UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Salt Lake City Metallurgy Research Center

1600 EAST FIRST SOUTH STREET
SALT LAKE CITY, UTAH 84112

July 17, 1970

Mr. Gran Rhodus
Forest Supervisor's Office
P. O. Box 811
Wenatchee, Washington 98801

Dear Gran:

Your original copy of the "Watershed Rehabilitation Plan" is returned herewith. The report provides us with much needed information.

We have obtained the following data on the samples we took:

Holden water samples

Sample	pH	Analysis, grams per liter: Total solids	Fe	SO_4	As	Cu	Zn
*Mine water	4.3	0.70	0.005	0.41	<0.0001	0.0046	0.024
No. 2 Pond water	3.8	.12	.002	.04	< .0001	.00004	.00007

*	Ca	Mg	SiO_2	Cl	Na	K
*Mine water (continued)	0.081	0.013	0.024	0.004	0.012	0.006

Holden mineral samples

Sample	pH	Analysis, percent 1/: Cu	Fe	S	As	CaO	SiO_2	Oz/ton Au
Blow sand	5.0	0.07	5.5	1.24	<0.0002	0.13	73.5	0.047
Outer crust	3.9	.066	9.6	4.90	.0002	.13	65.6	.026
Interior surface	5.1	.028	6.3	.75	< .0002	.13	69.2	.017

1/ Zn assays are being recalled.

cc: Bill Rines
Don Ford
Jerry Thorson
Werner Janssen

In addition, we took six "hand" samples from various locations on the No. 2 tailings pond. These samples were leached with distilled water and the solution assayed to determine the quantity of soluble salts in the samples. The following table shows the pH values of the leachate and grams of each element extracted from 1,000 grams of sample.

		Analysis			
Sample	pH	Total solids	Fe	Cu	Zn
Surface slime	3.0	1.66	0.009	0.0021	0.006
Surface crust	2.85	9.09	1.203	.0007	.011
Slime mound	3.0	5.65	.022	.0044	.016
General tailings	2.7	2.93	.099	.0085	.005
Near surface water at 12-inch depth	3.05	1.94	.146	.0023	.003
Near surface slime sample at 12-inch depth	2.9	2.69	.048	.0069	.006

As you will note, the principal deterrent to plant growth is the acidity. Another growth inhibiting factor may be the soluble zinc.

We have started tests in which we will determine if a wetting agent can help in the spray leaching of acid from the surface area into the lower reaches of the tailings. If successful, we will plant some leached tailings with selected seeds to determine if we can achieve growth. When, and if, we succeed in growing some plants, we will recontact you about establishing a test plot on the tailings site.

Best regards.

Sincerely yours,

Karl C. Dean

Karl C. Dean
Project Coordinator

Enclosure