City of Grand Junction, Colorado 81501
250 North Fifth St., 303 243-2633

March 22, 1978

Mr. Evan D. Dildine, P.E.
Technical Secretary
Water Quality Control Commission
Colorado Department of Health
4210 East 11th Avenue
Denver, Colorado 80220

Dear Mr. Dildine:

I wish to take this opportunity to comment on your letter of January 25, 1978, and the letter of January 30, 1978, to me and to Mr. Alan Merson concerning the Commission's approval of the Grand Junction Facilities Plan granting Step II funds for the new regional wastewater treatment facility.

First of all, we question the implication of your letter as representing the views or the concerns of the entire Commission. At the various meetings, we heard these concerns expressed by one or two of the members. At best, we feel that the items listed are a minority report and not those opinions that were expressed when it came to voting on the resolution concerning the Step II final design process. As you will recall, the voting of the Commission was unanimous on the authorization of the City to proceed with the design of the mechanical wastewater treatment plant alternative.

The City feels that land treatment alternatives were adequately considered along with the mechanical treatment alternatives and compared on a cost effective basis. However we fully agree that the reuse of our sewage effluent is a valuable consideration and have already committed ourselves to actively pursue future reuse of this resource.

Your letter seems to imply that if water right values were included in the costs, then suddenly the land application alternatives will become the most cost effective alternative. The figures below clearly demonstrate that this is not the case. Using the cost data compiled in Table 10 of Supplement No. 2 of the predesign report dated December 21, 1977, by Henningson, Durham and Richardson, indicates that there are three land treatment alternatives considered known as Alternate 4, IX, and Border Irrigation, and a mechanical plant alternative known as alternative 5.

The land treatment alternative 4 involves the keeping of the existing treatment plant in operation and using land treatment for the remaining flows with the City owning the land and operating the project similar to the project you described in your letter. Alternative IX

and Manual Border Irrigation use the entire City wastewater flows for land treatment but differ only in the method in which the water is applied to the land. These two alternatives also closely resemble the method you described in your letter.

The total present worth of capital costs, including construction engineering, and land at $3500.00 per acre is listed below for each alternative.

PRESENT WORTH OF CAPITAL COSTS

Alternative 4	Alternative 5	Alternative IX	Manual Border Irrigation
$26,248,700	$14,189,200	$36,980,700	$34,884,000

I understand the cost estimate for land at $3500.00 per acre has been questioned by some members of the Commission. The City staff has recently contacted more people concerning these costs and find that they are very close to land values of the area being considered, if not slightly low.

To the present worth of capital costs we added the present worth of operation and maintenance costs which include personnel, energy, operating supplies. In the case of the land treatment the present worth cost of the net crop income at a rate of $113.15 per acre per year has been subtracted from the operation and maintenance costs.

PRESENT WORTH OF OPERATION AND MAINTENANCE LESS NET CROP INCOME

Alternative 4	Alternative 5	Alternative IX	Manual Border Irrigation
$ 7,587,000	$ 9,739,300	$ 4,043,000	$ 2,572,200

These costs are added to those shown above to make up the total present worth costs of the alternatives which we have listed below.

PRESENT WORTH CAPITAL COSTS PLUS PRESENT WORTH OF O & M COSTS LESS NET CROP INCOME

Alternative 4	Alternative 5	Alternative IX	Manual Border Irrigation
$33,835,700	$23,928,500	$ 41,023,700	$37,456,200

With these total present worth costs we begin to make comparisons of the alternatives. From these basic figures shown you can see that Alternative 5, the mechanical plant, is by far the most cost effective alternative.

However, you mention that the value of the water rights acquired with the land must be credited to the alternative. The lands which are to be a part of the alternatives are presently irrigated by the Grand Valley Canal system. It is necessary to only consider the use of farm

land which is presently being irrigated to not make additional salinity contributions to the Colorado River and avoid expensive water transportation costs. The City staff has met with Mr. Robert Henderson, Superintendent of the Grand Valley Canal system, and obtained his opinion on the amount of water which would be obtained as well as its value. The Grand Valley Canal system has a share holders system of water ownership. Each share represents four-tenths of a Colorado miner inch of water and according to Mr. Henderson most water users from the ditch system use 1.25 shares of water per acre of land. Mr. Henderson has been involved in the Grand Valley Irrigation Company for a number of years and has observed many stock ownership sales. In his opinion the value of the shares in the Grand Valley Canal at the present time is $400 per share. Using these figures, the value of the water rights obtained under each alternative proposed is as follows:

PRESENT WORTH VALUE OF WATER RIGHTS OBTAINED WITH LAND ACQUIRED

Alternative 4	Alternative 5	Alternative IX	Manual Border Irrigation
$ 975,000	$ 30,800	$1,666,500	$1,666,500

These are credited to the value of the alternatives subtracting these values from the total present worth cost previously shown. This is accomplished below to demonstrate the revised total present worth costs of the alternatives.

TOTAL PRESENT WORTH OF ALTERNATIVES LESS VALUE OF WATER RIGHTS OBTAINED

Alternative 4	Alternative 5	Alternative IX	Manual Border Irrigation
$32,860,700	$ 23,897,700	$39,357,200	$35,789,700

As can be seen above, even when the cost of water rights is included, the cost of the mechanical treatment (Alternative 5) is still the most cost effective alternative.

To answer the comments of your letter, the above cost comparisons should be all that is required. However in the Commission meeting of January 4, 1978, I understand that a few comments arose regarding the need for the lagoon and reservoir liners which are included in the cost analysis of the land treatment alternatives. These were inluded by our consulting engineers following consultation with the U. S. Bureau of Reclamation, the Soil Conservation Service, and others who recommended their inclusion into the alternatives where lagooning and reservoir storage are required. Our engineers and staff recommend that liners are a necessary part of the alternative to insure protection of the quality of the Colorado River and ground water in the area of the facilities. The cost of the liners for each proposed alternative is listed below.

PRESENT WORTH COST OF LAGOON AND RESERVOIR LINERS

Alternative 4	Alternative 5	Alternative IX	Manual Border Irrigation
$7,140,000	$ 0.00	$11,564,000	$11,564,000

Subtract these costs from the total present worth costs of each alternative after credit has been given for water rights. This results in the value shown below.

PRESENT WORTH COST OF ALTERNATIVES LESS LINER COSTS

Alternative 4	Alternative 5	Alternative IX	Manual Border Irrigation
$25,720,700	$23,897,700	$27,793,200	$24,225,700.

Even after the land treatment alternatives are optimized by giving credits for water rights values and removing the liners from the alternatives, which again our engineers and staff recommend be included, the mechanical treatment alternative (Alternative 5) is still more feasible.

We must also consider some of the problems of implementation of the land application alternatives. The area where these alternatives were to be placed, because of the proximity to the treatment and interceptor terminus, consists of a large number of small acreage family farms. From our determination, average farm size is about 65 acres and the families who own the farms usually reside on them. This means that under alternative 4 about thirty separate family farms would need to be purchased and about thirty families relocated. Under alternative IX and the Border Irrigation Alternative about fifty farms would need to be purchased and about fifty families relocated. The problems and time required for land acquisition and family relocation would result in very serious implementation problems for the land treatment alternatives.

Grand Junction has been faced with a continuation of criticism from Water Quality Control Commission for the duration of this project planning. We feel that the Commission is not justified in delaying our project further. Therefore we hope to be proceeding with the most cost effective alternative (alternative 5) as rapidly as possible and will continue to work with Grand Valley irrigators and others involved for future reuse of the effluent from our proposed wastewater treatment plant.

Sincerely,

Lawrence Kozisek, Mayor
City of Grand Junction

cc - Henningson, Durham and Richardson
D. J. Dufford
William H. Hormberg
Richard H. Bowman, P.E.
Johnathan W. Love, P.E.
Culp, Wesner, Culp