0129

CO-OP MINING COMPANY

P.O. Box 1245
Huntington, Utah 84528

(801) 381-5238
Coal Sales (801) 381-5777

September 6, 1992

Pamela Grubaugh-Littig
Permit Supervisor
Utah Division of Oil, Gas & Mining
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

File

Ms. Grubaugh-littig,

RE: Proposal for culvert C-13aU, Co-Op Mining Company, Bear Canyon Mine, ACT/015/025, Emery County, Utah

#2

This proposal, designed by Mangum Engineering Consultants, is for the purpose of placing an additional culvert below C-13U at the request of one of the Bear Canyon Residents. Please review and notify Co-Op of approval to install the culvert. We need to install it by September 14, 1992. Your immediate attention would be appreciated.

Thank You,

Wendell Owen

Wendell Owen
Resident Agent

WJO
cr
cc: Kimly C. Mangum

RECEIVED
SEP 11 1992
DIVISION OF
OIL GAS & MINING

MEC Mangum Engineering Consultants

388 East Boynton Road • Kaysville, Utah 84037 • (801) 544-3641

4 September 1992

Wendell Owen
Co-Op Mining Company
P.O. Box 1245
Huntington, Utah 84528

Dear Mr. Owen ,

Re: **Proposed Culvert C-13aU, Co-Op Mining Company, Bear Canyon Mine, ACT/015/025, Trail Canyon Mine, ACT/015/021, Emery County, Utah**

Attached are two copies of pages 7-89 and 7G-38a dated 9/92 and Plate 7-1A (see Rev. 4). The pages and plate have been marked "DRAFT" to differentiate them from those previously approved.

This should be a simple amendment due to the limited number of revised plates and pages. The design for culvert C-13aU is just a repeat of C-13U which has been through the Division review process. Please notify me if the Division has any questions or concerns.

Thank you,

Kimly C. Mangum, P.E.

enclosure(s)
cc: Charles Reynolds

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DIVISION OF
OIL GAS & MINING

Table 7.2-11 Culvert Charateristics

Culvert	Dia in.	Type	Contributing Watersheds	Slope ft/ft	Outlet Condition
C-1U	30 15	CMP & flexible	AU-3, AU-4, AU-5	0.73	Bedrock
C-2U	12	CMP	AU-11	0.08	Soil
C-3U	12	CMP	AU-6, AU-7, AU-11	0.05	4" rip-rap
C-4U	12	CMP	AU-8, AU-9	0.05	4" rip-rap
C-5U	12	CMP	AU-8, AU-9, AU-15	0.05	4" rip-rap
C-6U	12	CMP	AU-6, AU-7, AU-11, AU-13, AU-14	0.05	4" rip-rap
C-7U	12	CMP	AU-12	0.05	6" rip-rap
C-8U	18	CMP to RCP	AU-2, AU-3 AU-4, AU-5	0.13	12" rip-rap
C-9U	60	stl pipe	Bear Creek	0.06	48" rip-rap
C-10U	60	RCP	Bear Creek	0.06	48" rip-rap
C-11U	18	CMP	AU-16	0.10	6" rip-rap
C-12U	24	CMP	AU-17	0.04	6" rip-rap
C-13U & C-13aU	16	CMP	misc. road drainage	0.06	3" rip-rap
C-1D	15	CMP, flexible	AD-6, AD-3B	1.00	24" rip-rap
C-2D	15	CMP, RCP, flexible	AD-2B, AD-2C, AD-3B, AD-4, AD-6	0.40	10" rip-rap
C-3D	20	stl pipe	AD-3A	0.03	4" rip-rap
C-4D	21	CMP	AD-3A, AD-5 AD-7, AD-8	0.18	9" rip-rap
C-5D	18	CMP	AD-9	0.08	soil
C-6D	12	CMP	AD-10	0.48	9" rip-rap
C-7D	18	CMP	AD-8	0.55	16" rip-rap
C-8D	18	CMP	AD-3A, AD-5 AD-7	0.05	3" rip-rap
C-9D	18	CMP	See C-8D	0.05	3" rip-rap

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: CULVERT ADEQUACY

Comment: CULVERT C-13U and C-13aU

Solve For Actual Depth

Given Input Data:

Diameter.....	1.33 ft
Slope.....	0.0600 ft/ft
Manning's n.....	0.024
Discharge.....	1.00 cfs

Computed Results:

Depth.....	0.28 ft
Velocity.....	4.64 fps
Flow Area.....	0.22 sf
Critical Depth....	0.39 ft
Critical Slope....	0.0174 ft/ft
Percent Full.....	21.24 %
Full Capacity.....	10.11 cfs
QMAX @.94D.....	10.88 cfs
Froude Number.....	1.84 (flow is Supercritical)

Open Channel Flow Module, Version 3.3 (c) 1991
Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708

DRAFT

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DRAFT

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Open Channel - Uniform flow

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Open Channel Flow Module, Version 3.3 (c) 1991
Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708