the sharp hairpin turn and north of the conveyor. According to the Permit Document (Permit Map 341.100a Revegetation Plan Sheet 5) this site corresponds to the Mountain Shrub Reference Area. The resulting plant cover characteristics for the Mountain Shrub Reference Area (Permit Table 321.100e, 1981 Sample Adequacy Calculations) was found to have an average total plant cover of 49.0 percent with a standard deviation of 19.2 percent based upon the 30 samples originally collected.

Based upon the 2 samples collected from this site, the average reclaimed plant cover was calculated to equal 31.3000 percent with a standard deviation of 6.0811 percent. Application of the *t*-test comparison to these two data sets results in a calculated *t*-value of -1.2901, which is less than the corresponding *t*-value at 31 degrees of freedom of 2.030. The conclusions to be drawn from comparing the total plant cover on the 1.15 acre 1983 reclaimed tract with its corresponding reference areas is that statistically there the plant cover on the reclaimed site is not statistically different than is the plant cover on the corresponding reference area site.

## CONCLUSIONS

When all of the data obtained from sampling of the six 1983 reclaimed sites is averaged and compared with the corresponding weighted average reference area, the total plant cover value data obtained from the 1993 monitoring effort representing temporary reclamation efforts, appears to be successful with respect to the parameter of total plant cover and erosion control. Indications are that the total plant cover data obtained from four of the six sites sampled exceeds the corresponding total plant cover values associated with the corresponding Reference Area plant cover values. The only site sampled having less total plant cover than its corresponding reference area is the 1.10 acre tract associated with a steep sloughing road cut of exposed Mancos Shale.

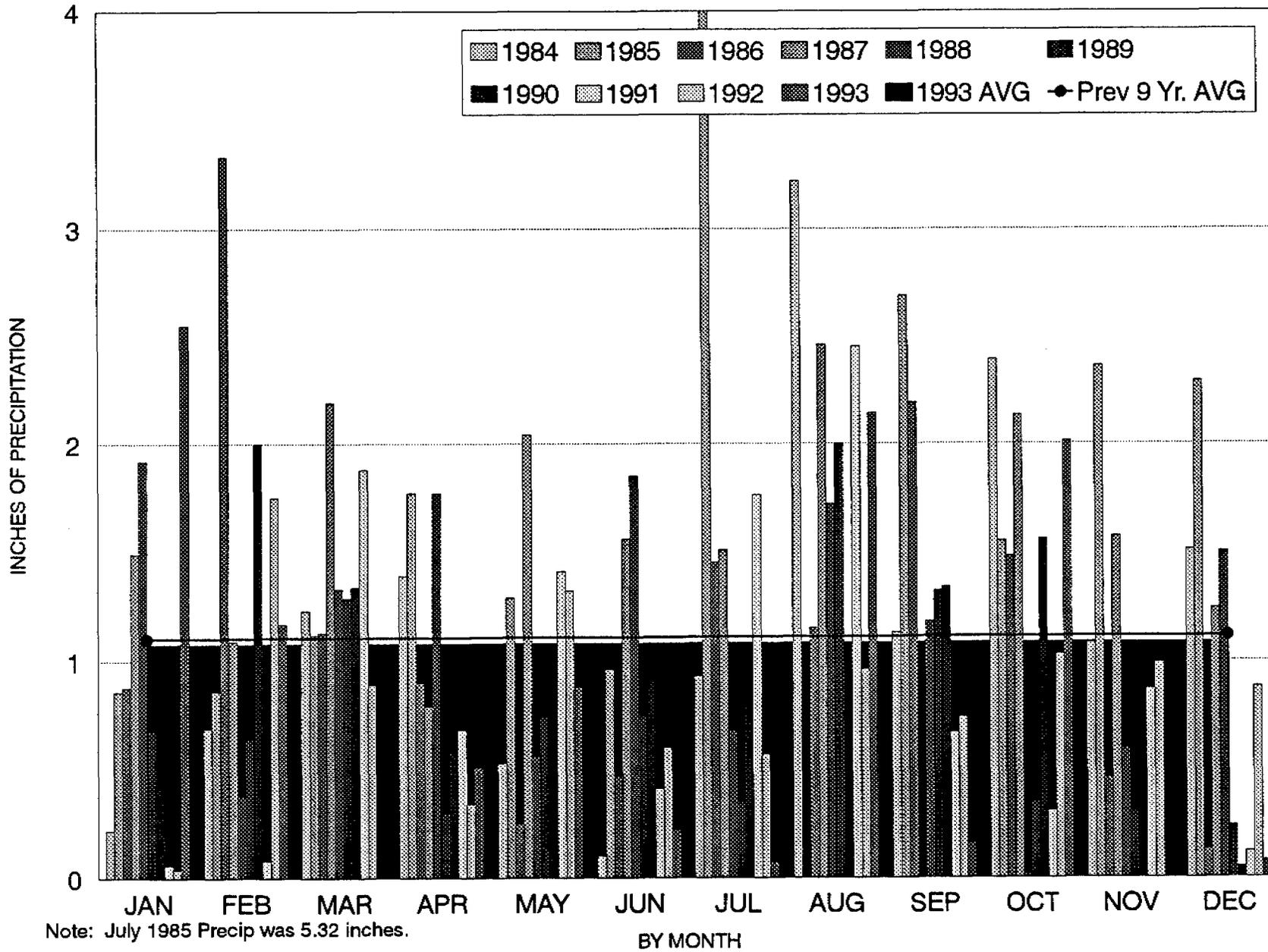
Data collected during this monitoring effort suggests that using the reclamation practices associated with the 1983 Reclamation Seedings, it should be possible to achieve the total plant cover standard within the required ten year bond liability period. Since most of the previous reclamation which has been completed for the Plateau Mine area has been conducted on steep road slopes, similar to the conditions associated with this sampling effort, these data provide evidence that with proper regarding and slope stabilization techniques on exposed cut and fill road cuts, there is reason to believe that successful revegetation can be achieved on these kinds of sites at the Cyprus - Plateau's Star Point Mines.

**Table 1,  
Plateau 1983 Reclamation, Total Plant Cover, Composition and Frequency.**

<b>Species</b>	<b>Average (%) Cover</b>	<b>Percent Composition</b>	<b>Percent Frequency</b>
<b>Perennial Grasses</b>			
Intermediate Wheatgrass	6.25	27.89	75
Smooth Brome	4.19	18.71	80
Orchardgrass	1.09	4.85	40
Crested Wheatgrass	1.08	4.80	33
Salina Wildrye	0.50	2.21	10
Western Wheatgrass	0.37	1.63	20
Sandberg Bluegrass	0.23	1.03	13
Indian Ricegrass	0.18	0.78	10
Timothy	0.08	0.33	8
Subtotal	13.97	62.23	-
<b>Forbs</b>			
Blueleaf Aster	5.30	23.67	35
Cicer Milkvetch	1.39	6.21	40
Russian Thistle	0.27	1.19	15
Yellow Sweetclover	0.25	1.12	5
Morning Glory	0.15	0.67	3
Eaton Daisy	0.03	0.13	5
Hoary Aster	0.03	0.13	5
Colton Milkvetch	0.02	0.09	3
Subtotal	7.44	33.21	-
<b>Trees and Shrubs</b>			
Curlleaf Mtn. Mahogany	0.40	1.76	5
Rubber Rabbitbrush	0.22	0.96	10

Fourwing Saltbush	0.09	0.38	3
Wyoming Big Sagebrush	0.09	0.38	5
Woods Rose	0.08	0.33	5
Douglas Fir	0.06	0.27	3
Mountain Snowberry	0.05	0.20	3
True Mtn. Mahogany	0.04	0.16	3
Douglas Rabbitbrush	0.02	0.09	3
Subtotal	1.05	4.53	-
<b>TOTAL PLANT COVER</b>	22.39	99.99	-
<b>BARE GROUND</b>	34.72	-	-
<b>LITTER</b>	16.19	-	-
<b>ROCK</b>	26.70	-	-
Mean = 22.39; SD = 10.11; Nm 90/10 = 55.18; Nm 80/10 = 33.51			

TABLE 48  
PRECIPITATION RECORD



Cyprus Plateau Mining Corporation

1993 Sediment Pond Certification

I hereby certify that I am a registered professional engineer in the State of Utah. I certify that I have made an inspection of Sediment Ponds 1 through 9 at Cyprus Plateau Mining Corporation, and that all of the pond embankments appear to be stable and in good physical condition. There are no apparent structural weaknesses or other hazardous conditions at any of the ponds. I certify that I have reviewed the documentation pertaining to Attachment A, and that to the best of my knowledge the information shown thereon is accurate.

*W. John Borla* Date: 12-30-93  
John Borla



Attachment A  
Sediment Ponds Storage Capacities

Pond	Date	Depth of Water in Feet From Decant Level	Elevation Of Water	Sediment Storage Capacity in A.F.	Sediment Storage Volume Used in %	Sediment Storage Volume Remaining in A.F.
1	12/28/93	1.5	8300.6	0.36	25	0.27
2	12/28/93	4.0	7714.75	1.92	03	1.86
3	12/28/93	5.0	8095.85	1.77	17	1.47
4	12/28/93	2.2	7310.80	0.44	02	0.43
5	12/28/93	Dry	DRY	2.42	29	1.72
6	12/28/93	1.3	7141.4	0.76	31	0.52
7	12/28/93	Dry	Dry	0.04	0	0.04
8	12/28/93	0.8	7049.10	1.10	12	0.97
9	12/28/93	0	7439.30	2.02	02	1.98

**Cyprus Plateau Mining Corporation**

**Quarterly Refuse Pile Certification  
First Quarter 1994**

I hereby certify that I am a registered professional engineer in the State of Utah. I certify that I have made an inspection of the coal processing refuse pile at Cyprus Plateau Mining Corporations' Star Point Mine in Carbon County Utah. The refuse pile has been constructed and maintained as designed. The 1993 certification performed by Rollins, Brown and Gunnel dated December 30, 1993 also certifies the pile to be in conformance with the requirements of design criteria. There are no apparent areas of instability, structural weakness or other hazardous conditions.

John Borla Date: 3-28-84  
John Borla

