MARCH, 1978

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FINAL ENVIRONMENTAL IMPACT STATEMENT

Wastewater Treatment Facilities For Three Lakes, Colorado

U.S. Environmental Protection Agency Region VIII

#611238S

FINAL

ENVIRONMENTAL IMPACT STATEMENT

WASTEWATER TREATMENT FACILITIES
THREE LAKES, COLORADO

Prepared by

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION VIII, DENVER

March, 1978

Approved by: Alan Merson
Regional Administrator

Anyone who has had a bull by the tail knows
five or six things more than someone who hasn't.

Mark Twain

Summary

Draft Environmental Impact Statement
Wastewater Treatment Facilities for
Three Lakes, Colorado

1. Environmental Protection Agency: Draft ( ) Final (X)

2. Type of Action: Administrative (X) Legislative ( )

3. Description of Action: The objective of this project is to protect the water quality of Grand Lake, Shadow Mountain Lake, Lake Granby, and their tributaries by the provision of wastewater collection and treatment facilities and the control of nonpoint (erosion, sedimentation, septic tank wastes, etc.) type pollution. The objective is also to provide these water quality controls while, at the same time, avoiding undesirable secondary impacts on area growth patterns, the Shadow Mountain National Recreation Area, water rights, and other aspects of the local environment. The treatment facilities and nonpoint controls have been proposed so that water quality in the Three Lakes area will meet goals established by the 1972 Amendments to the Federal Water Pollution Control Act, the State of Colorado water quality classifications, and so that the lakes and streams will continue to be a quality environmental resource.

The Three Lakes Water and Sanitation District proposed to construct a large regional sewerage system (described as Regional System in the facility plan) to serve the west shores of Lake Granby and Shadow Mountain Lake and the Grand Lake area. EPA refused to fund this system because it believed the system would lead to development which, in turn, would lead to serious nonpoint type pollution. EPA also objected to this regional system for technological, water rights, and Shadow Mountain National Recreation Area reasons.

Following EPA's rejection of this earlier proposal EPA, the Three Lakes Water and Sanitation District, Grand County, State of Colorado, Park Service, U.S. Bureau of Reclamation, and others have worked to resolve issues and to develop a satisfactory water quality control plan for the area. Six alternative wastewater treatment systems have been analyzed with one, the Willow Creek Lagoon alternate, having been selected by EPA.

This final environmental impact statement thus grants EPA approval for funding of Step II (preparation of plans and specifications) for the Willow Creek Lagoon alternative as described in this document. This approval includes the following grant conditions which must be met by the Three Lakes Water and Sanitation District and others involved:

(A) Enactment by Grand County of non-point pollution controls as previously discussed between EPA and the County.

(B) Resolution of water rights issues between the Three Lakes Water and Sanitation District and the U.S. Bureau of Reclamation.

(C) Further testing of a known archaeological site and use of a qualified archaeologist during the initial construction phase of the sewage lagoons.

(D) No EPA approval of an interceptor sewer line to Area "L" until resolution of the National Recreation Area issue.

(E) Demonstration of financial ability by the Three Lakes Water and Sanitation District.

4. Environmental Impacts (of the proposed Willow Creek Lagoon):

An extensive list of the various impacts that could be expected from implementation of the Willow Creek Lagoon sewerage system is found in Chapter VII of the facility plan. The major impacts, as analyzed in this EIS, are as follows:

(1) Construction will cause some short-term erosion and resultant sedimentation. EPA grant conditions, however, will require stringent erosion control, especially for the sensitive lake shore areas.

(2) There will be a loss of approximately 33 acres of land area to lagoon construction. This land is part of a general deer winter range area.

(3) Local residents will have to pay monthly service charges and will be taxed to pay for the system. This cost, however, should be viewed in relation to present septic tank costs and to increased property values that will probably result.

(4) The Three Lakes will be protected from septic tank and sewage treatment plant discharges with resulting higher water quality.

(5) Nonpoint pollution (erosion, sedimentation, septic wastes) will be controlled to a much greater extent than at present with resulting water quality benefits.

(6) Presently undeveloped subdivision lots will be easier to develop with provision of sewer service, and some accelerated development may occur as a result. Grand County land use regulations, however, should mitigate the impacts of this development. At the same time, the sewage collection system will serve to channel growth to preferred areas.

(7) The Shadow Mountain National Recreation Area should benefit from improved water quality. The sewage collection system should not conflict with Park Service and Grand County plans for the area.

(8) Effluent will be given proper treatment and discharged out of the lakes' basin. An added advantage will be land treatment (crop irrigation) of the peak summer sewage loads.

(9) The lagoons have the added benefit of being easier and cheaper to operate than more "mechanical" systems. Also, the lagoon site is away from areas of heavy human use and from the aesthetically sensitive lake shore areas.

(10) Two small "neighborhood" treatment plants will continue to discharge to the lakes. The impact of this discharge should be minimal.

5. Alternatives Considered:

(1) Do Nothing (capitol cost = 0)

(2) Upgrade Existing Facilities (capitol cost = $940,000)

(3) Regional System (capitol cost = $6,113,000)

(4) Willow Creek Lagoon (capitol cost = $5,719,000)

(5) North Shore Plant (capitol cost = $6,336,000)

(6) Stillwater Creek Lagoon (capitol cost = $5,756,000)

6. Distribution:

Only those agencies and individuals commenting on the draft EIS will be mailed copies of this final. These agencies and individuals are those as found in Section X of this EIS.

7. Draft Statement Sent to Council on Environmental Quality: N/A

8. Final Statement Sent to Council on Environmental Quality:

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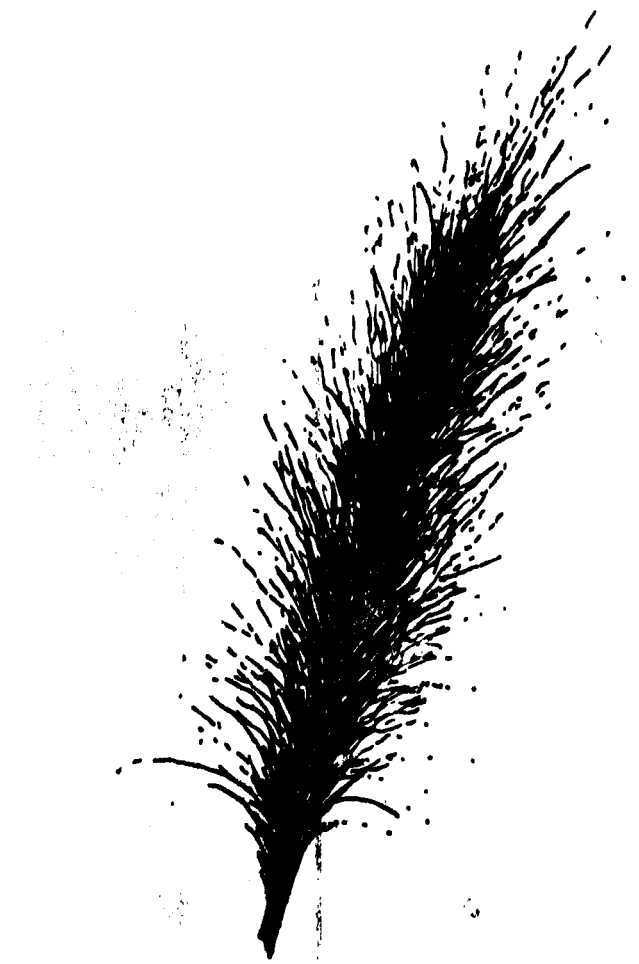

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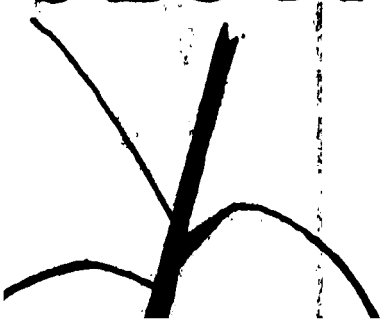


I. Introduction and Summary

The National Environmental Policy Act (NEPA) requires that EPA and other federal agencies prepare an environmental impact statement (EIS) on proposed projects that may significantly affect the quality of the human environment. The EIS serves as documentation of the agency's decision-making process on the project and includes consideration of environmental, social, and economic impacts and of ways to avoid or minimize potential adverse effects.

The project on which EPA has written this EIS is a proposed wastewater treatment and collection facility for the Three Lakes area in Colorado. The sponsor and proponent of the sewerage project is the Three Lakes Water and Sanitation District (District). Under terms of the Federal Water Pollution Control Act EPA, in conjunction with the State of Colorado, provides 75% of the costs of such projects, providing they meet environmental, cost effectiveness, and other standards.

As required by federal law, the District and its consultants have prepared a plan (facility plan) analyzing several alternative ways to meet Three Lakes area sewage treatment needs. This planning process has compared and ranked these alternatives on the basis of their relative impacts on the environment, on their costs, on their compatibility with local land use plans, etc.

The facility plan for the Three Lakes project is attached to this draft EIS and is considered part of it. The facility plan contains the details of the project, and the EIS describes EPA's decision-making process

and the analysis of the major environmental and other issues that were involved. The reader must use both documents (the EIS makes numerous references to specific pages in the facility plan) to gain a full understanding of the project and its potential impacts.

Deliberations between all those involved in this project, including EPA, the District, State of Colorado, National Park Service, U.S. Bureau of Reclamation, Grand County, Northwest Colorado Areawide Water Quality Planning Project, and others, have been going on for a number of years. There have been differences of opinion among these parties as to the best way to preserve the water quality of the lakes. The issues involved have included what level and type of sewage treatment are needed, the actual status of the lakes' water quality, developmental impacts, costs, land use regulation, water rights, and others.

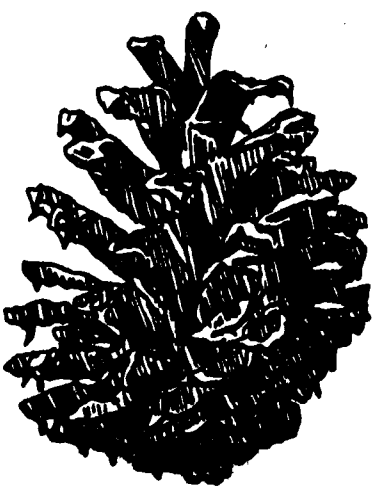
Early in 1977 the EPA Regional Administrator was able to select a "preferred" alternative sewage treatment and collection system. Though a final decision will not be made until this EIS receives full public review, this selection of a "preferred" system was made because the major points of contention between the various parties had been resolved.

The "preferred" alternative is the Willow Creek Lagoon system (described in Chapter VII and shown as Figure VI-8 in the facility plan). This alternative has the advantages of (1) offering a reliable and manageable type of treatment, (2) serving the major areas of concentrated development in the Three Lakes area, (3) discharging sewage effluent out of the lakes' drainage basin, (4) offering land treatment of effluent in the peak summer season, (5) avoiding conflict with the Shadow Mountain

National Recreation, (6) placing the treatment plant in an area that results in few aesthetic or other impacys, and (7) being somewhat conducive to phasing (building the system in increments) if the District is unable to obtain its full 25% share of system costs. At the same time, Grand County has agreed to control erosion that may result from development associated with provision of sewage service. Also, water rights issues, which have been a stumbling block, are being resolved.

Under the preferred plan two small neighborhood treatment units will provide service to two clusters of development outside the larger area to be served by sewer lines. These areas are at Sunset Point (plant would discharge to Lake Granby) and at Sun Valley Ranch (plant would discharge to North Fork, Colorado.

EPA believes that the "preferred" Willow Creek Lagoon alternative is a project that, along with the other mitigative measures involved, is capable of providing positive benefits. The project has been complicated and not an easy one to resolve, but the result--a plan to protect the waters of this beautiful mountain valley--offers the promise of helping assure the environmental quality of the Three Lakes area.



SECTION II

II. The Issues

The Three Lakes sewerage project has been the subject of lengthy negotiations and often has been controversial. This controversy and the lengthy period of time it has taken to resolve it probably can be attributed to the fact that the Three Lakes area is the scene of a major water resource development project, is a highly scenic and popular vacation area, and is subject to differing management policies of numerous agencies and levels of government involved. Also, the controversy and length of time it has taken to resolve it can be attributed to honest differences of opinion about the nature, the extent, and thus the appropriate solution to water quality problems in the area.

Certain issues have dominated the deliberations and differences of opinion between the District, EPA, Grand County, Park Service, State of Colorado, Bureau of Reclamation, the public, and others involved. Though there are many issues involved (the facility plan presents an evaluation of alternative sewerage systems on some twenty-four different criteria), this EIS will identify the major issues that have had to be resolved before the project could proceed and will concentrate on them. These same issues will be used in the evaluation of alternatives in that section of this EIS. These central issues, and a brief summary of each, follow.

1. Point source pollution - Point sources of water pollution are those which reach a water body via a specific conveyance structure (pipe, canal, etc.). Point sources are usually the discharges from something like a factory or, as with Three Lakes, the discharge from a sewage treatment facility. In the Three Lakes case, these point sources are comprised of the discharge from the Town of Grand Lake's sewage treatment plant and possibly some unknown discharges from private structures in the area. The National Park Service also has a facility on Shadow Mountain Reservoir consisting of two lined lagoons with discharge into a third unlined holding lagoon; the holding lagoon seldom has a discharge to the lake and is not considered polluting.

The issues concerning point sources at Three Lakes are (1) actual contribution of point sources to lake pollution; (2) type of sewage treatment needed in the area; (3) extent of area that should be included in a centralized collection system; and (4) whether or not point source discharge, even though treated, should continue to enter the lakes. These questions surrounding point sources have been one of the focal points for all deliberations on this project.

Concerning each of the above four questions, the District has maintained that point sources are a major source of pollution, the type of treatment system proposed should eliminate any discharge to the lakes, and nearly everyone in the district should be hooked into a centralized sewage collection system.

On the other hand, EPA has not been as adamant about not allowing properly treated effluent enter the lakes. However, EPA

would prefer a treatment system that does not discharge to the lakes if it can be justified. EPA has determined that there is no need to serve nearly everyone in the district with a centralized collection system, especially those outlying developments where expense and environmental considerations argue against it.

2. Nonpoint pollution - Nonpoint type water pollution is that reaching a body of water via some nondiscrete conveyance. Nonpoint pollutants are sediments and associated nutrients from soil erosion, residues from chemical fertilizer or animal wastes that have been spread over a large area, underground seepage of poorly operating septic tanks, etc. These wastes are not generally receptive to treatment but instead must be controlled by prevention, i.e., not allowing erosion to take place, not over-fertilizing, not allowing use of septic tanks in unsuitable areas. It can also be seen that prevention of nonpoint pollution implies land use regulation of some sort such as performance regulations for construction activity, use of building permits, or lakeshore setback requirements.

Many people and governmental agencies involved have recognized the seriousness of the nonpoint problem in the Three Lakes area. The National Park Service, U.S. Bureau of Reclamation, and marina owners and their customers have been well aware that Shadow Mountain Reservoir, in particular, was growing shallower due to sediment accumulation at the mouths of its westside tributary streams. Areas where motor boats had once traveled have now become too shallow to allow for boat operation due to the sediment deposition.

More recently, the contribution of sediment to the nutrient enrichment and consequent lowering of water quality has become of great concern for the three lakes. Specifics of this concern are covered in the section of this EIS on water quality, but it should be pointed out here that EPA has found, through surveys of the water of the lakes, that nonpoint type pollution is the major water quality problem of these waters. How to control this problem has been a major issue of the Three Lakes project. It should be emphasized that all parties concerned have basically agreed that nonpoint pollution is a serious problem and must be controlled if the lakes are to be protected.

EPA has been involved in the nonpoint issue at Three Lakes for two reasons. First, the Federal Water Pollution Control Act, requires consideration of, and various planning programs for, control of nonpoint pollutants. Second, and more direct, EPA reasoned that any regional sewage collection system proposed by the District would sewer large undeveloped areas and thus probably lead to a large amount of construction and road building activity. This road building and construction activity would lead to increased erosion and thus to further water quality degradation. EPA was especially concerned about this possibility because of what it believed was inadequate County control of the land uses that could lead to acceleration of nonpoint pollution.

One of the major legal difficulties with controlling nonpoint pollution that could be caused by construction activities related to provision

of sewerage service is that the Water and Sanitation District is not the governmental entity with the necessary land use control authority. The governmental unit with this authority is Grand County, governed by the three-member Board of County Commissioners. It must be made clear, however, that land use control is a relatively new undertaking by Grand County and many other counties and, most important, until EPA actually quantified the nonpoint problem at Three Lakes in 1977, little concrete evidence existed showing the need for more stringent control.

The issues with nonpoint control are (1) what type of controls are needed and (2) whether or not the County will implement these controls. Both these issues have now been answered. In terms of the first issue, EPA and the County have jointly developed a definition of the type of controls needed. In terms of the second issue, the County has agreed to enact and implement some nonpoint control measures.

3. The Shadow Mountain National Recreation Area - The Shadow Mountain National Recreation Area (NRA) is administered by the National Park Service under rules and regulations of that agency. However, this NRA, unlike others in the National Park system, exists on the basis of a memorandum of agreement between the Park Service, U.S. Bureau of Reclamation, and the U.S. Bureau of Land Management. Though it is discussed in more detail in this EIS and in the facility plan, it should be pointed out here that the Park Service has attempted to gain Congressional legislation to more formally and more specifically back the NRA and to spell out its management direction.

The Park Service developed a plan for the NRA, which it made available for public review in May, 1975, in the form of a draft environmental impact statement. This Park Service activity came at the same time as EPA was analyzing and deliberating the potential impacts of the Sanitation District's original regional wastewater collection and treatment facility. A review and comparison of both the sewerage plan and the NRA plan revealed certain conflicts which have been an issue with this project.

The major conflict between these two plans was that the Park Service proposed open space-type management and, in some cases, purchase of areas along the west side of Shadow Mountain Reservoir and Lake Granby which the Sanitation District was planning to sewer. Obviously, it made little sense to use federal funds to sewer developments that might be purchased by another federal agency. Also, and most important, EPA did not want to interfere with a Park Service plan that was aimed at environmental preservation by funding a project that could foster developments at odds with this plan.

Another issue associated with the NRA is nonpoint pollution. With the lakes and their water quality a central focus of the NRA, the Park Service has been most concerned about proper sewage treatment and the control of nonpoint pollutants.

4. Water rights - The Board of Directors of the Three Lakes Water and Sanitation District developed a policy that sewage effluent should be collected from nearly all the developed areas around the lakes and delivered for treatment and final discharge below Lake Granby, thus

eliminating any discharge to the lakes themselves. This policy was reflected in the District's originally proposed regional sewage collection and treatment system which EPA rejected.

A major issue with the District's original proposal concerned a conflict with water rights vested in the U.S. Government and the Colorado-Big Thompson Project. Sewage effluent entering the lakes via the Grand Lake and Park Service treatment plants would have been discharged below the lakes and thus lost to the Colorado-Big Thompson storage system. EPA's position on this issue was that the water rights problem had to be worked out between the Sanitation District and the U.S. Bureau of Reclamation before a sewerage project could proceed. As will be seen under the discussion of the selected alternative, these water rights problems have been solved.

5. Land development - The relationship of a regional sewage collection system to increased nonpoint pollution has already been listed as an issue under the "Nonpoint Pollution" heading of this part of the EIS. Another related issue involving the District's plan to sewer most of the existing development in the Three Lakes area is that of the relationship of a sewerage system to land speculation and land development in general.

The problem with the District's originally proposed regional wastewater collection and treatment system and, to a lesser extent, the alternative shown as "preferred" in this EIS (Willow Creek lagoon) is that there are several thousand platted but unbuilt-upon subdivision lots (many are old plats and very small lots) in the area that would be served by the collection system. There is no way in which to quantify

the number, if any, of these lots that would be developed if a sewer line becomes available, but with the County's present policy of requiring a two-acre minimum lot size for septic tank use, it becomes readily apparent that the potential exists for development. It should be pointed out that these are lots and subdivisions already accepted in their present configuration by the County and that their owners have been granted certain rights to develop based on this acceptance. Undoubtedly, a number of these lots were laid out with no environmental impact considerations.

The issues thus become (1) whether the need for the sewage system justifies the provision of an extensive collection system to serve many of the existing developments and (2) whether mitigative measures are available to control potential impacts from possible development of these lots. A note in relationship to this later issue is that a strong case can be made that provision of a centralized sewage collection system can channel and concentrate growth into areas deemed acceptable and suitable for it. This is a most important consideration for the Three Lakes project.

6. Cost of Sewerage System - The expenditure of public monies for construction of wastewater collection and treatment systems requires that the funds be used in a "cost-effective" manner. EPA does not believe that sewage-related water quality problems should be corrected by unnecessarily elaborate and expensive systems. In the case of the Three Lakes project, the issues in this regard have been related to the type of treatment plant needed, to the extent of the collection system, and to whether any treatment plant of any kind is needed.

It should be pointed out here that the State of Colorado, acting through the Colorado Water Pollution Control Commission, actually makes the decision on which sewerage projects in this state will receive EPA funds. The Commission has a funding priority system, approved by EPA, which assigns priority to various proposed projects based on severity of water quality problems, on population involved, on quality of receiving streams, and on other factors. It has been the policy of the Commission to fund interceptor sewers and treatment plants but not to fund sewage collection lines. Sewage collection lines represent the major part of the expense of the Three Lakes Water and Sanitation District's preferred system. Since the District does not have sufficient funds to pay for the full collection system, it must find funds elsewhere or gain special funding approval from the Commission before the system proposed in this EIS could actually be built.

7. Technological Aspects - Certain aspects of the District's proposed sewerage system have been an issue because of the nature of the technology proposed for use. The major issue has revolved around the District's original proposal to use underwater vacuum lines to collect sewage from homes around parts of Grand Lake and along the west shore of Shadow Mountain Lake. Less of an issue but still important to deliberations on the Three Lakes project has been concern over the type of treatment plant to be used. These latter concerns have centered around whether treatment would be best provided by some "mechanical" type of plant (rotating bio-discs have been considered, for example) or whether treatment would best, and possibly more economically, be provided by aerated sewage lagoons.

Another important factor that has had to be taken into account on treatment type has been the level of treatment that might be required in the future. Because of the high quality water presently in the Three Lakes area and because of a desire and policy by all concerned to protect this quality, it is entirely possible that any treatment plant discharging to the lakes might be required to add an advanced waste treatment (AWT) process in order to maintain this quality due to increased sewage loads or because of more precise and refined water quality trend data becoming available.

Because of the above factors, EPA, the District, and the State believe that aerated lagoons plus another treatment level ("advanced") offered by land irrigation of the lagoon effluent represent a sound technological approach to Three Lakes sewage treatment needs. This approach is that described in the recommended Willow Creek lagoon alternative.

8. Phasing of the Sewage Collection and Treatment System - The Willow Creek lagoon system preferred by the District is comprised of extensive collection systems. The Willow Creek lagoon alternative also has additional components--two or three small "neighborhood" treatment plants for clusters of development beyond the main system.

Because the Three Lakes Water and Sanitation District does not have enough money for the local share of the system (they are approximately $2 million short of sufficient funds) and because other funding sources for this money may or may not be available, EPA has urged the Board of Directors of the District to be flexible and, if the entire amount of money needed for the construction of the complete system is not available, to phase the completion of the system. This phasing could be accomplished by not

immediately building all the collection system or by not initially building the outlying neighborhood treatment units. EPA has, as explained under the "NRA Issue" heading, already decided that certain areas of the southwest shore of Lake Granby should not be served until the NRA issue can be resolved. This decision is a "phasing" of that part of the system.

The Board of Directors of the Water and Sanitation District have adopted a policy that they intend to serve nearly all the homes in the District. EPA, because it believes that sewage treatment plant improvements must be made in the area whether all areas receive service or not, has asked the Board to be as flexible on this issue as its members feel possible. EPA must point out that this is the Board's decision to make, not EPA's, and that the whole sewerage system as described as preferred in this EIS is being considered for approval.

9. Septic Tanks - The use of septic tanks in the Three Lakes area has been an issue comprised of two opposing viewpoints. First, the District and the County have stated that they do not believe the Three Lakes area to be suitable for widespread septic tank use. Both entities have expressed the opinion that septic tank use has been a major problem and that the use of these systems is probably causing water quality problems. On the other hand, the Rocky Mountain Center on the Environment (ROMCOE), which performed an environmental analysis on this project, has stated that septic tank management in conjunction with some type of centralized treatment and collection, operated by the Sanitation District and the County, might be a better and less costly system for management of sewage in the Three Lakes area than the centralized collection and treatment system

proposed. The difference between the two sides of the septic tank issue has been one of degree--that is, one side arguing that access to a sewer connection be provided nearly "all" homes and establishments in the District and the other side arguing that many of these units would better be served by individual septic systems managed by the District or County.

The water quality data on the three lakes and their tributaries is not conclusive as to whether septic tanks are a major water quality problem. The sampling programs to date have not been refined to the level where the contribution of septic tanks, especially in the west-side tributaries, has been specifically identified as a certain quantity of the whole pollutant load entering the lakes. However, the fact that people in the area have continuing problems with malfunctioning septic systems, though not quantified, has also been brought to EPA's attention by the County and District on numerous occasions.

Data developed by the County under current land use planning efforts indicates that most of the Three Lakes area is unsuitable for septic tank use. EPA water quality analysts are also leary of wide-spread and concentrated septic tank use in mountain areas such as at Three Lakes. It should also be stated that the District is adamantly opposed to becoming involved in a septic tank management system.

As stated in the beginning of this section of the EIS, the facility plan contains much additional discussion on these issues and on others that have not figured as prominently in the deliberations con-

cerning the Three Lakes project. The reader should refer to this discussion in the facility plan for a more complete review of the issues considered. The issues described in this EIS document will be the ones on which the alternatives are further evaluated in this EIS, with the discussion in the facility plan serving to cover the remaining ones.

SECTION III

III. Background

The Three Lakes Water and Sanitation District

The Three Lakes Water and Sanitation District, a special service unit of local government, is the proponent of, and the legal entity responsible for, the sewage collection and treatment system proposal analyzed in this EIS. The service area designated for wastewater management planning purposes is the District boundaries comprising some 56 square miles. These boundaries, shown in Figure II-2 of the facility plan, include Grand Lake, Shadow Mountain Lake, and Lake Granby, as well as the North Fork of the Colorado River and other smaller tributaries to the lakes.

Unlike other special service water and sanitation districts in Colorado, the Three Lakes District was created by the Colorado General Assembly. This action by the Legislature was in recognition of the valuable environmental resource represented by the three lakes and in the belief that action needed to be taken to preserve the quality of the waters of the lakes. The Act creating the District was passed by the General Assembly in 1971. In stating its purpose for passing the Three Lakes Sanitation District Act (CRS 1973, S32-10-101 through 179), the Legislature stated, among other things, the following:

> (a) Certain areas in the state possess natural characteristics which make them attractive for the building of seasonal homes and tourist facilities. There is an increasing need to build public facilities in such areas in order to accommodate the needs of the seasonal population. . . The increasing public use of such areas is leading to serious water quality problems, a factor of

> concern to all the citizens of the state . . . the General Assembly thus declares that the creation of this District promotes the health, comfort, convenience, safety and welfare of all the people of the state and visitors to the state, and will be of special benefit to the inhabitants of the District and the property therein.
>
> (f) The necessity for this Article results from the population, growth, and development in the area included by this Article and from the resultant population of Grand Lake, Shadow Mountain Lake and Lake Granby; . . . (Ref. No. 7.)

Like other water and sanitation districts, the Three Lakes District was given the power to levy taxes, build and operate wastewater treatment facilities, own property, etc. Most important to the history of this project, the District was also empowered to provide:

> (1) Not later than December 31, 1972 the Board shall submit to the Board of County Commissioners of Grand County a comprehensive Master Plan for the development, maintenance, operation, and financing of a proposed sanitary sewer transmission and disposal system. The master plan shall contain provisions for the acquisition or utilization by purchase, lease, or other agreement, of existing facilities planned, constructed, or operated by existing municipalities and special districts having area within the boundaries of the District. The Board of County Commissioners shall proceed to hold public hearings on the Master Plan. . . (Section 32-10-179 of the Act).

In response to this charge, the District hired the planning/engineering firm of Nelson, Haley, Patterson, and Quirk (NHPQ) which, in turn, analyzed the Three Lakes situation and developed a plan for the regional wastewater collection and treatment system. This sewerage system was approved by the Board of Directors of the District but has been met by objections from EPA and others.

A complete chronology of events subsequent to the creation of the Three Lakes Water and Sanitation District and the appointment of its Board of Directors is found on pages II-2 through II-12 of the facility plan. To avoid repetition, this section of the EIS will only discuss those particular events in that chronology that need to be elaborated on or emphasized in order to clarify the environmental issues and the background leading to the decision to write this EIS.

As mentioned, the Three Lakes Master Plan was completed and approved by the District and submitted to Grand County in November, 1972. The plan recommended a sewer system that would serve most of the existing dwellings in the District by means of an extensive collection network and an interceptor line from the existing Grand Lake treatment plant to a new treatment facility just south of Lake Granby. This treatment plant site would be below the Three Lakes drainage basin and thus would eliminate any effluent discharge to the lakes. This system proposed in the 1972 Master Plan is the same as Alternate 3, Regional System, as discussed in greater detail in Chapter IV of the facility plan.

There are two important aspects of this original plan that should be pointed out. The first concerns the District Board of Directors' desire to eliminate any discharge of treated effluent to the lakes. As stated, this was a feature of the original plan and is one the Board and others believe should be part of any water quality management plan for the area. This position stems from the belief that inadequately treated sewage treatment plant effluent and poorly operating individual septic tanks are presently a major impact on water quality of the lakes.

The second aspect is that the Board has maintained the position that sewage treatment service, i.e., provision of access to a centralized system if possible, should be made available to the majority of the existing homes and other structures within the District's boundaries. This latter position probably stems from the Board's belief that these homes and businesses, the ones on septic tanks, constitute a water quality problem. This position is also a result of the Board's concern that property owners who have been paying taxes to the Water and Sanitation District should receive some type of sewerage service in return. Both of these positions taken by the Board have been important because they partly underlie the rationale for the regional sewerage system proposed in 1972 and because they have played an important role in deliberations since that time.

EPA, on the other hand, while respecting the Board's position, has considered federal requirements calling for cost-effective sewerage systems and on the National Environmental Policy Act requirement that other environmental values and secondary impacts must be considered in the evaluation of these systems. EPA's position on these issues has tended to favor a smaller system, one not attempting to service the whole District, and also to a more detailed analysis and concern for secondary impacts associated with the regional sewerage system such as generation of development, nonpoint (erosion) pollution generation, and effects on the Shadow Mountain National Recreation Area.

The importance of discharging Three Lakes area sewage effluent out of the basin will be discussed in more detail under the Alternatives

section of this EIS. It is sufficient at this point to indicate that nearly all those involved in this project, including EPA, recognize the merit and the positive water quality benefits to be derived from such a system. Obviously, the quality of the lakes' water would be higher if no effluent, treated or not, were discharged to them.

The second point, whether all people in the District should be served, has been analyzed by EPA in some detail. Two studies contracted for by EPA on the three lakes (White and Burke legal analysis, Ref. No. 8; Rocky Mountain Center on Environment environmental analysis, Ref. No. 7) concluded that the Board did not have to provide sewerage service to all existing homes and businesses. There is obviously a question as to the definition of what constitutes "service." EPA maintains that service can consist of the provision of a connection to a centralized sewerage system, it could consist of septic tank improvements on an individual basis, or it could merely consist of an inspection of whether or not individual systems are functioning properly. The water quality control plan alternative described as the "preferred" system in this EIS is based on the above "flexible" definition of "service" and the Board, though still maintaining its position on this issue, has probably become much more receptive to the above definition than it had been in the past (see Resolutions of March 14, 1977, passed by the Board of Directors as found in Appendix A of the facility plan). The importance of a more flexible definition of "service" is that it allows for a more complete consideration of sewerage system alternatives--ones avoiding certain impacts associated with the original regional system-- and has allowed the Board, EPA, and others to work toward a resolution of differences.

The 1972 Master Plan/Regional Sewerage System and EPA Objections

The sewerage system developed under the 1972 Master Plan was described in the preceeding section, and reference was made to a more complete description of this system in the facility plan. (This system is shown as Alternate 3 in the facility plan.) Following completion of the master plan and its adoption by the Grand County Commissioners and the Governor of Colorado, EPA was asked to approve the system proposed and thus allow the granting of federal funds (75% federal funding is allowed under the Federal Water Pollution Control Act) for its actual construction.

Because of concern about the possible growth, resultant nonpoint pollution, and certain technical matters, EPA asked the Board and its consultants, NHPQ, for more information and analysis on these subjects. A complete coverage of these requests and their chronology is found on pages II-4 through II-6 of the facility plan. Most important to the history of this project, EPA in 1974 conducted an additional water quality survey on the lakes. This survey led EPA to the conclusion that (1) nonpoint pollution was the major water quality impact on the lakes and (2) that the growth inducement potential of the regional system could lead to a worsening of the nonpoint problem by fostering construction activity along the sewer lines.

The District and NHPQ responded to EPA's request for more information by the submittal of a revised environmental assessment and a supplementary report in February, 1975. EPA, being aware of other governmental agencies'

interest and involvement in this area and of public interest in the project, sent this report out for public and federal, state, and local agency review. A number of those who received these reports responded, and their ideas and positions on the project served as an important element in EPA's deliberations.

After reviewing the revised environmental assessment, the results of the 1974 water quality survey, and the comments of other agencies and individuals, EPA developed its position on the District's proposed regional wastewater treatment project. This position was transmitted to the Board of Directors of the District in a letter dated August 4, 1975 (ref. No. 9).

The position taken by EPA in the August 4th letter can be summarized as follows:

1. The regional sewerage system as proposed by the District would not be in the best interests of the environment of the Three Lakes area;

2. EPA's position is based on the findings that:

a. nonpoint pollution was the major water quality problem of the lakes, and this problem was not being addressed by the District;

b. the extensive sewer line collection system would probably induce "uncontrolled" growth along the west side of the lakes and was speculative and growth-inducing in nature (required eighty new taps a year in order to be financially feasible);

c. the induced growth and attendant construction activity would worsen the nonpoint pollution problem; this was especially true in view of a lack of local land use regulation addressed to this problem;

d. certain technological aspects of the proposed system, in particular the underwater vacuum lines in Grand and Shadow Mountain Lakes, are of concern;

e. the discharge of effluent below the lakes would probably violate the water rights associated with the Colorado-Big Thompson project;

f. the sewering, and resulting development, of the west shore areas would conflict with National Park Service plans for the Shadow Mountain National Recreation Area;

3. instead of the sewerage system as proposed, EPA recommends a "scaled-down" system that would eliminate these objections as a better alternative. At the time the letter was written, it was thought that an upgraded Grand Lake sewage plant and a new one between Lake Granby and Shadow Mountain Lake would be a possible alternative that would eliminate most of these objections;

4. EPA <u>does not</u> recommend a "do nothing" approach but believes that a water quality management plan comprised of <u>point</u> and <u>nonpoint</u> controls is needed to assure the long-term protection of the lakes.

Following the development and transmittal of this position statement to the Board by EPA, all parties concerned--EPA, District, Grand County, State Health Department, National Park Service, Bureau of Reclamation, and others--have been working to resolve differences, to reevaluate the

situation, and to develop a water quality plan more responsive to the environment of the Three Lakes area.

Interagency Aspects

As mentioned in the previous section, the views and involvement of other agencies involved in the Three Lakes area have played an important role in EPA's deliberations on the sewerage system project. Numerous meetings have been held with these agencies with the express purpose of making an attempt to resolve differences and to gain assistance in devising a plan that meets water quality and other environmental protection goals. The agencies with major involvement in the Three Lakes sewerage project, their type of involvement, and their concerns as expressed to EPA are discussed individually as follows.

National Park Service. With direct responsibilities for environmental management and protection of the Shadow Mountain National Recreation Area and the adjacent Rocky Mountain National Park, the Park Service has probably had the longest and most direct involvement with water quality and environmental issues in the Three Lakes area of any federal agency. As an agency with a basic mission to protect environmental values. the Park Service has recognized the need for improvements in environmental management of the Three Lakes region, particularly stressing the need for more adequate land use and erosion controls.

Unlike other national recreation areas, the Shadow Mountain National Recreation Area (NRA) was not created by a specific act of Congress but instead exists solely on the basis of a memorandum of understanding

between the Park Service, the Bureau of Reclamation, and the Bureau of Land Management, which are all agencies in the U.S. Department of Interior (see pages IV-11 and IV-12 in the facility plan for further discussion on the NRA). Funds to manage the area are actually taken from operating monies appropriated for management of Rocky Mountain National Park.

Shadow Mountain National Recreation Area presents the Park Service with various management problems which they, and others, would like to correct. First, the very lack of a Congressional act in setting up the area, giving it management direction, and authorizing funds for its management does not lend itself to the quality of management and of operation usually associated with units of the National Park system. Second, the land ownership pattern of the recreation area--a significant amount of shoreline and adjoining lands are in private ownership and have been developed with trailer courts, marinas, resorts, etc., some of which are not compatible with Park Service standards--has led to a basic conflict between publicly owned water and privately owned shorelands. Last, the Park Service has become increasingly aware that land development and other activities, particularly that causing accelerated erosion to enter Shadow Mountain Reservoir, are serious environmental problems.

In May, 1975, the Park Service issued a document for public review entitled, Draft Master Plan - Shadow Mountain National Recreation Area. The proposal described in this draft plan and accompanying EIS had a direct relationship to EPA's deliberations on the regional sewerage system, which the Sanitation District had previously submitted for approval. The most direct relationship was due to the fact that the Park Service was proposing

purchase of some areas of private ownership that were to be sewered under the District's plan. Obviously, it would make little sense to place expensive and permanent capital improvement structures such as sewers into an area slated for eventual removal of structures and reversion to open space. Such an action would make little economic sense and would, in all probability, make it much more difficult for the Park Service to carry out its plans. Second, but perhaps less obvious, a regional sewerage system, with its growth and development implications overlaid on a lack of land use regulation on private lands, could lead to further accelerating of an already serious nonpoint type water quality problem.

With possible conflicts between the proposed National Recreation Area master plan and the Three Lakes Sanitation District's sewerage system master plan, EPA has tried to reach a compromise between the two. The section of this EIS on alternatives further discusses this issue, and the alternative preferred by EPA is based partially on the fact that this system permits a large measure of this compromise.

It should be pointed out that, although the Park Service has not been able to develop a consensus on the master plan, this work is ongoing and will possibly be submitted to Congress before too long. The preferred alternative takes these factors into full consideration. The County and Park Service are considering provisions for federal purchase of some lands essential to preservation of the aesthetic values of the NRA. One such area lies south of the Willow Creek lagoon site on the west shore of Lake Granby. EPA has chosen not to participate in the funding of sewerage service to this area until the NRA plan is finalized.

Grand County. In the State of Colorado, county government, administered by a board of county commissioners, is the unit of government with basic authority to regulate and control the use of private lands not part of an incorporated community. Because most of the land area that would have been served by the District's proposed regional wastewater collection and treatment system and, in fact, all the other alternatives also considered fall under county jurisdiction, Grand County land use regulation has been a most important aspect of this project. Because of the potential relationship between the sewerage system, land development, and nonpoint water pollution, the need for Grand County action to control this problem has been most evident.

Grand County, like most counties outside the populous east slope area, has only been involved in land use planning for a relatively short period of time. Grand County's first master plan, the one currently in force, was adopted in 1971. Like all plans, this one has features that many, including the County, have found to need revision.

EPA's concern with Grand County land use regulations is mainly related to how these regulations may or may not control water quality degradation. Since EPA concluded that the District's regional sewerage plan would probably lead to land development that would, in turn, lead to worsening of the nonpoint pollution, EPA has taken the position that Grand County must be part of any water quality plan for the Three Lakes area and that the County should be prepared to control these pollutants through land use regulation.

It has been obvious to many involved in the Three Lakes situation that the Three Lakes Water and Sanitation District does not have the authority to control these impacts via land use regulation. This authority rests with Grand County and its zoning, subdivision approval, septic tank regulations. EPA's main goal in light of this discrepancy has been to work with the County in making plans to take positive water quality protection action that will be in conjunction with District sewerage plans.

The most encouraging element of the development of the revised sewerage system described in this document has been Grand County's willingness to take positive action to revamp and improve its land use planning and controls. Obviously, the County has undertaken this effort because it is well aware of its own land use problems and is motivated to prevent their recurrence. Without this commitment, little progress would probably have been made in resolving the difficult issues associated with this project. EPA will not, however, make final approval of construction monies for the project until the County has enacted the regulations necessary to control nonpoint pollution.

Grand County has expressed a number of concerns to EPA on the Three Lakes project, including: (1) a desire to reach a compromise equitable to the Water and Sanitation District; (2) a desire and need for EPA to furnish the County with specifics on how County regulations do or do not protect water quality; and (3) a recognition of environmental problems, including nonpoint water pollution, that need to be controlled. It should be pointed out that EPA has always been fully aware that the County is the proper authority for these type of local land use regulations

and respects County rights in this area. It must also be reemphasized that EPA involvement with the County on these issues is related to water quality protection and not to the more general police powers associated with county land use controls.

U.S. Bureau of Reclamation. The Bureau of Reclamation, as builders and operators of the Colorado-Big Thompson Project, has had a direct involvement with the three lakes since this project was constructed in the late 1940's. The Bureau of Reclamation's interests in the water quality management of the lakes include: (1) protection of this quality (for example, approximately 16% of the 230,000 A-F diverted to the eastern slope each year goes for municipal uses); (2) maintenance of storage volume in the lakes - thus, an interest in prevention of sedimentation; and (3) the protection of water rights associated with the Colorado-Big Thompson Project.

The water rights associated with the District's proposed regional sewerage system have been of concern to the Bureau of Reclamation. Under that proposal, water that is currently being discharged to the lakes through the treatment plants and through septic tanks would be discharged below the lakes. This water would thus be lost to the Colorado-Big Thompson system. As will be explained in the section on the "Preferred Alternative" and in "Mitigative Measures," efforts to solve this water rights issue have been an important element in working out a compromise wastewater treatment system (ref. No. 10).

It should also be pointed out that the major recipient and user of Colorado-Big Thompson water, the Northern Colorado Water Conservancy

District, has expressed the same general concerns about the original District sewerage system as did the Bureau of Reclamation. The Conservancy District especially was interested in the effects of the system on water rights, water quality, and interference with National Recreation Area plans (ref. No. 10). As with the Bureau of Reclamation, the Conservancy District has been a participant in the resolution of issues involving the Three Lakes project.

State of Colorado. Though the Federal Water Pollution Control Act is federal legislation, it provides for a major state role in implementation of the law. The Water Quality Division in the State Health Department, with the duty of administering various provisions in the law (water quality planning, review and monitoring of treatment facility grants, discharge permits, etc.) in conjunction with the Water Pollution Control Commission (sets stream standards, approves treatment plant sites, and disburses federal treatment facility construction funds via a priority system), has been involved with the Three Lakes project from its inception. Other state agencies, because of their various functions--State Division of Planning, State Fish and Game, etc.--are involved with the management and impacts occurring at places like Three Lakes and thus have been part of the deliberations on this project.

State interests expressed to EPA on the Three Lakes project include (1) concern over the present poor quality discharge from the existing Grand Lake treatment plant; (2) desire to establish a point and nonpoint source control plan as soon as possible and end the debate over this project; (3) concern over the water rights impacts of the original

district sewerage system proposal; (4) desire to see better land use planning for the area; and (5) desire to construct a sewage treatment system capable of protecting the lakes' water quality.

The State Water Pollution Control Commission will review and either accept, deny, or ask for modifications on the alternative system shown as "preferred" in this EIS. The State Health Department has indicated acceptance of the "preferred" system. Again, State concerns have played a major role in the deliberations that have led to this stage of the project (ref. No. 10 for State letters on the originally proposed sewerage system).

U.S. Forest Service. The U.S. Forest Service, though not directly involved in the management of the lakes themselves, plays an important role in water quality and environmental protection affairs in the Three Lakes area. First, national forest lands comprise large amounts of the watershed of the lakes' tributaries. Obviously, Forest Service activities on these watershed lands that may contribute to production of sediment--road building, timber harvest, etc.--can directly add to what has been identified as the number one water quality problem in the lakes. Second, Forest Service decisions on allowing ski area development on public lands under their management (an area has long been proposed by local people at Bowen Gulch, a site up the North Fork Colorado River valley) are directly related to population growth and to the subsequent need for, and sizing of, wastewater treatment facilities.

Concerning the first issue, i.e., maintenance of water quality, it should be pointed out that the Forest Service, like all federal agencies, must not violate water quality standards by their activities. EPA has

had numerous discussions with Forest Service people on this issue, specifically as related to Three Lakes. The Forest Service is an active participant in local land use planning that has water quality protection as a major goal.

Concerning the ski area issue, the fact that the Bowen Gulch development is speculative at this point makes evaluation of its possible relationship to a sewerage system equally speculative. Before any such area becomes reality, it must first have a proponent with the financial capability to develop it. Secondly, the area must be evaluated via the Forest Service's own environmental evaluation and EIS process.

Colorado Open Space Council. The Colorado Open Space Council (COSC), representative of a statewide coalition of environmental groups, has shown interest and has been involved in deliberations on the Three Lakes project for some time. COSC, specifically its Water Quality Workshop, has reviewed and provided comments on the earlier regional sewerage system proposal on a number of occasions. The COSC concerns with this system have centered on its possible growth inducement aspects, on the acceleration of non-point pollution from this growth generation, on the use of public funds that might be better spent elsewhere, and on the technology associated with the system's underwater vacuum lines and other features (ref. No. 10).

The concerns expressed by COSC have been fully considered in EPA's efforts to devise an acceptable water quality management plan for the Three Lakes area.

Other Comments. Though not as directly involved as those agencies and groups discussed in preceeding sections, it should be pointed out

that the U.S. Bureau of Land Management, Mr. James P. Fitzgerald of Northern Colorado State University, and numerous Three Lakes area residents and homeowners have expressed opinions via formal letters of comment, verbal presentations at various public meetings, and informal correspondence on water quality management needs for the area. These comments have varied but basically are the same as those attributed to the agencies discussed in this part of the EIS. Nearly all who have spoken out on the project have emphasized the need to resolve differences and to proceed with a plan to protect area water quality.

Recent History of the Project

Following EPA's decision not to fund the Sanitation District's regional wastewater collection and treatment system on August 4, 1975 (ref. No. 8), a series of meetings and studies has been conducted which was aimed at developing a sewerage system and water quality plan acceptable to all parties concerned. The major developments and studies will be described in this section of the EIS with the reader also referred to pages II-6 to II-13 of the facility plan for further discussion and a chronology on the same subject. It should be pointed out that these more recent developments, aimed at reaching a solution to the Three Lakes situation and culminating in this EIS, do not comprise a final decision by EPA on the project. A final decision will be made after completion of the EIS process.

The studies and deliberations that have occurred up to the present time have served to define the issues, to clarify some misconceptions, and to devise solutions to them. The many meetings that have been held,

ranging from the major policy decision-making occasions on the part of agency heads and elected officials to staff member work sessions, have been based on a desire to fully explore all issues and to better understand viewpoints held by opposite parties. These meetings have been open, candid, and have resulted in development of a "compromise" plan with commitments from the County, Sanitation District, and others to correct problems with the earlier proposal. These meetings and work sessions have involved all the agencies with direct involvement with Three Lakes including EPA; Grand County Board of Commissioners and County staff; NHPQ; Three Lakes Water and Sanitation District Board of Directors and their legal counsel; National Park Service representatives; Rocky Mountain Center on Environment (hired by EPA to assist with an environmental assessment on the project); State Health Department; Northwest Colorado Areawide Water Quality Planning Organization; Bureau of Reclamation representatives; and Northern Colorado Water Conservancy District representatives. The Colorado Open Space Council has also been in attendance at times.

The major thrust of these meetings was to analyze the problem areas associated with the earlier sewerage plan and to develop information needed to better assess the Three Lakes situation. Another hoped-for outcome running concurrently with these efforts was the development of an alternative sewerage system that would, in conjunction with nonpoint controls, satisfy recognized point source treatment deficiencies.

These meetings resulted in agreement that (1) nonpoint source control regulations needed to be strengthened by the county and (2) that the actual trend of water quality in the lakes was very difficult to

pinpoint. It was decided, in view of this situation, that an approach emphasizing a high level of treatment would be the safe course of action to follow. Also, because of the long history of the project and the extensive work that had already gone into alternatives evaluation, it was decided that the six alternatives shown in the facility plan adequately represented the possible array of alternative sewerage systems that should be considered.

As has been mentioned several times in this EIS, nonpoint type pollution arising from man-caused erosion and resultant sedimentation and nutrient loading of the lakes had been identified as a major problem critical to the preservation of the lakes. Nonpoint controls are, by their nature, land use controls. The control of nonpoint pollution involves such things as not allowing construction on steep and unstable slopes, keeping road grades to a low degree, requiring revegetation of disturbed areas, requiring setbacks from lake shores, etc. These controls are commonly expressed in a local government's land use map and related zoning and subdivision ordinances.

Because there was some disagreement between Grand County and EPA over the adequacy of County land use regulations as related to nonpoint control, the decision was made to hire an outside analyst to review the County laws. The Denver law firm of White and Burke was chosen to do this analysis. White and Burke submitted a final report to EPA and the County in January, 1977, (ref. No. 7) entitled, Review and Analysis of Grand County, Colorado, Land Use Laws Related to Water Quality Protection.

The White and Burke study basically pointed out that the County had a number of means available to it to control water quality impacts. These means included use of existing zoning regulations, special use permits, subdivision regulations, planned unit development regulations, building codes, and other features of the various authorities available to county government. Use of these various authorities would result in prohibition or control of developmental activity on shorelines, hazardous and unstable areas, floodplains, areas unsuitable for septic tanks, etc.

One of the most difficult aspects of land use control as related to water quality protection in the Three Lakes area is that related to already platted subdivision lots. As explained in the later section of this EIS entitled "Land Use," there are some 4,000 already platted lots in this area. These lots, many of which are quite small, have been on the County books for years, and their owners have certain legal rights. Unlike the situation where a developer wants to gain county approval for subdivision of presently unplatted land by going through whatever review process exists and meeting whatever requirements are current, these lots have already been approved and there is no authority requiring the lot owner to go through the subdivision approval process again.

Because availability of a sewage collection system could possibly make many of these small lots "developable" (the County now requires a two-acre minimum lot size when no centralized collection system is available and a septic tank must be used) and because many of these lots and their associated roads were laid out without any water quality impacts in mind, they have been of great concern to EPA and the County as related

to the Three Lakes project. White and Burke were asked to examine the possibilities for control of potential water quality problems from development of these lots.

White and Burke expressed an opinion that certain control over such sources could be obtained through the use of such techniques as building permit regulations, regulation of nonconforming uses, nuisance regulations, adoption of certain H.B. 1041 regulations, and adoption of H.B. 1034 regulations. White and Burke did, however, advise a word of caution by stating that:

> The regulation of water quality impacts created by existing development or development approved under prior versions of subdivision regulations or County platting regulations is largely untested in Colorado. While the consultant has offered as suggested techniques only those which it has concluded are lawful under existing Colorado statutes and case law, the novelty of the suggested techniques mandates that any specific proposed regulation based on these suggestions be carefully reviewed to assure that it is in fact valid. To assure that a particular regulation is valid the County must devise regulations which:
>
> (1) Have as their purpose the regulation of an identifiable water quality hazard to the public health, safety, or welfare, and which
>
> (2) Serve as a reasonable means of regulating a land use in order to aid in controlling that problem. (Ref. No. 7, pages 119 and 120.)

Obviously, there is no simple solution to the control of land uses that may degrade water quality in the Three Lakes area. White and Burke suggested a number of possible regulatory schemes that could be used to accomplish this goal, and, most important to Three Lakes water quality protection, Grand County is in the process of formulating

and enacting certain of these. This development is probably the single most important element of the whole process of deliberation on the Three Lakes sewerage project and is, in EPA's opinion, the basic reason why planning for such a system has been able to proceed to the EIS stage. The type of controls that Grand County will institute are as described in the letters between Grand County and EPA in Appendix A of the facility plan. Enactment of these measures will be required by EPA before any federal funds are approved for actual construction of a Three Lakes sewerage project.

It should be pointed out that Grand County has recognized the need to improve its whole planning/regulatory function in the Theee Lakes area in order to protect not only water quality but also to protect general aesthetics, to promote a more favorable tourist industry climate for the area, and to provide for a more orderly and efficient public service and public utility situation. In order to develop a better Three Lakes area plan, one that is legally defensible and on which new regulations can be based, the County has taken two steps.

First, the County Commissioners created a subgroup to the County Planning Commission called the Three Lakes Planning Commission. This commission, involving a citizen advisory board and members of the County planning staff, has been at work for over a year and has conducted a number of public meetings aimed at generating local land use goals.

Though a final plan has not been officially adopted by the County Commissioners at this time, the Three Lakes Planning Commission has fully

recognized the importance of water quality protection for the area, has developed a goal of maintaining water quality, and is recommending steps to reach this goal (ref. No. 11). Though it defers to the Three Lakes Water and Sanitation District for decisions on the exact type and configuration of a sewerage system, the planning commission has listed as priority items the need to control both point and nonpoint type pollutants for the three lakes.

As part of its Three Lakes planning effort, Grand County has funded and is using the planning and environmental analysis of Dr. Dennis Lynch at Colorado State University and that of COMARC Design Systems, a private environmental planning firm. Dr. Lynch, building on previous land carrying capacity analysis that he and Colorado State associates developed for eastern Grand County, made a detailed land capability study for the Three Lakes area. This effort resulted in land suitability maps (specific areas of land were rated per suitability for construction, septic tanks, etc.) and a number of policy proposals designed to keep land uses compatible with these suitabilities.

The second effort, that being conducted for the County by COMARC (the Northwest Colorado Areawide Water Quality Management Project is also sponsoring this work along with a financial grant from EPA), is refining and adding to Dr. Lynch's work by the production of computer drawn land capability maps developed on 400' x 400' cells. The COMARC system, using twelve categories of resource and land uses (soils, wildlife, ownership, etc.) has developed a number of interpretive and constraint maps (erosion hazards, environmental limitations, etc.). The purpose of

the Comarc system is to build data-based land use capability maps that will serve as the basis for allowing, denying, or modifying proposed uses of specific land areas. This type of analysis, based on specific data, is needed to give a factual and legally defensible basis to County land use regulations. Water quality impact analysis and related maps showing which areas should not be developed or developed only with certain precautions taken in order to protect water quality have been a major element of COMARC's work.

Because of the long history of the Three Lakes project and due to the fact that the Sanitation District and EPA had developed somewhat polarized positions, EPA also decided to hire a separate outside consultant to analyze and report on the potential environmental impacts associated with the alternative sewerage systems possible for the Three Lakes area. It was hoped that such an analysis by a group not involved in the long series of deliberations on the project would help to define and to refine the issues and to move all the parties concerned toward a resolution of differences. After gaining agreement from the Board of Directors of the Sanitation District to hire this independent consultant, EPA hired the Rocky Mountain Center on the Environment (ROMCOE) to fill that role.

ROMCOE assembled a team consisting of a planner, attorney, engineer, economist, and writer and began an analysis of the Three Lakes situation and also began to participate in various meetings and discussions on the project. Though dealing with a complex and controversial situation and with a rather limited budget, ROMCOE submitted its environmental assessment

to EPA in June, 1977. This assessment, listed as reference No. 6, has been used as a supporting document in preparation of this EIS.

ROMCOE believed that there were certain problem areas related to provision of sewerage service in the Three Lakes area. These included:

1. lack of definitive data describing the degree, extent, or trend of water quality of the three lakes;

2. the fact that the various sewerage system alternatives do not directly confront the nonpoint pollution problem;

3. that all alternatives, especially an alternative emphasizing extensive septic tank management, were not considered;

4. that the system proposed by the Sanitation District (Willow Creek lagoon alternative) may not be the best expenditure of federal monies and might, in fact, be better spent elsewhere on other projects;

5. that wildlife, water supply, relationships to other sanitation districts within the Three Lakes Sanitation District boundaries, and the debt burden and its effects have not been adequately analyzed.

In addition to pointing out what they considered the above problem areas, ROMCOE also evaluated the impacts of the alternative sewerage systems as presented in the facility plan. These alternatives were evaluated on twenty-eight different criteria and then ranked in terms of negative impact on these various criteria (aesthetics, secondary growth factors, water rights, etc.). It should be pointed out that ROMCOE concluded that they had insufficient data for the areas of water quality, fish and wildlife, air quality, protection of lakes, water supply, and

groundwater quality to enable the use of these criteria in this ranking process.

Based on the results of this ranking process, ROMCOE concluded that "Alternatives 1, 2, 4 and 6 (see Chapter VI of facility plan for discussion of alternatives) do not exhibit a very wide spread in relative negative impacts." ROMCOE also concluded that "due to the District's desire not to be involved in an alternative with a very large non-sewered component, consideration of the implementability of the alternatives would narrow this spread." (Page 18, ref. No. 6.)

Another conclusion drawn by ROMCOE in their final report includes the finding that the sewerage facility plan favored by the Sanitation District, in conjunction with nonpoint controls, could improve water quality in the area. Also, ROMCOE found the cooperative accomplishments of EPA, Grand County, and the District for land use controls to be commendable. Last, ROMCOE stated that "the validity of the centralized system, as represented in the recommended alternative, is not supported in a broad view of the Three Lakes situation. Unfortunately, no other remedy is obvious either. Whether or not a mix of approaches, including a centralized system, land use controls and septic management plan, can have a predictable impact on water quality in the area simply isn't certain." (Page 40, ref. No. 6.)

EPA has recognized the questions identified by ROMCOE on this project and has attempted to answer them in this EIS. Though data gaps will exist with any project, it is EPA's opinion that the amount of data supporting decisions at Three Lakes is considerable and probably much more extensive

and concrete than that used in most projects of similar magnitude. Given the above difficulties, EPA believes a decision on a centralized sewerage system, bolstered by strong mitigative measures, can be made and supported at Three Lakes.

EPA's Selection of a "Preferred" Alternative

Following EPA's rejection of the District's original proposal for a regional wastewater collection and treatment system, efforts have continued between all those involved to resolve points of contention and to develop a water quality plan acceptable to all. The previously described studies--White and Burke; ROMCOE--and further efforts by NHPQ, EPA, the Park Service, and Grand County on alternatives and land use plans were involved. A chronology of these activities is found on pages II-6 through II-12 of the facility plan.

Through the more complete development of alternatives, a more extensive consideration of impacts, and commitments and involvement of the Grand County Commissioners, the Bureau of Reclamation, the Board of Directors of the District, and the Park Service, the Regional Administrator of EPA was able to select a "preferred" alternative sewage collection and treatment system. This selection, based on a full consideration and comparison of environmental, economic, and policy factors, was made on March 21, 1977. It must be emphasized that this was not a final decision. A final decision by EPA on this project must await completion of the EIS process and the public review provided by it.

SECTION IV

IV. The Setting

The Three Lakes region is located in the northeastern portion of Grand County, Colorado, just to the north of Middle Park and immediately west of the front range of the Rocky Mountains. The area is within a three-hour drive from Denver and other metropolitan areas along the northern front range. Federal Highway 34 serves as the major road through the Three Lakes area and through Rocky Mountain National Park. Locational maps are found as Figure II-1 (page II-15) and Figure II-2 (page II-17) of the attached plan.

The Three Lakes (Grand, Shadow Mountain, and Granby), the National Park Service-administered Shadow Mountain National Recreation Area, the adjacent Rocky Mountain National Park, the Arapahoe National Forest, numerous private tourist and resort facilities, and the associated mountain scenery are major attractions that yearly draw thousands of visitors to the area. Grand Lake is a natural lake formed by glaciation, while the other two lakes are man-made reservoirs built as part of the U.S. Bureau of Reclamation's Colorado-Big Thompson Project in the late 1940's.

Overall, the Three Lakes drainage basin, encompassing approximately 396 square miles, can be characterized as a high mountain valley ringed by mountain peaks, forested except for the valley floors and open parks, and drained by the headwaters and tributary headwater streams of the Colorado River.

It is an area of outstanding natural beauty, which has been impacted to varying degrees by the creation of two large reservoirs, the construction of numerous roads, and the urbanization of major parts of the valley floor. Further discussion of the setting of the Three Lakes area is provided in Chapter IV of the facility plan.

Land Use Patterns

Land use patterns, both existing and as may develop in relationship to a centralized sewer system, have been a major consideration in the long history of deliberations on the Three Lakes project. EPA's main involvement with the land use issue has been related to how land development (provision of sewer service will lift a present restraint to development of land parcels too small or unsuitable for septic tanks) could generate nonpoint pollution (erosion and sedimentation). EPA and others have also been concerned over the possible impact of this possible development on the NRA and other environmental values such as aesthetics. For these reasons, a careful look at the land use issue is necessary and, as presented later in this EIS, the mitigation of these possible impacts by Grand County via land use planning and regulation is essential to an environmentally acceptable sewerage project.

The total Three Lakes drainage basin area encompasses some 396 square miles, much of which is in a relatively natural state. In terms of the total 396 square mile drainage basin, some 35 square miles, or 9 percent, is in private ownership. Though the percentage of private land

is relatively small in comparison to the total land area in the basin, it should be noted that 35 square miles are sufficient to accommodate a very large level of development and also that much of this private land is located in the aesthetically and environmentally sensitive stream valleys and along the western side of the lakes.

Rocky Mountain National Park east and north of the lakes, though it contains some development along Highway 34, is basically managed as wilderness area. Arapahoe National Forest lands located west and southeast of the lakes are managed for multiple use purposes and, as such, contain some roads, timber harvest areas, and other existing or potential development. However, several unroaded areas, Indian Peaks to the east and some areas forming the western boundary of the Kawanechee Valley, are currently undergoing evaluation for possible wilderness classification. Shadow Mountain National Recreation Area, encompassing the lakes and the immediate area around them, is managed by the Park Service. The NRA includes, or is adjacent to, extensive developed lands along the west sides of Shadow Mountain Lake and Lake Granby with the eastern shores of these two reservoirs being lightly developed or undeveloped.

The bulk of the developed lands in the area lie along the Highway 34 corridor along the western shores of Shadow Mountain Reservoir and Lake Granby, in a core area centered at the Town of Grand Lake and around Grand Lake itself, and in a subdivided and developed area northeast of Grand Lake and extending for some distance up the Kawanechee Valley.

The majority of this developed land lies within the boundaries of the Three Lakes Water and Sanitation District. A land ownership map

of the immediate Three Lakes area (that land area within the boundaries of the Three Lakes Water and Sanitation District) is shown as Figure IV-15 in the facility plan. This map offers a visual presentation of development which, as previously stated, is mainly on private lands concentrated along the western side of the lakes and northward along the North Fork Colorado River. Also, in addition to the previously mentioned Rocky Mountain National Park lands to the east and north of the lakes and U.S. Forest Service lands on the west and south, there are some U.S. Bureau of Land Management and U.S. Bureau of Reclamation tracts scattered among other ownerships.

Historically, most of the privately owned land in the region was devoted to ranching. Large ranches still exist in the southern portion of the Three Lakes region but farther north, in the area under consideration in this EIS, ranching has been lost to the reservoir inundation or has become more of a "guest ranch" type operation. Much land has been subdivided and offered for sale as residential or recreational housing property.

The Three Lakes Water and Sanitation District includes many platted subdivisions in addition to the Town of Grand Lake. These subdivisions contain numerous lots ranging in size from one-tenth of an acre to more than four acres per lot. Some of these subdivisions were platted many years ago, while others are more recent. In the five-year period after the two reservoirs were built, there were 25 filings. After that, the rate of subdivision filing dropped off for ten years, then started to increase again in the 1950's (reference No. 1). Again, reference to the

land ownership map in the facility plan shows that the majority of these subdivisions are located along the western side of the lakes.

These subdivisions, and their existing and potential environmental impacts, are a major concern of EPA and others as they relate to the proposed sewerage project. This subject is treated in more detail elsewhere in this EIS, but basically the issue is that provision of sewer lines may make these lots, many of which were laid out with no consideration for environmental impact, much more "developable" than if no sewer were available. Also, for further discussion on this subject see page IV-10 in the facility plan.

Currently, there are approximately 1,500 existing residential units in the Three Lakes region (ref. No. 2). The Three Lakes Water and Sanitation District has proposed providing sewerage service to some 1,900 units in the area. (A "unit" is an existing single development that would be a source of sewage. The 1,900 figure includes National Park Service campgrounds and commercial units such as motels.) The majority of these residential units would be served by the Sanitation District's proposed sewerage plan (see page VI-7 of the facility plan and Figures VI-1 and VI-8).

Commercial developments, basically tourist-oriented facilities such as motels, lodges, marinas, restaurants, shops, gas stations, etc., are located along the Highway 34 corridor and at the Town of Grand Lake. The Town of Grand Lake developed as a resort and tourist-oriented community long before the Colorado-Big Thompson reservoirs were constructed and remains as the major concentration of this type of activity in the Three

Lakes area. Overall, there are some 55 motels and lodging establishments in the region supplying an estimated 660 rental units (1973 data from ref. No. 1).

A summary of land uses in the Three Lakes area has been recently developed by COMARC Design Systems, a land planning and analysis firm that is under contract to Grand County and the Northwest Colorado Water Quality Planning Project to do detailed land and resource mapping and evaluation for that area. Though the planning area chosen by Grand County for use in the COMARC effort is not contiguous with the boundaries of the Three Lakes Water and Sanitation District, they do cover almost the same land area. The COMARC analysis summarizes Three Lakes land uses as:

Type Use	Area in Acres	Percent of Area
Lakes	8011.021	17.43
Urban	58.77	.13
Vacant Urban	14.69	.03
Residential	999.08	2.17
Trailer	116.19	.24
Power Generation	146.92	.32
Water Treatment	14.69	.03
Recreation	176.31	.38
Campground	18.37	.04
Golf Course	154.27	.34
Special Recreation	14.69	.03
Irrigated Hay	1928.37	4.20
Range	5417.81	11.79
Misc. Range	1355.37	2.95
Wetlands	2953.17	6.43
Water	187.33	.41
Con. Forest	23698.80	51.57
Dec. Forest	697.89	1.52

1 Small areas of Grand Lake and Lake Granby are not within the COMARC study boundary.

(Ref. No. 3)

Land ownership of the Grand County study area is summarized by COMARC as:

Owner	Area in Acres	Percent of Area
Bureau of Reclamation	547.29	1.19
Bureau of Land Management	275.48	.60
National Recreation Area (Park Service)	822.77	1.79
Grand Lake Metro Recreation District	5663.91	12.32
U.S. Forest Service	9046.83	19.69
Park Service	5046.83	10.98
Private	16543.61	36.00

(Ref. No. 3)

Grand County has compiled subdivision data on the Three Lakes area as part of its land use planning. This data lists the following information on subdivisions (Grand County Planning Area C encompasses the Three Lakes area and covers nearly the same private land area as is contained in the Three Lakes Water and Sanitation District boundary.):

Total number of subdivisions: 81

Total land area of the 81 subdivisions: 3,459.31 acres

Number of developed units (residential): 1,478

Number of undeveloped lots: 3,283

Building Permits Issued: 1974 - 38
1975 = 25
1976 = 31
1977 (as of 6/1) = 19

(Ref. No. 2)

Figures compiled in 1973 under a study entitled Three Lakes Regional Planning Study reveal the following about subdivision trends in the Three Lakes area:

Amount of Subdivided Land,
By Filing Date of Plat

Before 1945	499.4 acres
1946-1949	275.5 acres
1950-1954	438.7 acres
1955-1959	172.6 acres
1960-1964	239.7 acres
1965-1969	499.1 acres
1970-1972	523.7 acres

This study also concluded that the trend was toward subdivisions containing larger lot sizes. This trend was probably partly attributable to the need for larger lot sizes to accommodate adequate septic tank leach fields. It should be noted here that Grand County now requires a two-acre lot size if a public sewage collection system is not available (subdivision regulations revised August 31, 1972).

Note - The Three Lakes Regional Planning Study listed 84 subdivisions in the area totaling 2,737.67 acres and containing 4,168 lots. These are different figures than those supplied by Grand County under ref. No. 2. This difference is probably attributable to the use of slightly different study area boundaries.

The Lakes

As stated, Grand Lake is the only natural body of water of the three lakes, and Lake Granby and Shadow Mountain Reservoir are man-made reservoirs built as part of the Colorado-Big Thompson Project by the U.S. Bureau of Reclamation. As a result of this project, all three lakes are linked in a somewhat complex hydrologic manner.

Basically, Lake Granby acts as the major storage facility of the system, collecting and holding spring runoff. This water is then pumped back during irrigation season into Shadow Mountain Reservoir, from where it flows into Grand Lake and then out the Adams tunnel, which runs under the Continental Divide. The water is delivered for irrigation and municipal uses on Colorado's eastern slope area between Ft. Collins and Boulder. (Further discussion on this system is found on page III-4 and IV-7 of the facility plan.) Also, though it will be discussed further in this EIS under Water Quality, it should be noted that the complex hydrologic arrangement of the three lakes--flows go in either direction, depending on the season and operational demands with water detention times varying considerably--makes an equally complex task out of water quality analysis and impact evaluation.

The three lakes collectively cover more than 8,800 acres of water. Lake Granby, by far the largest of the three, has a maximum pool of 7,256 surface acres. Lake Granby's water level, however, may fluctuate from 15 to 75 feet annually, depending on runoff and on demands made on the system by the eastern slope users. Shadow Mountain Lake, with only 1,356

surface acres, maintains a constant water level, as does Grand Lake with which it is connected by a navigable channel (ref. No. 4).

Grand Lake is almost completely ringed by private ownerships, which have been developed into residential units and some commercial establishments. The eastern shorelines of Lake Granby and Shadow Mountain, the highly scenic backdrops for views from the Highway 34 corridor, are under federal ownership and are basically undisturbed. The western shores of these two lakes, the shores most accessible to people, are, for the most part, privately owned. These private tracts have mostly been developed in some manner including resorts, marinas, campgrounds, homes, and trailers. Some public land does exist on these western shorelines (again, refer to the land ownership map, Figure IV-15, in the facility plan), but these lands consist of a relatively small portion of the area.

Overall, the three lakes form the focal point for much of the recreational activity in the area. The maintenance of the water quality of the lakes, the problems with some of the lakeside development, and the nature of the future management of the lands surrounding the lakes make up the major environmental protection conflicts associated with the region.

The Tributaries

The maintenance of the water quality of any lake is obviously dependent to a large extent on the quality of water flowing into the lakes from its tributary streams. In the case of the three lakes, the pollutant load reaching the lakes from their tributaries has been the basis of part of the environmental controversy involving the area. Because human

activity (land disturbance, etc.) can degrade the quality of streams and thereby the lakes, any environmental impact evaluation of Three Lakes must include these streams and the land uses involving them.

Drainages on the east side of the lakes are comprised almost entirely of public lands. These tributaries include the North Inlet, East Inlet, Arapahoe Creek, and a number of smaller tributaries. Only some 2% of the drainage area is in private ownership, with the public lands in these drainages (Arapahoe National Forest and Rocky Mountain National Park) managed as "undeveloped" type areas. These drainages are the least influenced by man's activity of any in the study area.

Drainages to the north and west of the lakes contain a larger percentage of private ownership, but the predominant ownership is public. This includes the North Fork of the Colorado River, Willow Creek, Soda Creek, Stillwater Creek, and Little Columbine Creek drainages. Land uses in these drainages are much less homogenous, but, in general, the headwaters and upper reaches of the streams are in public ownership with the private lands occurring in the lower segments nearer their confluence with the lakes.

Stillwater and Soda Creeks are approximately 20% in private ownership with land uses in these areas including subdivisions, irrigated hay meadows, livestock grazing, timberland, and roads. Little Columbine Creek drainage, in contrast, is comprised entirely of private land with a high intensity subdivision area completely encompassing Columbine Lake.

The North Fork of the Colorado River arises in Rocky Mountain National Park but flows through private lands in its last ten miles before reaching Shadow Mountain Reservoir. Land uses are similar in the private sections

to those found in the Stillwater and Soda Creek drainages. The area of the drainage in the Park, though lightly developed, does carry Highway 34 and has several Park Service developed areas (campground, housing, visitor center). It should also be noted that the North Fork Colorado drainage contains the site for a proposed developed winter sports site and also, according to the Three Lakes Regional Planning Study, has high potential and is suitable for further subdivision development (ref. No. 4).

Social and Economic Setting

The economy of the Three Lakes project area is geared primarily to the tourist and recreation business. Though there are several ranches and some irrigated grazing lands within the Sanitation District boundaries, employment other than tourism is slight and consists mainly of construction people, government maintenance workers, professional people, and laborers.

Because of its tourism basis, the income of the residents of the Three Lakes area is highly dependent upon retail sales and services. A predominant characteristic of this income is its "seasonality" with the summer months predominating and the winter months accounting for only a small percentage of the total year's economic activity. The following sales tax information (figures are for amount of taxes returned to the community by the State) for the Town of Grand Lake show this "seasonality" very well:

January, 1976	-	$ 3,767.08
February, 1976	-	$ 2,075.60
March, 1976	-	$ 3,330.72
April, 1976	-	$ 1,885.01
May, 1976	-	$ 1,616.43
June, 1976	-	$ 4,021.56
July, 1976	-	$13,276.58
August, 1976	-	$20,272.27
September, 1976	-	$18,058.75
October, 1976	-	$11,821.17
November, 1976	-	$ 3,854.58
December, 1976	-	$ 2,101.67

(Information provided by Town of Grand Lake, June 10, 1977)

One of the major goals expressed by the residents of the Three Lakes area in such past planning efforts as the Three Lakes Regional Planning Study and current efforts to develop a new Three Lakes comprehensive plan has been for the improvement of the area's year round economy. Numerous ideas have been expressed on how to accomplish this goal, some of which are being pursued by local residents. Though wintertime activities have increased in recent years--basically due to the weekend and holiday influx of snowmobilers--a ski area (probably located at a site in the Kawanechee Valley) is held out as the major potential solution to the problem. To date, though, actual plans for such an area do not exist and such a development remains highly conjectural.

The Three Lakes seasonal economy and the population fluctuations that are associated with it have an important bearing on the type and financing of a sewerage system and water quality management system for the area. Significant factors to be considered because of this situation include (1) sewage loads reach a peak in the few summer months;

(2) the tax base needed to pay for costly utility services such as sewage systems is much less than in areas with more stable and populous economies; and (3) pressures exist for the creation of income generators such as ski areas, which in turn require that there be made available such services as sewage collection and treatment. Each of these issues is discussed further in later sections of this EIS.

Water Quality

One of the major difficulties with the Three Lakes project has been attempting to reach an understanding of the actual status of the quality of the lakes' water. Because of these difficulties it has been hard for all those concerned--Sanitation District, EPA, State, Park Service, and others--to reach agreement on how best to meet the water quality maintenance needs of the area.

The following is a summary of past water quality studies of the Three Lakes taken from the Three Lakes Sanitation District's 1975 Revised Environmental Assessment (ref. No. 5). This summary, and the observations that are included, points out the difficulties involved in analysis of the status of the quality of the lakes' water. The reader is also referred to pages III-3 through III-10 of the facility plan for further discussion of the water quality of the lakes. (The facility plan and the former reference are somewhat duplicative in their discussion on this subject, but the two together offer a more complete accounting than if read alone.)

Information on water quality and possible pollution problems in the Three Lakes area has been collected by numerous agencies since the early 1950's. Studies include those by the Joint-Algae Committee (1954); State Health Department (Smades and May, 1969, and others); Colorado Game, Fish and Parks Division (Nelson, 1971); Environmental Protection Agency (Timm and Seeley, 1970); and Colorado State University (Kugrens and Paulsen, 1972). Some data has also been collected in the area by the U.S. Geological Survey, U.S. Bureau of Reclamation, and the National Park Service. The most recent work has been done by EPA (1974 and 1975) and by the proponents of the Windy Gap Project.

Because of the numbers of different agencies involved and variations in research techniques and methods, conclusions from evaluating the past and present conditions of the lakes or projecting future conditions have been difficult. However, discussion of these studies and the general effects of pollution or eutrophication problems will be beneficial in understanding water quality situations in the lakes.

The present three lakes were created in the 1940's with construction by the Bureau of Reclamation of Lakes Granby and Shadow Mountain and their connection with the existing natural Grand Lake. The project serves to divert water to the eastern slope of Colorado via the lake systems and a diversion tunnel (Adams Tunnel) to the east slope. Morphometric and physical data concerning the lakes are as follows:

Lake	Mean Depth Feet	Approximate Surface Area in Acres	Average Volume in Acre Feet	Average Total Water Exchange Time**
Grand	135	507	68,500	96 days
Shadow Mountain	10	1,700	17,700	19-23 days
Granby	74	7,000	324,300	570-730 days

** Based on calculations by Nelson (1971)

By means of pumps and diversion structures, water flow patterns through the lakes are as follows:

1. During spring runoff periods from May through June, water from Grand Lake and Shadow Mountain Reservoir flows into and fills Lake Granby.

2. From August through April, depending on seasonal water needs on the east slope, water is pumped from Lake Granby to Shadow Mountain Reservoir to Grand Lake, where it exits through the Adams Tunnel.

These flow patterns allow for the free mixing of water in the lakes and exchange of pollutant or nutrient materials between the lakes, depending on the direction of water flow at a given time. The shallowness of Shadow Mountain Reservoir, its role in receiving basin runoff from the North Fork of the Colorado River, sewage effluent from the Grand Lake sewage treatment plant, and its location between the other lakes make it the primary source of pollutant or nutrient materials to the lakes' systems.

Two different yet related conditions must be considered in the lakes: pollution and eutrophication. Pollution will be considered to mean too

much of a given material or substance present over a given time period to interfere with or prevent man's use of the lakes for domestic, fisheries, aesthetic, or recreational purposes. Pollutants may include organic matter such as sewage effluent, bacteria, algae, aquatic plants, dead fish, fish innards, and related material, or inorganic substances such as mineral and metallic compounds, silt, sand, suspended materials, or oil or gasoline films from outboard motors. Nitrogen, phosphorus, sulfates, and related compounds may be contributed by either runoff or natural biological processes, or from organic materials associated with domestic sewage effluent.

Eutrophication literally means "good eating." A eutrophic lake is one that is rich in nutrients (nitrogen, phosphorus, sulfates, etc.) and generally supports large populations of plant and animal life. An oligotrophic lake generally has low quantities of available nutrients and a low productivity with respect to animal and plant life. The natural process of aging in most high mountain lakes, such as the Three Lakes, proceeds from conditions of oligotrophy to those of eutrophy. As sediments and nutrient materials are washed into new, relatively nonproductive lakes and form deposits on the lake beds or become incorporated into the lakes' biological and chemical systems, the biological productivity of the lakes increases. The end result of such trophic changes under long-term natural conditions is a successional change from a relatively deep unproductive lake to a shallow productive lake to a filled-in lake basin on which terrestrial plants and animals become established (Welch, 1952).

Man, with his technology and apparent inherent ability to pollute or change his environment, can speed up the rate of eutrophication in lake systems. This ability has been called "cultural eutrophication" to distinguish the process from natural eutrophication. Cultural eutrophication can and does create serious pollution problems in lake systems, since overloading of lake systems with nutrients and organic materials can cause loss of oxygen in such lakes and a decline in bioproductivity. In general, the process of cultural eutrophication can be reversed if pollutant or nutrient materials come from a specific identifiable source such as an improperly functioning sewage treatment plant or septic systems. Other forms of cultural eutrophication are much harder to control with present technology, such as increased nutrients being washed into waters from fertilized lawns, gardens, or agricultural lands surrounding lakes, or increased sediment loads and suspended materials washing into the lakes as a result of human development and land use impacts on surrounding areas within the watershed. In the Three Lakes area some cultural eutrophication is occurring in the lakes. Although some of this is controllable through the construction of a proper sewage system, other less obvious cultural eutrophic conditions will continue without improved land use and management controls in the area to prevent these detrimental effects.

Biologists who have investigated the three lakes in the past have different views on whether the three lakes are eutrophic or not. However, their contentions and interpretations at given points in time on trophic situations in the lakes may all be relatively correct. Pennak (1955) considered the three lakes to be eutrophic. Timm and Seeley (1970), Nelson (1971),

and Kugrens and Paulsen (1972) did not consider Lake Granby or Grand Lake to be eutrophic. Kugrens and Paulsen (1972) considered Shadow Mountain Lake to be an eutrophic lake, while Nelson and Timm and Seeley considered it to be oligo- or mesotrophic. However, the latter two studies agreed that cultural conditions could lead to eutrophic conditions in all of the lakes. It is quite likely that, when Pennak (1955) and the Algae Committee (1954) examined the lakes in the early 1950's, they were showing definite eutrophic signs and that conditions have changed in the following years. New constructed reservoirs, such as Granby and Shadow Mountain in the late 1940's, frequently are very productive in their first few years as a result of high nutrient levels and organic materials present in the lake bed as it is filled. These nutrient loads are gradually reduced so that, in a sense, the three lakes may have gone from a brief period of eutrophy to the more expected high mountain condition of oligotrophy and are now cycling towards increasing eutrophic conditions; Shadow Mountain Reservoir is certainly heading towards eutrophy.

Over the years the following general conditions in the lakes were noted:

1. In the early 1950's, an increase was noted in Grand Lake and attributed to the Colorado-Big Thompson project and the construction of Shadow Mountain Reservoir. The Algae Committee report (1955) noted that the extensive and complex changes in the environmental conditions of Grand Lake as a result of the project preclude restoring it to original conditions and biological changes in populations must be accepted. At

that time the Fish and Wildlife Service, in concurrence with the Colorado Game and Fish Commission, stated "that the problem of excessive algae growth in the lakes will naturally tend to correct itself when the project is in full operation and as the initial fertility of the lakes decreases during the next few years."

2. A lack of agency pollution studies, and no complaints, during the period 1954 to 1966 indicate that algae did not present substantial problems during that time span. Nelson's (1971) report covered the period 1962 to 1966; during this time he estimated primary productivity to be only moderate in the three lakes with almost all productivity being in the upper six (6) meters. Blue green algae, green algae, and diatoms including Aphanizomenon and Melosira were the most common. Nelson concluded that inflow from Shadow Mountain with its two sewage treatment facilities and individual septic tank units at Grand Lake may contribute to so-called "nuisance algae blooms" but not to the point that they are causing the lakes to become eutrophic.

3. Nelson indicated that Lake Granby functions as a "sink" in late June and July with inflow from Shadow Mountain Reservoir and Grand Lake contributing to the deposition of sediment and organic materials. Conversely, Grand Lake acts as a "sink" in the summer and fall months. A decrease in dissolved oxygen was already noticeable in the hypolimnion, and Nelson noted that a continued loss of oxygen at deeper levels could result in depleted O_2 levels in over 80 percent of the lake's volume, resulting in serious effects on productivity in the lake.

4. In 1967 a public health consultant for the National Park Service conducted a survey of Shadow Mountain Reservoir following complaints of persistent foam deposits, algae formation, turbidity, and floating solids and sludge deposits in the lakes. Although observed conditions were not as serious as the situation presented by the residents, the conclusion was that there was apparent evidence of the presence of domestic pollution of sufficient strength to create public health hazards.

5. A more thorough investigation by the Federal Water Pollution Control Administration was completed in 1969 and published in 1970 by the Environmental Protection Agency. At that time, domestic wastewater sources were the Grand Lake sewage treatment plant, Shadow Mountain government camp, and individual subsurface disposal systems. The study revealed that all of the lakes were generally nitrogen deficient, existing water quality was equal to or better than standards, and that most organic material was either from photosynthesis or natural runoff and correction of the depleted dissolved oxygen situation in Grand Lake was not readily correctable. Evidence suggested Lake Granby was becoming a "sink" for orthophosphates with concentrations two to thirteen times the levels in the other lakes or in its upper levels. Lake Granby also had the highest organic content and lowest dissolved oxygen and pH measurements in their study.

6. EPA recommendations were that natural inflows be monitored to detect nutrification loads, and <u>that a plan be formulated to control future development in the area to protect the water quality of the lakes</u>. Domestic wastewater was considered the major cause of orthophosphate and thus the major contributor to nutrification pollution and the increase in certain algae species.

7. Studies by the State Health Department (May, 1969-1970) indicated generally low dissolved oxygen levels at the surface in all three lakes and high coliform counts by the sewage treatment plant. No definite evidence of septic tank or direct pollution from domestic sites was found, although 68 were less than 50 feet from the lake shore.

8. Data from the State in 1971 generally indicated dissolved oxygen levels above 6.5 and low coliform counts in all of the lakes. This data was collected after upgrading of existing sewage treatment plants and individual home units.

9. In 1972 Kugrens and Paulsen indicated that the lakes were in reasonably good condition based on surface water quality and algae counts. They concluded that:

a. All three lakes have relatively pure water.

b. The main vegetative problem in Shadow Mountain Lake is a vascular plant, Elodea. Its nutritional requirements are not known, but it grows in relatively pure water habitats, not in ones that have experienced heavy organic pollution.

c. Elodea is generally beyond the control of any chemicals currently on the market that are not also toxic to fish. Harvesting under conditions when the crop is exposed during lake water level reduction is recommended.

d. Algae are not a nuisance in any of the lakes. The annual "bloom" of algae is minor and may be essentially a natural phenomenon caused by nutrient levels increasing temporarily during an overturn of the lakes.

e. The major area that can be considered polluted is in the vicinity of the sewage plant effluent in Shadow Mountain Lake, extending some sixty yards into the lake.

f. Temperature may be instrumental in keying the intermittent excessive algae "blooms" that have been reported.

g. Generally, pH, DO, BOD, alkalinity, calcium, magnesium, phosphate, nitrate, sulfate, and chloride levels are below those levels at which pollution results.

h. Silica contributions, especially from the North Fork of the Colorado River, are within the optimal range for diatom growth and may contribute significantly to the high levels of Fragilliria and Asterionella noted in several of the past studies.

i. There presently exists no need for the application of algae erradication methods to any of the lakes.

Based on this available background data, it appears that the following results may be expected with construction of a treatment system to remove effluent from the basin:

1. The system will alleviate any contributing cultural eutrophication effects caused by effluent discharge, especially that associated with phosphates which may be a contributing factor to the growth of certain common algae species such as Anabaena in the lakes.

2. The removal of contributed BOD material will very slightly lessen some oxygen demand in the lakes, although much of this problem is apparently of a natural origin.

Any proposed system to remove effluent discharge from the lakes will not solve problems associated with:

1. natural or cultural eutrophication processes, including enrichment of the lakes from material washed into the lakes from natural waterways or from developed properties along the lake shores;

2. the present Elodea situation and the growth of other plants, especially in the shallow areas of Shadow Mountain Reservoir, and the collection of noxious material in such plant growths;

3. lake pollution or degradation arising from oil or gas leaks from motor boats. It has also been suggested that the use of such craft in shallow areas of the lakes may serve to stir up sediments and reintroduce settled nutrients into the lakes' systems;

4. growth and production of diatomaceous algae such as Fragillaria and Asterionella which are dependent on the high content of silica washed into the lakes from natural sources;

5. pollution and aesthetic problems caused by cleaning fish or discarding unwanted fish into the lakes or around boat docks, or domestic wastes discharged from large boats equipped with toilets into the lakes.

In the future, the following situations may still have to be considered:

1. The definite possibility exists that the algae growths observed are the result of natural, seasonal changes in water temperatures and overturn in the lakes serving to recycle nutrients in the system. If this is the case, then the observed algae "blooms" are likely to continue to occur even with decreased phosphate loading from improved wastewater management.

2. Insufficient data is available to define the contribution of natural runoff and nonpoint nutrient sources to the dissolved oxygen and related problems observed in Grand Lake and Lake Granby. Detailed investigations of runoff and stream flows should be undertaken to assess their contribution to future eutrophication of the lakes.

3. It appears highly probable that, even with a basin sewage system, failure to adopt more appropriate land use controls will still lead to some cultural eutrophication of the lakes from nonpoint runoff, sedimentation, and increased human impacts. Better protection should be afforded the entire basin system through improved land use control. While Grand County is presently engaged in an effort to develop a new comprehensive plan and land use regulations, there is concern over possible development that may be initiated in the interim period before these are implemented (ref. No. 5).

It has been very difficult for the District's consultants, NHPQ, EPA, the State, and others to be definitive about the trend of the water quality of the lakes. A summary of the conclusions that have been drawn would include the statements that (1) the lakes are currently meeting State water quality standards though there is no assurance that this situation will continue; (2) the major water quality problem is nonpoint in origin but point sources, especially in view of the Town of Grand Lake's present substandard discharge, must be controlled; and (3) that a positive water quality management program emphasizing point and nonpoint control is the only safe course of action to follow.

Sedimentation and EPA's 1974 Water Quality Survey

In summer of 1974, EPA initiated further water quality investigations to assess the water quality status of the three lakes and the effectiveness of the water quality management plan that had been proposed. This water quality survey was designed to determine the existing physical, chemical, and biological conditions in the lakes and tributaries, with particular emphasis on determining the relative contribution of point and nonpoint sources of nutrient inputs. The sensitivity of the lakes to increased nutrient inputs in terms of algal productivity and eutrophication was also a major element of the study.

The 1974 water quality survey has been of particular importance to EPA in its deliberations on the Three Lakes project for several reasons. First, it was becoming increasingly evident before the study was conducted that nonpoint source pollution had not been sufficiently considered in past analysis of the lakes' water quality. This was true even though it was becoming clear to many observers that sedimentation was a very real physical type problem and that, in fact, Shadow Mountain Reservoir was filling in to a degree because of this type pollutant. Second, based on this study, EPA and others were becoming more and more aware that any long-term water quality management plan for the lakes would have to include some type of land use regulation (erosion control implies preventitive regulation such as not allowing construction activity on steep slopes--nonpoint type pollutants are not receptive to treatment as are domestic sewage wastes). The 1974 survey was thus intended to help

clarify the impact of nonpoint pollution on the water quality of the lakes and to help provide a basis for assessing the type of water quality management plan needed to assure protection of the lakes.

As mentioned, numerous observers of the three lakes situation, including the Park Service and marina owners, were aware that Shadow Mountain Reservoir was receiving a heavy load of sediment from its westside tributary streams. A previous facility plan (ref. No. 5), prepared by NHPQ for the District, contained an excellent discussion of the sedimentation problem. This discussion is reprinted in the following paragraphs.

> Water, in the form of storm runoff and snow melt, may carry particles of soil in suspension for some distances from their point of origin. As stream velocity decreases, sediment particles tend to be deposited. The inlet of the Colorado River into Shadow Mountain Lake is a place where the stream water slows as it enters a constant level lake. The resultant deposition creates an alluvial fan-shaped deposit, which is undesirable for several reasons. Shadow Mountain Lake is quite shallow at this end, and the accumulated sediment causes difficulties in recreational boating. The quantity of silica dissolved in the lake water is increased by the accumulation of silt and may contribute to algae growth, specifically of Diatoms. Excessive siltation also decreases the geologic and productive life of the lake by deposition of materials onto the lake bed.
>
> Areas with sufficient natural vegetation yield sediment at fairly low rates, while disturbance of the soil by agriculture or development increases the amount of sedimentation drastically. Recent studies have shown that land in the stage of total development of the Kawanechee Valley can be expected to yield about 300 tons of sediment per square mile per year. Estimating a weight to volume ratio of 150 pounds per cubic foot, one year of runoff from the north fork drainage basin would yield 412,000 cubic feet of silt. Each year then, approximately this quantity of silt could be deposited in Shadow Mountain Lake, aggravating the boating problem and contributing to the growth of algae.

Only 8.2 percent of the drainage basin is now in private ownership. Assuming that all federal land is left in its present stage of development, only this 8.5 square miles of private land could be modified to increase its sedimentation yield. However, the consequences could be significant. A recent article states: "The removal of vegetation, and earth moving, during construction causes sedimentation in streams and siltation of harbors. Sedimentation from heavy development can be 100,000 tons per square mile per year as compared to 300-500 tons from a rural area." The same article includes the following table:

Sediment Volume - Tons/Square Mile/Year	
1. Woodland	100
2. Mixed Rural Areas	300
3. Farm Land	500
4. Light Development	10,000
5. Heavy Development	100,000

Using the figure cited for light development, the 8.5 square miles of land would yield 85,000 tons of silt per year. This would occupy 1,133,000 cubic feet, nearly three times as much as present conditions.

However, caution must be used in applying generalized findings such as these to specific areas, such as the Three Lakes region. Differences in soil types, geology, vegetation, slope, and climate all have considerable effect upon sedimentation. Construction would increase the amount of sedimentation and poor practices, such as development on steep slopes, excessive grading and excessive removal of vegetation, would cause serious erosion and consequent sedimentation.

Estimates of sedimentation, for the total watershed of the Three Lakes region, are shown in Table 1. It should be pointed out that design of new developments can control sedimentation to a very large extent, if proper criteria are used and sound construction practices are followed. Due to the importance of the quality of the lakes to the economic future of the region, degradation of the water by sedimentation is of serious consequence. Therefore, it is strongly recommended that development and construction standards be enacted and enforced to minimize development-caused sedimentation. (Ref. No. 5.)

TABLE 1
SILTATION

	North Fork	South Fork	Stillwater Creek	North & East Inlet	Willow Creek	Total
1. Total area, square miles	103.0	65.3	24.5	73.7	128.0	394.5
2. Current silt production, cubic feet per year[1]	412,000	87,067	98,000	98,267	512,000	1,207,334
3. Privately owned land, square miles	8.5	0.5	8.0	1.0	17.0	35
4. Percentage of private land	8.2%	0.8%	32.6%	1.4%	13.3%	9%
5. Additional silt from development of private land, cubic feet per year[2]	1,099,333	64,667	1,034,667	129,333	2,198,667	4,526,667
6. Forest Service estimates (private land), cubic feet per year[3]	775,000 to 800,000	5,000 to 6,000	375,000 to 400,000	9,000 to 10,000	750,000 to 800,000	1,214,000 to 1,296,000

1 Sediment volume in tons per square mile per year = woodland -100, mixed rural -300, light development -10,000. Estimated mass = 150 pounds per cubic foot.

2 Estimate based on 10,000 tons/square mile/year.

3 Forest Service hydrologists feel that the 10,000 ton figure is too high for the Three Lakes region. Their estimates assume all development has a well designed road system with grades not exceeding 8%, necessary cross drainage, and the slope of the average developed lot not exceeding 10 to 12%. Steep road and lots could easily increase the sedimentation by a magnitude of three to four times according to Forest Service estimates.

Source: NHPQ (Forest Service as noted).

The 1974 EPA water quality survey was thus undertaken to better define the nature of the nonpoint problem for the three lakes and also to better devise a plan to control these pollutants. The results of the survey can be summarized as follows (see also pages III-8 and III-9 of the facility plan for discussion on the same subject):

1. Water quality standards for numerical criteria were not found to be violated from any of the samples taken from the lakes or tributaries.

2. Point sources account for approximately 7% of the total phosphorus and 2% of total nitrogen entering the lakes over a hydrologic cycle (it must be pointed out that during the September low-flow period the Grand Lake treatment plant discharge accounted for a significant quantity of phosphorus and nitrogen--see page III-8 of the facility plan).

3. The influence of man's activities in increasing the nutrient yield of the watersheds was very apparent. "Undisturbed" watersheds account for nearly two-thirds of the stream flow entering the lakes but only a small percentage of the nutrients. On the other hand, it was found that sedimentation and associated nutrients increased substantially from areas influenced by man's activities (no attempt was made to allocate sediment production to particular activities; thus, the relative contribution of grazing, road building, construction, etc., have not been differentiated).

4. The lakes are currently classified as mesotrophic. Algal growth is currently limited by nitrogen in Grand Lake and phosphorus and nitrogen in Shadow Mountain and Granby Lakes.

5. The lakes are not particularly sensitive to nutrient increases over the range of nutrient increases tested (ref. No. 4).

Based on the 1974 and other surveys, EPA drew various conclusions about the type of water quality management plan needed for the Three Lakes area. EPA conclusions can be summarized as:

1. nonpoint type pollution is a major water quality problem for the three lakes; any plan to protect the future quality of the lakes must incorporate control of these pollutants;

2. point source pollution, though not of the same magnitude as nonpoint, must also be addressed in the water quality management plan; a combination of point and nonpoint controls is called for;

3. acceleration of land disturbance in the area from road building, home construction, etc., must be carefully evaluated and should, as far as practicable, be controlled by the level of government having legal jurisdiction over the land area involved.

An additional EPA water quality survey conducted in 1975 (see page III-9 of the facility plan), though not as comprehensive as the 1974 effort, drew similar conclusions about the water quality of the three lakes. That is, nonpoint type pollution comprises the greatest pollutant load reaching the lakes with point sources contributing a smaller, though still important, load.

Water Quality of the Tributaries and of Willow Creek

As discussed, the water quality of the lakes is dependent to a large extent on the quality of the water reaching them from their tributary streams. Also as discussed, the quality of the lakes' tributaries are (1) currently (1974) meeting numerical water quality standards, (2) contributing significant amounts of sediment and nutrients attributable to human land use activity, and (3) must be considered in any water quality plan for the area. Additional discussion on these subjects will be found under sections of this EIS dealing with impacts of the various alternatives and with mitigative measures. Specifics of the 1974 survey, such as sampling locations, pollutant quantity and type found, etc., are contained in reference No. 4 on file with other supporting documents.

The water quality of Willow Creek, though it does not discharge to the lakes, must also be considered because the discharge of the District's new preferred alternative would discharge into an irrigation ditch, which in turn discharges into a tributary of Willow Creek (see figures III-1, VI-8, and VII-2 of the facility plan). A discussion of the present water quality of Willow Creek is found on pages III-7 and III-8 of the facility plan.

Lower Willow Creek, that portion related to this project, contains both brook and brown trout, though the stream is of negligible importance as a sport fishery and is not open to general public use. Willow Creek in this area is roughly divided in half by a series of beaver ponds approximately 1.5 miles upstream from the confluence with the Colorado River. These ponds act as a barrier to upstream fish movement. From the

beaver ponds downstream the creek represents fairly productive brown trout habitat.

Brown trout numbers drop considerably during spring and summer due to reduced water levels and irrigation return flows, but increase significantly in the fall. The lower portion of Willow Creek appears to function primarily as a nursery and spawning ground and thus contributes to the Colorado River fishery (see letter from Dames and Moore to Paul Seeley, NHPQ, and from Colorado Division of Wildlife to Paul Seeley in Appendix A of the facility plan).

Basic Conclusions on Three Lakes Water Quality

To summarize, it is obvious that opinions have differed on the actual quality of the lakes and on whether the trend of this quality is downward, stable, or actually showing improvement. As the facility plan points out, the lakes have a complex hydrology, sampling techniques and procedures have varied, and the Three Lakes system has been going through changes inherent to all man-made lakes. EPA's conclusion, based on all these factors and the past studies, is that 1) numerical water quality standards are presently being met in the lakes; 2) the Grand Lake treatment plant discharge needs to be corrected; 3) nonpoint type pollution is the major water quality problem and its control is essential; and 4) the many uncertainties and the risks involved with a do-nothing approach would not be acceptable. Last, EPA believes a "sufficient" water quality control program would be comprised of some type of centralized sewage collection and treatment system in combination with nonpoint controls.

SECTION U

V. Environmental Impact Evaluation of the Alternatives

As with any area, there are a multitude of sewage treatment types and sewage collection system configurations that could be devised to serve the Three Lakes Water and Sanitation District. Obviously, however, the past experiences (of the engineering consultants, EPA, and the State) with treatment plant types and use of easily comparable factors such as cost have served to narrow the possible alternatives down to a reasonable number. In the last phase of this project, prior to issuance of this EIS, EPA and the District agreed that the six alternatives as presented in the facility plan, plus consideration of septic tanks and neighborhood units, sufficiently gave representation to the various environmental, cost, locational, etc., factors that had been of concern throughout the long history of this project.

These alternatives are Do Nothing, Upgrade Existing Facilities, Regional System (original District proposal), Willow Creek Lagoon, North Shore Plant, and Stillwater Creek Lagoon. It is suggested that the reader review the alternatives section of the facility plan (Chapter VI) before proceeding further with the EIS. The facility plan offers specifics (location, plant type, etc.) on each alternative.

As was stated in the beginning of this EIS under "Issues," these alternatives were evaluated and compared on some twenty-four different criteria in the facility plan. This EIS, however, will separately discuss each alternative only in terms of the major issues which are: type of point source control needed; nonpoint source control; the effects of the

alternatives on Shadow Mountain National Recreation Area; water rights; land development; costs; technology; phasing of the system; and septic tanks. The facility plan covers the other evaluation criteria, though further comments will be made on several of them in this separate EIS document.

A special note should be made here on the source of an important segment of data and impact analysis that EPA has used in this alternatives evaluation. As previously noted in this EIS, Grand County, along with the Northwest Colorado Areawide Water Quality Management Project and financial support from EPA, hired COMARC Design Systems to do a detailed land capability study for the Three Lakes area. EPA provided partial funding for the COMARC effort in order to obtain a data-based assessment of existing and potential land use/environmental factors related to the Three Lakes sewerage project. It should also be reemphasized that Grand County intends to use the COMARC analysis to revise its land use plans and regulations--an undertaking that is the basis for the mitigation of impacts associated with wastewater treatment plans for the area.

COMARC and the County have provided EPA with an analysis of sixteen factors associated with the sewage collection system and treatment plant sites associated with the five alternatives under consideration. (The "Do Nothing" alternative was not analyzed by COMARC.) These sixteen factors were land use type, soils, geology, slope, flood hazards, surface water, wildlife, land ownership, subdivisions, jurisdictions, septic tank limitations, construction limitations, slope stability, erosion hazards, runoff potential, and wildfire hazards. The COMARC analysis

was based on 400' x 400' (3.67 acres) cells or units. This level of "site-specificity," though not as detailed as some might desire, offers a level of detail based on actual data that is seldom available for planning areas such as at Three Lakes. This information has been of great benefit in this EIS analysis.

Before discussing each alternative in terms of the major issues, three basic assumptions underlying all alternatives must be explained. These three assumptions deal with population forecasts, Grand County land use control, and the NRA.

First, population forecasts are one of the most difficult aspects of wastewater system planning. In an area like Three Lakes, such unpredictable factors as general economic conditions, transportation cost, a possible ski area, people's preferences for vacation and second home sites, etc., are all variables that would have to be considered as having an influence on the future population of the area. Obviously, these factors make population estimates speculative. For that reason, the population projections presented in the facility plan, based on historical trends, have been deemed reasonable by EPA and the County. The Northwest Colorado Areawide Water Quality Planning Project uses the same figures as the County. The size of the treatment facilities presented in the facility plan appears reasonable and is that used in this EIS analysis.

Second, because there will undoubtedly be some amount of land development due to the provision of sewerage service, the County's willingness to control nonpoint pollution is essential to any alternative, including "Do Nothing." The commitment made by Grand County, which will

be required by EPA before construction funds are granted, to strengthen its land use regulations thus is a basic assumption underlying the project.

Third, because of the realization of the importance of the NRA to the future of the lakes, EPA has assumed that the County and the National Park Service can mutually agree upon a plan for implementing a management scheme for the area. Current negotiations between the County and Park Service give every indication that this is a safe assumption.

The importance of this assumption is that EPA will not approve permanent sewer service to "Neighborhood L" (page VI-43 of the facility plan) until the County and Park Service can agree whether this area, or a substantial part of it, is to be marked for purchase and inclusion in the NRA. This area is a prime candidate for this type of action, and EPA believes that it is proper not to sewer the area in lieu of a NRA decision.

The alternatives evaluation based on the major issues is as follows:

1. Point Source Pollution

Before discussing each alternative in relation to the point source issue, several basic points need to be made. First, all parties basically agree that the present Grand Lake plant, which is currently discharging a substandard effluent, should be abandoned. Specifics on this subject are offered on page V-10 of the facility plan. Obviously, the fact that this present plant represents a water quality problem, the magnitude of which will surely increase, and the fact that its discharge is not meeting legal requirements (discharge permit is being violated) negate the "No Action" alternative.

Second, in terms of the Park Service facility, it should be pointed out that the Park Service has been committed to its abandonment whenever another system becomes available. The assumption here is that equitable service charge and capital improvement fees can be negotiated between the District and the Park Service.

Third, though the actual contribution of point source discharges to degradation of the lakes is not now specifically quantified, sufficient evidence and the past experiences of NHPQ, EPA, and the State lead to the conclusion that the future of the lakes would be much more secure were this effluent not discharged directly to them. The need to discharge effluent in some potentially less degrading manner becomes more important when one considers the fact that the quantity of this discharge will surely grow as the area population increases and that sewage treatment plants invariably are subject to operational problems and mistakes.

Fourth, the question of the extent of a centralized sewage collection system needs to be addressed. A most difficult aspect of this question is that an extensive collection system will bring a larger quantity of sewage to a central point. This sewage is now dispersed in a much broader area via treatment (assuming the system works) by septic tank/leach fields. At the same time, it has to be recognized that septic tanks are currently a problem and that the whole area is generally unsuited for their use. The heavily and more densely built-up areas are particularly worrisome in this regard. In attempting to balance the first aspect against the second, EPA has concluded that concentrating and properly treating area

sewage (especially if no discharge to the lakes is involved) is preferable to continued and probably accelerating use of septic tanks.

Thus, in terms of which specific areas should be included in a centralized collection system, EPA believes the built-up areas identified in the facility plan as D, C, B, A, F, G, H, I, J, and K (page VI-43 of the facility plan) should be given priority for service. Areas E, M, and L are probably less of a priority in this regard, though EPA defers to the Board of Directors, the County, and Park Service on policy for service area priority and will participate in funding of sewerage service to these areas to the extent regulations allow. Area L, however, should not be sewered until the NRA issue can be resolved.

Another important factor that must be considered for all alternatives that include discharge of sewage effluent to the lakes is the possibility that advanced waste treatment might have to be added in the future. Water quality data available at this time does not support a treatment level beyond the secondary stage. However, with the compilation of more data based on more refined and extensive study, coupled with population growth and development in the area, there is a very good chance that a future conclusion would be that some type of advanced treatment is needed. Costs for the alternatives presented in the facility plan are not based on the addition of advanced treatment.

NHPQ furnished EPA with an estimate of the cost of advanced waste treatment for the Upgrade Existing Facilities alternate and the North Shore Plant alternate for use in this EIS. These calculations show the following:

Cost of Tertiary Treatment

Unit Process	Upgraded 0.5 MGD Grand Lake Plant	1.3 MGD North Shore Plant
Ammonia Removal		
(Capital Cost)	$110,000	$200,000
(O&M)	17,500	36,000
Phosphorus Removal		
(Capital Cost)	$161,000	$293,000
(O&M)	16,000	29,500
Multi Media Filtration		
(Capital Cost)	$289,000	$526,000
(O&M)	18,800	34,800
Activated Carbon and Regeneration		
(Capital Cost)	$1,095,000	$1,990,000
(O&M)	17,500	32,400
Total Capital Cost	$1,653,000	$3,009,000
Total O&M	$71,800	$132,700

Though there is no way at present to calculate whether all or part of these advanced treatment components might be necessary, it is a very real possibility that they might be. This consideration has played a role in EPA's and the District's selection of a preference for the Willow Creek Lagoon alternative, which avoids the need for advanced treatment because this alternate actually has an advanced treatment component already included, i.e., secondary treated effluent will be used for hay irrigation.

Given the above considerations, EPA has concluded that:

a. The Do Nothing alternative is unacceptable because it allows substandard sewage effluent to continue to enter the lakes. This situation will lead to water quality degradation.

b. The Upgrade Existing Facilities alternate would require a new treatment facility at Grand Lake which could take in more sewage from presently unsewered areas around the Town of Grand Lake. The Park Service facility, if it were to serve more area than at present, would probably also be inadequate and have to be further expanded or replaced. With one new plant and another new or greatly improved plant there would be two discharges to the lakes, the impact of which, though not quantified at present, would have much more potential to degrade the lakes than a no-discharge system. Also, these discharges would be subject to operational problems and plant breakdowns.

Were this alternative the one constructed it would be logical to expand the collection system to take in the more densely developed areas in the general area around each of the two plants. If this is done the costs of this alternative would soon be comparable, or exceed, those of the alternatives based on a one plant concept.

c. The Regional System and the Willow Creek Lagoon alternatives both have definite water quality advantages over the other alternatives that discharge to the lakes. By discharging below Lake Granby, both avoid the potential problems associated with discharging large amounts of treated effluent to the lakes. Because they each include a type of advanced waste treatment (land irrigation for Willow Creek and percolation ponds for the Regional System), both will avoid possible future costs associated with advanced waste treatment additions.

Both the Willow Creek Lagoon and the Regional System alternatives would serve the more heavily developed areas in the District which are now using septic tanks. The Willow Creek Lagoon, shown in the facility plan as serving neighborhood area "L," would not serve this area if the NRA decision is to purchase private lands located there.

Another distinct advantage of the Willow Creek Lagoon system (also the Stillwater Creek Lagoon) is that aerated lagoons are generally less prone to malfunction and operational error as are more "mechanical" type treatment plants. Also important to these considerations is that, for an area like Three Lakes where the bulk of sewage loads come during a short time period, i.e., the peak summer tourist season of approximately eight weeks, lagoons can more easily absorb and "level out" these peak loadings.

d. The Stillwater Creek Lagoon alternative includes all the same positive factors in terms of point source control as does the Willow Creek Lagoon system (serves areas of concentrated development, uses aerated lagoons) but has the negative feature of discharging to Stillwater Creek, which in turn flows into Lake Granby. It should also be pointed out that Stillwater Creek is a trout fishery and that this resource could be negatively impacted by a sewage effluent discharge.

Though addition of land treatment in the future could be part of this alternative, the lagoon site is not such that it could easily discharge to the main irrigation ditch in the area, i.e., Red Top Valley Ditch. Also, present water quality data is not sufficient to require this measure. The Willow Creek Lagoon, on the other hand, will include land treatment as an additional benefit because the lagoons are

located at a site where their discharge will go into the Red Top Valley Ditch. The water in this segment of the ditch (the lower end) is used to irrigate a large area of hay meadows. Thus, between the two lagoon system alternatives, the Willow Creek system has a "built-in" advanced waste treatment component and does not discharge directly into a trout fishery.

2. Nonpoint Pollution

As discussed, the potential for a sewage collection system to allow increased land development and thus accelerated soil erosion has been one of the most serious objections EPA and others have had with the District's plans for an expanded collection system in the Three Lakes area. Nonpoint pollution has been identified as the major threat to maintenance of the lakes' water quality. Again, the solution to nonpoint water pollution is prevention and not treatment. Prevention of nonpoint pollution, by its nature, involves some type of land use standards for construction, setbacks, slope restrictions, etc.

Because nonpoint control is based on land use regulation, the governmental entities with authority to control land uses must be involved. Thus, Grand County, for private and nonincorporated areas, and the National Park Service and U.S. Forest Service (also some BLM and BuRec), for federal lands, are very much a part of a water quality management scheme for the Three Lakes area.

The U.S. Forest Service is currently preparing a unit plan/EIS for the Three Lakes region under its jurisdiction. They, like all federal agencies, are required to meet water quality standards in their programs.

The Park Service is subject to the same requirements. Both agencies operate under performance standards that fully take into consideration nonpoint water quality pollution control, and both can be expected to meet these standards.

Grand County (as do the federal land management agencies) does not have the same extensive background in land and environmental planning. To the County's credit, however, the County Commissioners and their planning/management staff are making great strides toward placing County land use policy on a data-based and up-to-date basis that fully recognizes local government responsibility to control water quality impacts from land uses under its jurisdiction. The previously referenced work by Colorado State University, by Dr. Lynch and COMARC, and by the Three Lakes Planning Commission under County direction represents a much greater land planning effort than that conducted by many other Colorado mountain area counties.

The Grand County Commissioners are committed to a definite course of action to control nonpoint pollution. The nature of this commitment can be found by reading the letters on this subject found in Appendix A of the facility plan. In EPA's opinion these actions by the County will significantly assist the control of nonpoint pollution in the Three Lakes area. The exact amount of this control cannot be quantified, but the cumulative experience of those involved in this type of pollution control on EPA's staff, and of other agencies involved, leads to the conclusion that effective control can be realized.

EPA requested that COMARC evaluate the erosion potential of each neighborhood area that would be served by the various alternatives

and also to evaluate the erosion potential associated with development along the interceptor (main collection line) associated with the Stillwater Creek, Willow Creek, and North Shore Plant alternatives. The results of this analysis are summarized by COMARC under the "erosion hazard" category of land constraints and are as follows:

Neighborhood	Erosion Hazard
A	Not applicable - this area has few remaining lots - no new construction is anticipated
B	37 1/2% low hazard 62 1/2% medium hazard
C	73.3% low hazard 26.7% medium hazard
D	100.0% low hazard
F	100.0% low hazard
G	96.8% low hazard 3.2% medium hazard
H	100.0% low hazard
I	100.0% low hazard
J	100.0% low hazard
K	100.0% low hazard
L	83.3% low hazard 16.7% medium hazard
M	100.0% low hazard
Interceptor Line	94.2% low hazard 3.3% medium hazard

*Area "E" is not in the COMARC study area.

Due to the level of detail of the COMARC analysis system, i.e., 400' x 400' cells, to the fact that the use of geometric cells leaves a certain amount of land area out of the analysis, and to the fact that it is difficult to quantify exactly the difference between "low hazard" and "medium hazard" (i.e., a low hazard area that is poorly managed can still add a large quantity of sediment to receiving streams), the above calculations must be viewed as approximations of potential impacts. They do, however, offer a picture of the general nature of the erosion hazard associated with development of these areas.

Also, it should be noted that it is not possible at this time to calculate the relative impact of various additional loads of sediment to the lakes. Thus, EPA believes that strict control of all potential sediment sources is necessary if management of the lakes is to err on the "safe side."

It is very difficult to assess the differences between the various alternatives as to how each may lead to accelerated nonpoint pollution (assuming no controls are instigated). In general, EPA believes that provision of a central sewer system will lead to a certain level of development that would not take place without the sewer. There is no doubt, in view of a record of fairly constant rates of development and of a general demand for second homes, resorts, etc., that septic tank limitations have led to a "brake" on some development.

On the other hand, it can be argued that a present lack of a central sewer system has led, and will continue to lead, to more dispersed growth (to meet County requirements of a two-acre lot size for septic tank

use) and, as a result, to extra miles of road crossing more hazardous areas. Proponents of this line of reasoning argue that the central collection system as designed will concentrate growth into certain suitable areas that have been shown to be less erosion prone by the County land use planning process.

EPA's position is that both arguments have merit and that the latter, i.e., concentration of growth along the sewage collection system, coupled with the erosion control performance standards agreed to by the County, is an acceptable conclusion. County land use control thus is the key to nonpoint pollution prevention for the Three Lakes area.

Based on the above reasoning, EPA concludes that the Willow Creek Lagoon, Stillwater Creek Lagoon, North Shore Plant, Regional System alternative, and the Upgrade Existing Facilities alternative (assuming this last one also includes extension of the collection systems) would have similar nonpoint impacts. EPA also concludes that these impacts can be controlled to an adequate degree.

The Do Nothing alternative and the Upgrade Existing Facilities alternative, if no collection line expansion is involved, would lead to less erosion potential but would probably lead to more dispersed development and thus possibly more erosion as a result of extra road mileage. The exact amount of erosion from these alternatives, as with the others, cannot be quantified because of the many unknowns involved. The nonpoint impact of all alternatives must be mitigated by land use controls.

3. The Shadow Mountain National Recreation Area

The impact of a central sewage collection and treatment system could actually impact the NRA in both positive and negative ways. On the positive side, such a system could improve the general land use situation in the area by helping to concentrate development in suitable areas. Also, a system improving point source problems would obviously benefit the NRA by helping to maintain a high level of water quality. On the negative side, uncontrolled growth and development associated with the sewerage system, especially as related to nonpoint controls and to developments located at scenic viewpoints, etc., could also occur.

In terms of the alternatives, the Park Service has not indicated any objection to the basic collection system common to the Willow Creek, Stillwater Creek, and North Shore Plant alternatives. At the same time, the Park Service has indicated a preference for a system that does not discharge to the lakes (see Park Service memo of March 11, 1977, in Appendix A of the facility plan). There is a strong indication, however, based on the previous EIS written on the NRA and ongoing discussions, that the extension of a sewer line south to neighborhood "L" could interfere with plans to add much of that area to the NRA.

Thus, EPA concludes that:

a. The Do Nothing, Upgrade Present Facilities, Stillwater Lagoon, and North Shore Plant alternatives do not meet NRA water quality goals as well as the two alternatives that do not discharge to the lakes.

b. The Regional System, though nondischarging, would sewer areas that may be added to the NRA.

c. The Willow Creek Lagoon alternative, minus service to area "L" until the NRA can be finalized, avoids these other objections.

d. The County's willingness to control nonpoint pollution mitigates the issue of growth associated with the sewer lines.

4. Water Rights

As discussed, the U.S. Bureau of Reclamation and the Northern Colorado Water Conservancy District have been part of the negotiations on the Three Lakes project. Though the alternatives that return treated effluent to the lakes would create no water rights problems, the two alternatives discharging below Lake Granby, Willow Creek Lagoon and the Regional System, are a different situation because this water would be lost to Colorado-Big Thompson storage.

The Bureau of Reclamation and Northern Conservancy District have indicated, however, that the water rights issue involving these latter two alternatives can be resolved. EPA thus believes the water rights issue is one that has been resolved for all alternatives. EPA will expect a final agreement on these matters before proceeding to the Step 2 phase of a Three Lakes sewerage project. (Step 2 is the design phase.)

5. Land Development

The nonpoint pollution issue as related to land development associated with provision of sewer lines has already been discussed. The issue under this section is whether the collection line is actually needed or is basically "speculative" in nature. Before beginning the discussion, it should be pointed out that the same unknowns about potential growth rates, build-out rates, location of development, etc., apply equally to this issue.

EPA believes that the major presently developed areas now on septic tanks present a water quality problem. Every indication is that the majority of these areas are unsuitable for septic tank use and that there have been considerable problems with such systems. Additional discussion on this subject is found on page VI-7 of the facility plan and shows that there are 4,632 population equivalents in these service areas at present (figure excludes areas E, L, and M).

There are a large quantity of undeveloped lots in these same areas. COMARC provided EPA with a listing of the approved subdivisions in these areas, plus those along the interceptor line not included in neighborhood units. This information was compared with County data on the number of the subdivision lots that have been developed to give the following estimate of lots that could possibly be developed:

Neighborhood	Undeveloped Lots
A	53
B	6
C	21
D	130
F	52
G	245
H	144
I	13
J	144
K	297
L	187
M	42
Interceptor Line (common to Willow Creek, Stillwater, and North Shore - Plant alternatives)	584
Total	1,918

The reader should not get the impression that there are 1,918 lots that will immediately be developed as soon as sewer lines are available. Many of these lots are very small and were platted many years ago. A number are not attractive for building, as the light build-out rate on them would indicate, and many would probably be consolidated into larger parcels as has been a common practice in the area. Other factors such as general economic conditions, people's preferences for the Three Lakes area, possible ski area development, etc., are unknowns that will also have significant effects on the area build-out rates.

At the same time, the fact that these large number of lots do exist is a worrisome situation. Perhaps the same situation is common to many other areas as well. One thing that should be pointed out is that many of these lots are in areas the County has indicated are acceptable growth nodules or centers (the area northwest of Grand Lake and the area between Shadow Mountain Lake and Lake Granby) and most are in subdivisions that already contain numerous homes.

Though the existence of the 1900+ lots is one of the most perplexing issues surrounding the Three Lakes project, EPA has concluded that (1) the existing unsewered development is at such a density in much of the area that sewering is justified and (2) that Grand County's updated land planning and proposed regulations will mitigate developmental impacts to an acceptable level. That the sewer system will concentrate and channel growth, thus tending to limit dispersed and random development, is also a positive factor in favor of the collection system.

6. Cost of Sewerage System

The costs of the various alternatives are fully explained in the facility plan (page VI-34 of facility plan). As can be seen, the bulk of these costs (except for the Upgrade Existing Systems alternate) are for the collection system. The State of Colorado, acting through the Water Pollution Control Commission, sets spending priorities for the federal funds involved in construction of wastewater systems. Most important to this project, the Commission has a policy of only funding treatment plants and main interceptor lines. With this being the case, the Three Lakes Water and Sanitation District would have to bear the bulk of the cost of the various alternative systems (see cost breakdowns for each alternative under Figures VI-2 through VI-10 of the facility plan). It should also be pointed out that the Commission has the flexibility to waive this policy and could fund the collection lines.

The impact of this requirement for a very large District share of the cost for the collection systems of the alternatives is that to build all alternatives, except Upgrade Existing Facilities, the District must find a major source of outside funding. If this funding is not available (the District is pursuing several sources) and if the District maintains its policy of either serving a substantial number of the people within its borders or serving none at all, then an outcome could be that no system is constructed.

Another cost factor to be considered is the burden of the local share on individuals owning property in the District. The figures found on pages VII-11 through VII-13 of the facility plan show the cost per unit

to be $6.60, $4.20, and $1.60 per month, figured on the addition of 20, 40, and 80 new taps a year respectively. (These figures assume the availability of a large outside funding source for the collection lines--the local share is some $1,300,000 already authorized by a local bond election.) These service charges do not appear unreasonable, especially when one considers the inevitable cost of septic tank/leach field maintenance and the increased value of property the addition of a sewer will probably bring.

If the outside funding for the sewers is not found, however, these calculations are not valid. If this occurs, then the District could attempt to gain voter approval for more bond authorization, scale the collection system down, or both. These factors are unknowns and can't be predicted at present but are possible obstacles to completion of a Three Lakes sewerage system.

7. Technological Aspects

There have been three issues associated with the technological or type of "hardware" related to the sewage collection and treatment alternatives at Three Lakes. These issues are (1) use of vacuum lines as part of the lake shore collection system; (2) type of treatment plant best suited for the area; and (3) whether advanced waste treatment (AWT) is needed for the plant that is installed.

First, EPA has concluded that the vacuum lines have too many unknowns associated with their use and maintenance and have the potential to cause unnecessary problems and possibly cause pollution of the lakes. An alternate method of sewage collection using grinder pumps and conventional

"in-the-ground" sewer line is described in the facility plan and is the one EPA prefers.

Second, EPA believes that the best choice for treatment plant type for the Three Lakes area is an aerated sewage lagoon as described in the facility plan under the "preferred" Willow Creek Lagoon alternate and also under the Stillwater Creek Lagoon system. Lagoons offer the advantages of greater simplicity of operation, ability to handle peak period loadings as are characteristic of the Three Lakes area, lower operation and maintenance costs, and the ability to produce an acceptable effluent. It should be pointed out that the Regional System alternative, while not "preferred" because of land use, NRA, and cost impacts, would also have these same advantages as described for the lagoons.

The alternatives based on plant types of a more "mechanical" nature (a bio-surf system is the type described in the facility plan) are, in contrast, generally more complicated to operate, more subject to malfunction and operator error, less able to handle peak loadings (without sewage storage of some kind), and more costly to operate. In an area like Three Lakes these are all very important considerations which have led to a favoring of the lagoon system.

Third, the issue of AWT must be addressed. As mentioned elsewhere in this EIS, present water quality data does not support the need for advanced waste treatment. Though the District, EPA, the State, and the Park Service have all indicated a preference for having effluent not enter the lakes, if possible, there is no data to require other than secondary level treatment with lake discharge.

The problems with this situation are several. First, as this EIS points out, the available water quality data for the lakes is not complete, is somewhat contradictory, and is drawn from a complex and changing hydrologic system. EPA water quality analysts have concluded that in view of this situation it would be best to have the effluent exit the basin.

Also, no assurance can be offered the District that AWT may be required in the future. In fact, with increased human populations in the area, there could be a very real possibility that AWT would be a future requirement. The possibility for future additions of AWT would apply to all treatment alternatives except the Willow Creek Lagoon and the Regional System. Under both of these systems, a form of AWT is already included, i.e., the Willow Creek Lagoon effluent would be used for crop irrigation and the Regional System uses percolation/evaporation basins. This additional benefit of the Willow Creek Lagoon alternative has been an important factor in EPA's, and others', selection of this system as "preferred." All the other alternatives, except the Regional System, would require expensive retrofitting of AWT components.

8. Phasing

EPA's position on sewering Neighborhood Area "L" has already been discussed under the section on the National Recreation Area. This position is that EPA will not approve a sewer line extension or a separate neighborhood treatment plant for this area until the NRA is finalized. At present, there is every indication that Grand County and the Park Service are moving expeditiously on this issue and that a NRA plan should be agreed upon soon.

The other "phasing" issue concerns the already discussed matter of the District having enough funding for the 25% local share of the project. If the Willow Creek Lagoon alternative is given final approval following completion of this EIS process, then the District is still some $2 million short of having sufficient funds for construction. As explained, the major expense is for the collection lines which the State Water Pollution Control Commission has, in the past, chosen not to fund. Also, as mentioned and as discussed in the facility plan, the Board of Directors of the Water and Sanitation District have stated that if they don't get the additional funds to construct the collection system they will petition the State Legislature to dissolve the District.

The results of not getting the additional money, though this is speculative, would be that the Three Lakes District could go out of existence and the burden of providing sewage service would fall to the four smaller sanitation districts located within the Three Lakes District's boundaries. If this were to occur, the benefits of the centralized system would be lost and there would be a great loss of time and effort with a resultant negative impact on a process that has gone very far towards developing an integrated water quality planning and control arrangement which is somewhat unique to the State of Colorado.

Because funds to make up the District's shortfall are not assured, EPA has urged, and will continue to urge, the Board of Directors of the District to be somewhat flexible in terms of possible phasing of the selected system. In terms of the Willow Creek Lagoon alternative, for instance, a considerable initial savings could be realized by not building

the proposed neighborhood treatment units and by eliminating segments of the collection system. Though this action would require a much closer evaluation (the financial arrangements would have to be refigured because of fewer service fees being generated), it could mean the difference between construction of a needed system and the construction of no system. Though EPA has found the environmental impacts of all components of the "preferred" Willow Creek Lagoon to be acceptable, the funding situation leads EPA to encourage the District to be flexible in the possible phasing of its construction.

9. Septic Tanks

As discussed in the facility plan (page VI-23), the District is not interested in being involved in an extensive program of septic tank management for the area. It has been suggested that a septic tank management program, with the District actually involved in the construction and maintenance of individual septic tank/leach field systems, could be a treatment alternative used in lieu of a centralized sewage collection and treatment system.

Though such a management system has certain benefits associated with it (cost, for example), EPA has concluded that the Three Lakes area is generally unsuitable for widespread septic tank use. Grand County has repeatedly told EPA about septic tank problems in that region and is adamantly opposed to any large scale septic tank program. COMARC also performed a "septic tank limitation" analysis with the following results:

Neighborhood	Septic Tank Limitation
A	no data
B	100% severe
C	100% severe
D	100% severe
F	100% severe
G	100% severe
H	100% severe
I	100% severe
J	100% severe
K	100% severe
L	100% severe
M	100% severe
Interceptor	97.5% severe
(Willow Creek Lagoon)	2.5% no data

EPA will be the first to admit that the scale (400' x 400' cells) of the COMARC analysis is such that there are undoubtedly areas where septic tank use is quite acceptable. Obviously, many septic tanks are functioning properly at present. The above analysis, however, coupled with Grand County's communications on septic tank failures, leads EPA to conclude that widespread use of this type of system will probably lead to increasing water quality problems.

The various alternatives vary in their relationship to numbers of septic tanks that would be in use. No Action would obviously continue present, and undoubtedly increased future, dependence on these systems. The Regional System, on the other hand, would eliminate the greatest numbers of their use. The other alternatives would provide for more of a mix between sewered homes and those on septic systems. It should be again pointed out that the centralized collection system, by concentrating growth in a specific area, tends to help control more random and dispersed growth that would rely on septic systems.

10. Other Environmental Considerations

Several other aspects of the Three Lakes project need to be briefly discussed here. These include:

a. Archaeological resources - EPA funded a ground survey of archaeological and historical resources. A report on the findings of this work has been furnished the State Archaeologist, National Park Service, U.S. Bureau of Reclamation, and U.S. Bureau of Land Management. Any grant for actual construction of a sewerage system will be conditioned to assure protection of these type of resources.

Two prehistoric sites were located, at a "neighborhood" area and at one of the lagoon sites. A lagoon site also contained one isolated prehistoric item and one small concentration of prehistoric debris. Grant conditions will require test excavation of the neighborhood site before construction and professional monitoring of construction at the lagoon site.

b. Relationship of the Three Lakes Water and Sanitation District to other water and sanitation districts within its boundaries and with the National Park Service - A Three Lakes centralized sewerage system would take in four other existing sanitation districts and National Park facilities. Though no final agreements have been worked out between these parties and the Three Lakes District for acquisition of existing facilities, service charges, etc., EPA assumes that any difficulties that might arise can be solved. Any final EPA grant for construction of facilities would require that these matters be resolved.

SECTION VI

VI. The Preferred Alternative

EPA, the District, State, National Park Service, Bureau of Reclamation, Grand County, and others have worked long and hard to resolve the complex issues involving water quality protection and provision of improved sewerage service for the Three Lakes area. This EIS is only the "tip of the iceberg" of the work that has gone into this project.

As stated, the EPA Regional Administrator has selected the Willow Creek Lagoon alternative as a "preferred" system. The other agencies involved have also agreed that this is the preferred system. The reasons for this selection are:

1. The Willow Creek Lagoon alternative would provide service to the major areas of concentrated development in the area. These areas are ones of concentrated septic tank use.

2. Grand County will control nonpoint pollution arising from land development. Though development will surely tend to concentrate along the sewer line system, this concentration is compatible with County growth plans and, in fact, assists the County by helping channel growth to suitable areas.

3. The Willow Creek lagoon discharges out of the Three Lakes basin. Though neither EPA or the State can quantify the impact of discharge to the lakes, everyone agrees that it would be preferable to not discharge to them if possible. This system thus offers definite point source-related water quality benefits.

4. The Willow Creek Lagoon system offers advanced waste treatment via use of effluent (summer during peak loads) on hay meadows. AWT may well have to be added to the other alternatives at a future date at considerable extra expense.

5. The Willow Creek alternative uses aerated lagoons. Lagoons offer the advantages of operational simplicity, less O&M cost, and the ability to handle peak loads such as those that occur at Three Lakes.

6. The Willow Creek Lagoon would be located in an unobtrusive area away from the sensitive shoreline areas of the lakes.

7. The Willow Creek Lagoon collection system, pending resolution of the neighborhood "L" negotiations, is compatible with Park Service plans for the NRA.

8. The water rights issue has been resolved.

9. The Willow Creek Lagoon alternative has the possibility of being "phased" if the District's additional funding requirements are not found.

SECTION VII

VII. Irreversible and Irretrievable Commitment of Resources

Several commitments of resources have been identified with the implementation of a wastewater treatment facilities plan for the Three Lakes area. The extent of this commitment varies among the alternatives considered. These commitments are necessary elements of the wastewater treatment systems but must, however, be viewed in relation to the various mitigative measures associated with them. These resource commitments are (1) commitment of energy and economic resources and (2) commitment of land areas to permanent sewage treatment facilities.

EPA does not believe that the treatment alternatives further commit any land areas to future use for housing and/or commercial development. The areas to be served have already been committed to these uses by the local land use control authorities, and no changes, with the possible exception of certain southwest shore of Lake Granby areas, are anticipated. EPA, as stated in this EIS, will not approve sewer facilities for this area until the NRA issue can be resolved between the Park Service and Grand County. It should also be pointed out that Grand County favors the "preferred" Willow Creek Lagoon alternative because it is compatible with its land use plans.

The major mitigative measure related to all alternatives is Grand County's commitment to control nonpoint pollution from developmental activities that may be related to provision of a sewage collection system in the area. This commitment is key to EPA's selection of the "preferred" alternative and is key to the long-term protection of the water quality of the lakes.

In terms of commitment of land and associated resources (wildlife, etc.) to sewage treatment facilities, the Do Nothing alternative would have no impact. The Upgrade Existing Systems alternative would also have no impact unless in the future additional lagoon area was needed at the Park Service facility. In that case additional land area, possibly of the environmentally sensitive lake shore area type, might be required. The Regional System would require the use of 28 acres of land below Lake Granby. This plant site is highly visible and would comprise some intrusion on visual resources.

The North Shore Plant alternative would require use of approximately 3.7 acres of federal land on the north shore of Lake Granby. Though the area is already heavily impacted by the presence of Colorado-Big Thompson pumping facilities, a sewage treatment plant would be very obtrusive and probably considered as an aesthetic detriment by many.

The Willow Creek Lagoon alternative would require the commitment of 33.1 acres of lands presently used for livestock range (all but approximately 10 acres is federal BLM land). COMARC (ref. No. 3) analyzed this site and found no significant impact on wildlife resources, though there would be a loss of small game residing in the area and a loss of a small area of big game habitat, principally deer winter range. The area is located away from areas of heavy travel and visitation, however.

The Stillwater Creek Lagoon alternative would require the commitment of 29 acres of private land now used for irrigated hay. These 29 acres would also comprise that amount of loss of general deer winter range.

Unlike the Willow Creek Lagoon site, lagoons under this alternative would be in open land and much more visible to the general public.

Though none of the alternatives are large users of energy, there are relative differences (see page VI-36 of facility plan). The Do Nothing and Upgrade Existing Systems alternatives are low energy users, while the two alternatives using lagoons and the Regional System use moderate amounts. The North Shore Plant, on the other hand, uses a high amount of energy relative to the other alternatives and thus would require much higher operating expenditures by the District.

The economic commitments of each alternative are discussed under Tables VI-4 and VI-5 and under Figures VI-5 through VI-10 of the facility plan. While there are large calculable differences in cost between treatment, collection, and O&M components of each alternative, it should be pointed out that the probable negative water quality impacts of the Do Nothing alternative and the possible impacts of the alternatives discharging to the lakes cannot be quantified in terms of dollars.

SECTION VIII

VIII. Relationship Between Short-term Uses of the Environment and the Maintenance and Enhancement of Long-term Productivity

Wastewater generation and the necessary management and disposal of wastewater is a long-term fact of life. The proper management of this wastewater in the Three Lakes area and the subsequent water quality benefits constitute the basic maintenance and enhancement of long-term productivity associated with this sewerage project. This long-term productivity is viewed as maintaining a high level of water quality in the lakes and as assuring the compatibility of the sewerage system with the National Recreation Area and County long-range land use plans.

None of the alternatives considered here can be considered a strictly short-term use of the environment with the exception of Do Nothing. Do Nothing can only be a short-term situation because the present Grand Lake treatment plant discharge is in violation of its Federal Discharge Permit and thus will not be allowed to continue. The other alternatives reinforce the use of the land areas to be served as sites for housing development and other development.

SECTION IX

IX. References

1. Nelson, Haley, Patterson, and Quirk, "Three Lakes Regional Planning Study," Greeley, Colorado, 1973.

2. Grand County Department of Development, "Data On Three Lakes Area Land Use and Subdivisions," Hot Sulphur Springs.

3. COMARC Design Systems, "The Three Lakes Prototype Study Area," San Francisco, California, May, 1977.

4. National Park Service, U.S. Department of Interior, "Master Plan For Shadow Mountain National Recreation Area," Denver, Colorado, May, 1975.

5. U.S. Environmental Protection Agency, "Draft Water Quality Analysis -- Grand Lake, Shadow Mountain Lake, Lake Granby, Colorado," Denver, Colorado, January, 1975.

6. Nelson, Haley, Patterson, and Quirk, "Final Environmental Assessment Three Lakes Water and Sanitation District Master Plan," Greeley, Colorado, February, 1975.

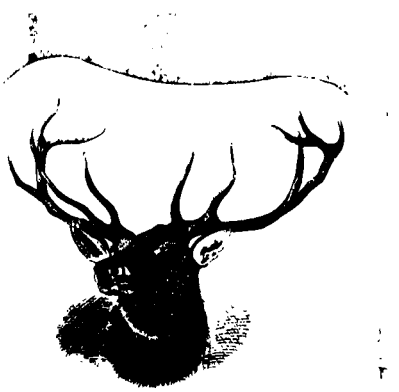
7. Rocky Mountain Center on Environment, "Environmental Assessment Wastewater Treatment Facilities Plan Three Lakes Water and Sanitation District," Denver, Colorado, May, 1977.

8. White and Burke, "Review And Analysis of Grand County, Colorado, Land Use Laws Related to WAter Quality Protection," Denver, Colorado, January, 1977.

9. U.S. Environmental Protection Agency, "Staff Position On Three Lakes Project," Denver, Colorado, August, 1975.

10. Letters of Comment from various agencies and groups on "Final Environmental Assessment Three Lakes Water And Sanitation District Master Plan," 1975.

11. Grand County Department of Development, "Three Lakes Plan," Hot Sulphur Springs, Colorado, July, 1977.



SECTION X

Department of Local Affairs
Colorado Division of Planning
Philip H. Schmuck, Director

Richard D. Lamm, Governor

November 14, 1977

Mr. Alan Merson, Regional Administrator
U.S. Environmental Protection Agency
1860 Lincoln Street
Denver, Colorado 80203

SUBJECT: Draft Environmental Impact Statement
Three Lakes Wastewater Treatment Facilities

Dear Mr. Merson:

The Colorado Division of Planning has reviewed both the facility plan and the draft environmental impact statement (DEIS) for the proposed Three Lakes Wastewater Treatment Facilities. We share EPA's belief that a regional wastewater treatment and collection system is vital to the continued protection and improvement of the water quality in the Three Lakes region. However, we must point out that the DEIS is inadequate in either identifying or discussing the secondary or indirect effects that could result from construction of such facilities.

The rules and regulations covering EIS preparation state that:

> "...the effects of the proposed action on population and growth may be among the more significant secondary effects. Such population and growth impacts should be estimated if expected to be significant and an assessment made of the effect of any possible change in population patterns or growth upon the resource base, including...public service, of the area in questions."[1]

1 This would seem particularly appropriate to Three Lakes in view of a Council on Environmental Quality (CEQ) report which argued that, "sewers (have) a powerful effect on the location, pattern, and timing of...residential development."[2]

These concerns are not adequately addressed by either the facility plan or the DEIS. As for the 3283 undeveloped lots that currently exist within the Three Lakes Water and Sanitation District boundaries (page 53), the DEIS only states that "provision of sewer lines may make these lots...much more "developable" than if no sewer were available (p. 51)." This is hardly illuminating in that

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[1] Section 1500.8 Content of Environmental Statement (a)(3)(ii), page 20533, Federal Register, Vol. 38, No. 147.
[2] The Growth Shapers, Urban Systems Research and Engineering, Inc., Washington, D.C., May 1976, p. 48.

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Grand County's zoning resolution presently requires a minimum of two acres for residential building in unsewered areas--a size that is considerably larger than most of the undeveloped lots (Table IV-5, pp. IV-24 and IV-25).

The facility plan argues that the secondary growth impacts for Alternatives 4-6--all of which are regional in scope--will be minimal "because the interceptor (sewers) will give Grand County the opportunity to encourage replatting of inactive subdivisions in close proximity to the interceptor and (will) encourage new growth to locate in suitable areas close to existing facilities and utilities (p. IV-21)."

2 While this would appear to be an admirable objective, unfortunately, it is at best a remote possibility as the DEIS points out on page 39. Replatting could only be accomplished with the subdivider's approval and that person would be less inclined to do so in view of the increased value that the land would be worth with a central sewer. The aforementioned CEQ report estimated that sewered, vacant land in suburban communities is worth from two to four times as much as equivalent unsewered land in the same communities. Since the Three Lakes region is a popular recreational area, that figure might be even higher.

Hence, in order to adequately address secondary or indirect impacts, the following topics must be dealt with:

A. Population. The facility plan states that a "potential peak population of 9377 persons was projected for the study area by the year 2000." When motel and camp residents were added, the total population figure swelled to 13,400(p. IV-16). However, as far as we can determine, these figures were arrived at independent of any consideration involving added population encouraged by a regional sewerage system. Since the differences between Alternatives 1-2 and 3-6 are significant (in terms of the size of the collection systems), it is difficult to believe that the above-stated population figures will be the same for all six alternatives.

3

B. Pattern of Development. In addition to the facility plan's remarks on replatting of inactive subdivisions, the DEIS adds "that the provision of a centralized sewage collection system can channel and concentrate growth into areas deemed acceptable and suitable for it (p. 12)." In support of this idea, the facility plan identified fourteen such "service" areas for Alternatives 3-6 (Figures VI-7 through VI-10 of the Facility plan).

4

However, neither the facility plan or the DEIS indicated how the four alternatives would have affected development patterns within the neighborhood. Also, are we correct in assuming that the collection line system is identical for Alternatives 3-6?

Finally, since the service areas or neighborhoods are almost all interconnected, what conditions are present to reduce the intensification of sprawl development along the western shore of Shadow Mountain Reservoir and Lake Granby?[3]

C. Location of Development. Based on the DEIS figures (p. 51), the Three Lakes Water and Sanitation District proposes to serve 1900 units (residential, motel and campground) at the outset. How will these 1900 taps be allocated among the fourteen neighborhoods (again assuming that the collection systems are identical for the fourteen service acres)? 5

D. Timing of Development. As far as we can determine, Alternatives 3-6 would not be appreciably different in affecting the timing or rate of growth. In fact, neither the DEIS nor the facility plan addressed the relationship between the regional system's presence and its possible effect on the area's growth rate. This is a glaring shortcoming in view of the potential impact that growth encouraged by such a system could have on the public costs for streets and highways (especially U.S. 34), police and fire protection, schools and hospitals. 6

E. Phasing and Fiscal Costs. Related to the timing question, the issue of phasing is inadequately covered in both the facility plan and the DEIS. We believe phasing is necessary both for the reason given above (i.e. to achieve "manageable" growth rates), and because of the Three Lakes Water and Sanitation District's financing problems. The aforementioned CEQ report, The Growth Shapers, argues that:

7

"Breaking down a project into successive stages of construction (i.e. phasing)...has two side effects. First, it confines immediate development to smaller areas and reduces leap frogging. Second, the resulting population forecasting period is shorter; it therefore allows for more accurate population projections and gives flexibility if population growth departs from predictions. Such phasing, if intelligently planned, is unlikely to increase project costs significantly. Any increased costs should be balanced by the benefits of better community planning and a lessening of the immediate financial burden of the project on present residents."[4]

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[3]The CEQ reports, The Growth Shapers states that "in areas with heavy growth potential, local level zoning and planning processes often cannot control the development pressures which sewers release (p. 48)." In a similar vein, the Colorado Supreme Court ruled in the Robinson vs The City of Boulder case that a "sole and exclusive provider of water and sewer" (which the city was) could not deny services to a landowner unless there was a "utility related reason" (such as insufficient treatment plant capacity). Hence, if Grand County's zoning resolution permits development outside of the fourteen neighborhoods, and if the development is close to the collection lines, the Water and Sanitation District will have to provide service. (Pacific Second Series, Vol. 547, p. 232)

[4]Ibid., p. 55

Since the system's major expense is its collection lines (an item the State Water Quality Control Commission has not funded in the past), it would be useful to present a seventh alternative that considers a scaled down collection system. We believe this is a reasonable request, in view of Figures VI-2 through VI-4 (of the facility plan) which show collection lines being planned in areas that appear to be vacant (most notably in Service Areas "G", "H", and "I" in Figures VI-3 and "K" in Figure VI-4). A reduction in the size of the collection system, along with the elimination of the proposed neighborhood treatment units (suggestions made by EPA), would relieve the Water and Sanitation District of most of its financing problem. It would also make the entire project more economically feasible--not to mention, environmentally more attractive.

F. Ski Area at Bowen Gulch. The DEIS on page 35, and again on page 60, raises the possibility of ski area development at Bowen Gulch. However, the DEIS avoids analysis by arguing that "Bowen Gulch development is speculative...(which)...makes evaluation of its possible relationship to a sewerage system equally speculative." Based on a preliminary assessment, we believe that the development of Bowen Gulch for winter sports would be compatible with many of the goals of the State of Colorado. Therefore, we feel that the final environmental impact statement should address the possible impacts that a ski area could have on the effectiveness of the Willow Creek Lagoon system (especially if effluent discharge into the creek is greatly increased).

8

In addition to the DEIS's shortcomings on secondary or indirect effects, we would also like to take exception to a statement in Section 7 (Irreversible and Irretrievable Commitment of Resources). The DEIS states that "EPA does not believe that the treatment alternatives further commit any land areas to future use for housing and/or commercial development. These areas to be served have already been committed to these uses by the local land use control authorities, and no changes, with the possible exception of certain southwest shore of Lake Granby areas, are anticipated." (p. 109)

9

This is a decidedly misleading argument in that it contradicts an earlier DEIS position (previously quoted in this letter) which stated that provision of sewer lines could make the (undeveloped) lots more "developable". It also conveniently forgets to inform the reader that many of the existing undeveloped lots could not be developed because they are not large enough to meet the county's two-acre minimum lot size. This is a minor point perhaps, but we strongly feel that the DEIS should not downplay the potential influence of the Willow Creek Lagoon system in the Three Lakes region.

This potentially significant influence should have been discussed in Section 9 (Relationship Between Short-term Uses of the Environment and the Maintenance and Enhancement of Long-term Productivity). While proper management of wastewater in the Three Lakes area will constitute an improvement in water quality, it will

also result in a change in the "quality-of-life" for the current residents of the area. The existence of an extensive treatment and collection system will encourage what we feel will be major development pressures. Whether these growth pressures will reduce long-term productivity is an unanswered question--but one that deservesconsideration nevertheless.

In conclusion, we feel that much of the success or failure of the Three Lakes Wastewater Treatment Facilities System rests with Grand County. We applaud EPA's efforts towards development of adequate non-point source pollution controls, and we are encouraged by the county's willingness to consider these and other land use measures. The formation of a strong Three Lakes area unit plan, backed up by revisions in the county's zoning resolution, partially hold the key to insuring orderly growth of this important recreational area. These, together with phased development of a regional wastewater treatment and collection system, can serve as a model of what land use planning can achieve in Colorado.

Very truly yours,

Peter Naseth
Planner

Reviewed: _____
Philip H. Schmuck, Director

PN/vt

Response to State Division of Planning:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VIII
1860 LINCOLN STREET
DENVER, COLORADO 80203

FEB 1978

Ref: 8W-EE

Mr. Peter Naseth, Planner,
Department of Local Affairs
Colorado Division of Planning
520 State Centennial Building
1313 Sherman Street
Denver, Colorado 80203

Dear Mr. Naseth:

Thank you for your comments of November 14, 1977 on EPA's draft environmental impact statement on the Three Lakes Sewerage Project and on the Three Lakes Water and Sanitation District's Wastewater Treatment Facility Plan on which our EIS was written. We appreciate your agency's recognition of the land use and environmental aspects of this project and assure you that resolution of problems associated with these aspects have been in the forefront of our long and not always easy negotiations with all those local, state and federal agencies involved in the Three Lakes area. EPA's concern over potential adverse secondary effects of the Sanitation District's proposed sewerage system has, in fact, been a major factor leading to the long period of deliberation over the project....

At the same time, it is only because we now believe that these potential secondary impacts can be satisfactorily mitigated that we have been able to issue a draft EIS and to move forward with the proposal.

Before addressing the specific comments made in your letter, we would like to first briefly explain the major points of our thinking on this project. These major points include:

1. Our concern with secondary growth, as possibly related to the provision of sewerage service, and the effect of this growth on the area's land uses and environment was the major reason for our refusal to approve the Sanitation District's original regionalized sewerage plan. Specifically, we believed that possible growth, in the absence of local land use control, would lead to a worsening of non-point (erosion and sedimentation) pollution in the lakes. Also, we believed that possible growth along the lakes would conflict with National Park Service plans for the Shadow Mountain National Recreation Area.

We should emphasize that our involvement in local land use affairs has been basically associated with our authorities in water quality protection (in this case as related to not only sewage treatment but also to the aforementioned impact of sewerage system related growth on accelerated non-point pollution).

2. We have come to the conclusion that a centralized sewerage collection system (one serving the main "built-up" areas) and one that does not discharge effluent to the lakes is needed for the long-term protection of the water quality of the lakes. Conversely, continued use and additions of septic tanks in large concentrations, continuation of the Grand Lake sewage plant discharge, and the addition of probably another substantial sewage plant at the North Shore area (with lake discharge) are not thought to be desirable. Non-point control, of course, must be an essential part of any water quality plan for the area.

The proposed sewerage system as described in the EIS has the following advantages: (a) serves heavily developed areas now relying on septic tank systems; (b) avoids the situation of having two major sewage treatment plants both discharging to the lakes (two plants would probably result because of high development concentrations at Grand Lake and again at the "north shore" area); (c) avoids any lake discharge of sewage effluent (effluents will only increase in the future), and; (d) provides a safe and reliable treatment method with low O&M, capacity for reasonable future growth, and offers land treatment during the high load summer season.

3. We have realized that the provision of a centralized sewerage system will no doubt play a role in allowing a certain amount of "new" growth in the area. Neither EPA nor local government can, however, predict the actual amount of growth that will be associated with sewering additional parts of the Three Lakes area.

We have accepted the fact that a certain amount of growth will inevitably occur due to the availability of sewers because Grand County has, and continues, to make impressive progress in the area of local land use planning for the area and thus will be in a position to mitigate the impacts of this growth. Most important, Grand County has reached agreement with EPA and the Sanitation District to implement actual controls needed to mitigate our concerns over potential environmental damage related to secondary growth.

Grand County's efforts in the land use area have, in fact, been the basic factor leading to resolution of differences on this project. Again, though we can only agree that the sewerage project will lead to some level and type of secondary impact, we believe that these impacts can be satisfactorily mitigated by the County.

Specific actions that Grand County, in cooperation with the Northwest Colorado 208 Project and others, have taken include:

a. Institution of the COMARC Design Systems computerized land use/environmental planning and analysis process for the Three Lakes area. This system has resulted in a set of detailed "source" maps and data files (soils, land uses, topography, cultural features, proposed sewerage facilities, etc.), a number of "interpretive and suitability" maps (septic tank limitations, erosion potential, aspect, flood prone areas, proximity to roads, etc.), and a number of "issues" maps (environmental limitations, development suitability, etc.) In our opinion, the COMARC system has given Grand County one of the more data-based and detailed planning and management tools of any rural county in Colorado or of many other states, for that matter.

b. Grand County is now working on revisions to its land use regulations which the COMARC process and County experience have shown to be necessary. Part of the County's activity is also based on the findings of an EPA-Grand County cooperative study titled "Review and Analysis of Grand County, Colorado, Land Use Laws Related to Water Quality Protection," by the Denver law firm of White and Burke. As stated on the draft EIS, enactment of certain land use controls as discussed by White and Burke and as discussed by EPA and the County in the letters appended to the Facility Plan must take place before EPA will approve Step II (design) or Step III (construction) of any wastewater facilities at Three Lakes.

We do not pretend that our efforts will lead to some "perfect" level of future land use control at Three Lakes. Poorly planned and environmentally damaging development may occur in the future despite everyone's good intentions. We are saying, however, that in our opinion., the combined efforts of all involved in the seven plus years of deliberation over the Three Lakes sewerage project has resulted in a great improvement in land use planning and environmental protection for this area and that the sewerage project, as proposed, is compatible with these goals.

Responses to your specific comments are as follows (we have numbered your comments to correspond to our response):

(1) One thing that should be clarified about the 3283 lots and 2-acre minimum lot size for unsewered areas is that the 2-acre standard applies only to areas receiving subdivision or building approval after 1972 (the date when the County enacted this regulation). For lots approved prior to 1972, a category into

which most of the 3283 lots fall, a septic tank/leachfield system may be used if State Health regulations are met (100' distance from well to leachfield plus adherence to design specifics for the leachfield, tank, etc.). We admit to sharing the idea that the use of septic tanks was strictly related to the 2-acre minimum lot size and incorrectly conveyed this in the draft EIS. We have only recently been corrected on this issue by Grand County via their review of the draft EIS.

It should also be pointed out that the figure of 3283 undeveloped lots is derived from a calculation of all undeveloped lots in Grand County planning area "c". Many of these lots are not in close proximity to the proposed sewer lines and are not being considered for service by the Sanitation District. We believe a much better number for undeveloped lots that could be served by the proposed system is that found on page 97 of the EIS, i.e., 1918 lots. This figure was derived by calculating only those lots in areas to be served by the proposed sewers. Though the Robinson Decision may possibly mean that those lot owners not included in the 1918 lot figure could hook onto the proposed system, were they to decide to make the necessary investment, the economic realities of individual lot owners making this decision tend to argue against substantial amounts of this type activity occurring. For purposes of impact evaluation, however, we believe that use of the 1918 figure for estimating possible development potential is more accurate and realistic.

Even though the lots approved before 1972 do not have to meet the 2-acre lot size minimum, we find it very difficult to calculate the number of these lots that might be developed were a sewer line available. For one thing, we do not have the level of soils and geology data that will reveal which lots may or may not meet State septic tank leachfield standards at present and thus aren't being developed for this reason. The best we have been able to do is to calculate that the area is generally "unsuitable" for such use while, at the same time, recognizing that a number of these systems are being installed in the area each year after site specific evaluation by the County Sanitarian.

It should be pointed out that a builder, if he chooses to make the investment, can overcome certain of the "natural" restrictions of this land for sewage disposal. This is, in fact, what many people have done in the Three Lakes area at present.

On the other hand, there are currently a probable number (?) of lot owners who are holding off building decisions until the sewer issue can be worked out. Common sense would dictate

that you not make a substantial investment in a septic system only to abandon it after a short period of use. How many people there are of this type, we do not know.

In Grand County's opinion, (personal conversation with Leroy Scott, Director of Development) provision of sewer lines may initially lead to a release of certain amount of presently "pent up" building demand owing to a present lack of such service. No attempt to quantify this demand has been made. The County is also of the opinion that once this initial build-out occurs growth will then level off to match expected County growth forecasts. The County does accept the population growth estimates as presented in the draft EIS and Facility Plan and as stated, believes that a new sewerage system will not appreciably effect this long-term figure.

Another factor that should be considered is that sewer service is already available in the Grand Lake-Columbine Lake areas yet substantial unbuilt-upon lots exist in these areas. It would appear that the existance of an available centralized sewer system is not the only reason these lots aren't being developed. Thus, it would appear that the existence of the Grand Lake sewerage system in combination with the probable ability of many of the 1918 lot owners (numerous individuals may own more than one lot) to meet State septic tank regulations already provide for a substantial amount of potential growth in the Three Lakes area, at least as related to availability of sewerage service.

The question still remains, "How many of the 1918 lots will be developed if sewer lines are greatly expanded in the area?" Surely all 1918 won't be built on, at least initially. For purposes of discussion, we could assume that if the sewerage system is constructed, then one-third of those lots will be built on within 5 years (a risky assumption at best, given the uncertainties of people's preferences, economics, ski area development, etc.). If this build-out rate were to occur, the resulting population (figured at 3.0 people per household) would be approximately 1918 people. Assuming an approximate 3 to 1 ratio between summer and permanent residents (roughly the ratio used in the Facility Plan), this would result in about 639 new permanent residents and an additional 1279 summer residents.

Because there are less than 533 permanent residents in the area at present, and this figure has only grown very slowly in the last 10 years or more, it is hard to visualize provision of sewer service leading to a more than doubling of this number. It would probably require development of a ski area at Bowen Gulch, an undertaking that is purely speculative at this time, to provide the economic base to support this many new permanent residents. The addition of summer homes, with some level of year-around use, might more realistically be the type development that actually takes place.

(2) As you point out, we do not share the belief as stated in the Facility Plan that the provision of sewer lines will necessarily lead to any wholesale replatting of old subdivisions and thus a lessening of secondary growth impacts. We have instead attempted to evaluate impacts from the proposed project based on the possible development of lots as they now exist.

Grand County has, however, expressed their belief (Stan Broome, County Manager) that provision of sewers may lead to a certain amount of "replatting." They base this opinion on the belief that a central sewer will make certain of the areas of very small lots more attractive for higher density development. The County believes that if this occurs, it will be an environmental benefit because it will allow the County to exercise strong control over the new development via their PUD and subdivision regulations. In view of the work the County is now doing in land use and environmental planning we tend to agree that there could be some very real benefit in replatting. We would not, however, want to convey the impression that we believe this potential activity is certain to occur.

A major point to be discussed in regards to the proposed sewerage project as it relates to location of growth in the service area is whether or not this growth will occur in environmentally acceptable areas and whether or not this location would be compatible with local land use plans. A related issue is whether or not the means exist to mitigate growth impacts if it is found that such growth might be allowed to occur in unacceptable (soils, slope, etc.) type areas.

In terms of the compatibility of the sewer line to local land use plans probably everyone is in agreement that new development will tend to locate in areas that have ready access to the sewer lines. First, it should be pointed out that Grand County believes that the proposed sewer lines are compatible with its on-going land use plans and projections for the area (see letter no. 10 and 12 in the appendix of the Facility Plan). Also, the County believes that they can control the growth as it materializes.

In our opinion, the sewer lines, as proposed, will have the following effects: (a) will tend to concentrate the growth that does occur and thus help dampen tendencies for random and dispersed development with this type development's attendant impacts (excess road building, loss of wildlife habitat, etc.); (b) will not greatly impact development along the immediate west shore of Shadow Mountain Reservoir because little "developable" land remains in this area; (c) will not encourage extensive development along

the west shore of Lake Granby because of extensive public lands along this shore-line and because of EPA's position of not approving the southern extension of the interceptor to Area "L" (at least until the NRA issue is settled), and; (d) will tend to focus development into the two general areas, i.e., Grand Lake/ Columbine Lake and the North Shore of Lake Granby which are both areas where land use planning for the area recommends growth be located.

We are, of course, basing a certain amount of these opinions on land use on Grand County's efforts to improve its land use planning. Again, neither EPA nor the County wants to paint an over-optimistic picture that there will suddenly be a complete switch away from what many consider present land use abuse in the Three Lakes area. We do believe, however, that the County is moving in a very positive manner in these regards and that their efforts should result in a more orderly and environmentally acceptable situation in the future.

(3) As you know, population projections are one of the most difficult aspects of any planning or EIS analysis and Three Lakes has proven no exception. In terms of our own analysis for this project, we have found no reason to question the year 2000 population figure of 9377 as used in the Facility Plan. Grand County and the Northwest Colorado 208 (see attached letter from the NW 208) also agree that this is a reasonable "planning" figure. The 9377 figure was derived independently of the assumption that an expanded sewer system would lead to a higher population than would result if the system were not built. As stated, the County and the Sanitation District do not believe that construction of the system will effect the total number of people who may live in the area.

In our opinion, the availability of a centralized sewerage system will make it easier and more desirable to build in the area. The amount of this induced activity is impossible to estimate but, if the figures we used earlier in our response make any sense, the induced growth would be well within that predicted by the Facility Plan, i.e., 9377 by the year 2000. Actually, if single family residences were constructed on all 1918 lots to be served by the sewer lines (at 3.0 people per residence), this would result in 5754 people. Again, this is considerably less than the figure used in the Facility Plan.

Also, it should be pointed out, that practically speaking, the real differences among the various alternatives in allowing growth in the area (ultimate numbers) is between the "Do Nothing" alternative, on one hand, and all the other alternatives, on the other. We would include Alternate 2, "Upgrading Existing Facilities"

along with Alternatives 3-6 because sewer lines could be extended from the two existing plants (upgraded) to cover nearly all the same service areas as covered under the other sewer line alternatives. One of the tough problems with this project all along has been how to best serve those areas already heavily built up. The result of our thinking on this problem has been the conclusion that whether you build one treatment plant or two, many of the present unplatted lots are in close enough proximity that sewers could be extended to them, albiet at increased cost, increased O&M, etc. for 2 plants as opposed to one. Two plants with lake discharge, however, are much less desirable from a water quality viewpoint than the system proposed.

In our opinion, the 9377 population figure is a high one unless, for instance, a ski area of some size were to be developed in the area. A more realistic ultimate growth figure might be only one-half or less of the 9377 number. Though here too, the many variables involved make these calculations purely speculative.

The real difference, as we stated, in population potential between the various alternatives is probably between the "Do Nothing" alternative and all the others. We would estimate that "Do Nothing" would lead to a permanent and summertime population growing not much larger than at present rates. The population growth associated with the other alternatives would possibly show an initial surge of growth as those who have been waiting on the sewage system take action. In the long run, the central sewer system alternatives will lead to larger absolute numbers of people in the area (possibly the number we have speculated on) as opposed to "Do Nothing."

(4) In our opinion, the sewer system configuration, as proposed, will be a major factor in <u>where</u> development occurs in the Three Lakes area. This tendency for growth to concentrate in areas with close proximity to the sewers is the reason we retained COMARC to analyze the impacts of development of these particular areas at Three Lakes. This informaiton supplied by COMARC is the basis of much of our analysis in the EIS.

Previous land use plans have identified two major "growth" centers in the area. These two are the Columbine Lakes/Grand Lake area and the North Shore of Lake Granby area. A majority of the developed lots that would be served by the proposed system fall in these two general growth areas (these are neighborhood areas D, C, B, A1, A, F, H, I, and J). We have thus concluded that the proposed sewerage system is compatible with general growth location plans for the area. Neighborhood Area "K" is also being considered a probable growth area by Grand County and it, too, is the location of a considerable amount of existing development.

Neighborhood Area "L" is the one we will not authorize for sewering (or possible individual treatment system of some type)

until the NRA issue can be worked out. The resolutions from the Sanitation District as found in Appendix A of the Facility Plan show that they basically agree to cooperate on this issue.

Figures V1-2 through V1-4 show the configuration of the proposed sewage collection lines for each neighborhood area. These figures are the best indication we have as to where growth will probably locate as related to proximity to sewer lines. Again, we believe the sewer system which has been proposed will encourage build-out in existing subdivisions (these are also where present development concentrations are located which should be served) and thus tend to concentrate growth in these areas.

The collection lines for Alternatives III through VI are the same, with one exception. Alternative III is based on an extension of the interceptor sewer to the south end of Lake Granby and also north to area "E". This configuration includes sewers serving all Neighborhood areas shown in the Facility Plan, one main interceptor sewer, and one treatment plant.

Neither EPA nor Grand County can offer absolute assurance that the proposed sewer system will not lead to some type and degree of "strip" development. A considerable amount of commercial development already exists along the west shore of the Lakes and the Highway 34 corridor. Factors that will tend to discourage or stop this type of development along the West shores of Shadow Mountain Lake and Lake Granby are: (a) a significant amount of Federal land, especially along Lake Granby (see Figure IV-15, Facility Plan); (b) continuing efforts by the Park Service to establish NRA policy wiich includes probable purchase of some lake shore areas; (c) EPA refusal to approve extension of a sewer to Area "L" until the NRA issue is settled, and; (d) Grand County desire to control this type development. For the private lands involved, it will ultimately be up to the County (for non-municipal areas) to control development. Grand County is currently attempting to revise its land use regulations to better control such things as strip development, and, as we have stated, have already reached agreement with EPA on specifics related to this issue.

(5) Data on the allocation of taps per neighborhood areas is found on pages V1-7 and V1-8 of the Facility Plan. These figures are given as "population equivalents" but do give an accurate picture of where existing development is now located.

(6) We have discussed at length, the subject of the potential effect of the proposed sewerage system on population growth in proceeding parts of this response. To reiterate, we are of the opinion that (1) the system will allow some increased level of growth in the area which is now stymied due to people's unwillingness to invest in septic tank systems; (2) the amount of this growth, though nearly impossible to estimate with any degree of accuracy, should not exceed that predicted by Grand County and the NW Colorado 208 and will probably be much less than the Facility Plan "design" figure; (3) any very rapid or large population increase in this area would probably be associated with construction of a ski area; (4) growth and its impacts, associated with ski area type development would be covered by a separate Federal EIS (assuming Federal actions are involved).

Though we do not believe that it is possible to predict the level of growth that might be attributable to provision of sewerage service, we believe the necessities of water quality protection for the area require a substantial improvement in waste treatment. Most important, we believe that Grand County is making positive efforts to control growth related impacts. This later factor, plus our own COMARC system based analysis of the probable growth areas, have led us to the conclusion that future growth should occur in a manner more compatible with the environment of the Three Lakes area than has been true in the past.

(7) The possibility of "phasing" the proposed Three Lakes sewage system has been a topic of dicusssion between EPA and the Sanitation District on numerous occasions. We have found there are two sides to the "phasing" question, one environmental and the other financial.

In terms of environmental factors, we concluded that we should analyze the potential impacts of the <u>entire</u> proposed system. A facility plan and EIS analyze long-term water quality management plans and, even though factors may change as time goes on, all components of the plan must be looked at during this initial phase. Thus, our analysis looks at each neighborhood area including the two outlying ones that would be served by separate small treatment plants even though financial restraints may not allow construction of these components until some future date. What our draft EIS means then is that as far as environmental factors go, we have looked at an entire proposed sewerage system and have judged that its impacts are acceptable and controllable.

As you note, we have suggested in our draft EIS that the Sanitation District strongly consider phasing parts of the proposed sewerage system for financial reasons. We believe that the most logical way to phase the system would be to not initially construct the two separate neighborhood treatment plants at areas "E" and "M" nor attempt to serve area "L" (the area in conflict with NRA plans). Elimination of these components results in a savings of approximately $600,000 (EPA would have contributed about $210,000 of this total assuming no collection line funding).

The neighborhood areas you mention as being apparently vacant actually have a considerable amount of present development. Expressed in terms of population equivalents (PE) these areas show the following levels (existing PE/year 2000 PE): area "G" - 694/950; area "H" 370/800; area "I" - 420/930; area "K" - 832/2410. As you can see by comparing the development levels of these neighborhoods with the others proposed for service (See pages CI-7 and VI-8 in Facility Plan) they include some of the higher development densities in the service area.

The Sanitation District may well be forced to cut back on proposed sewer line extensions to the various neighborhoods because of financial reasons. We cannot make any determination given the present distribution of PE's, just where this possible cut back should occur (except for the obvious areas "E", "M", and "L"). If the Sanitation District does not receive the full amount of funds they need for the collection system they will have to make some very hard, and probably unpopulat, decisions as to which areas will not receive initial service.

Under Federal regulations, the Sanitation District must show that it has the financial capability to insure adequate construction of a sewerage system which has received conceptual approval by EPA. This financial capability must be shown before we approve any Step II (preparation of plans and specifications) for the project. These regulations thus make it a requirement that the Sanitation District have its financing "in hand" which, in the Three Lakes situation, may well mean deletion of parts of the proposed system.

(8) We hope we did not convey the impression that we have ignored consideration of a potential ski area at Bowen Gulch in our deliberations over a sewerage system for the Three Lakes area. One of our concerns with the originally proposed underwater vacuum collection lines and with lake discharge of effluent was related to concern about greatly increased winter use of these systems due to ski area development and associated increased wintertime sewage loads.

At the same time, there is no assurance that Bowen Gulch, or any other Three Lakes site, will ever be developed as a winter sports site. If a ski area is to ever be developed in this area, it must (1) have financial backing and (2) receive full analysis and public scrutiny via a separate Federal EIS (assumes all sites are on Federal lands). To our knowledge, the first factor, i.e. a financial sponsor, does not yet exist and therefore, even though there is much local conversation over such a development, it remains a matter of "specualtion."

The proposed lagoon system has been designed with a certain amount of growth taken into consideration (see page 6-3 in Facility Plan for design specifics) in its sizing and process configuration. If the Three Lakes area were to outgrow the proposed lagoons, they could be expanded to include additional cells and possible changes in the treatment process to accommodate this growth. This would be true for both summer and winter loads.

(9) We did not intend to down-play the role of the proposed sewerage system on Three Lakes area land use. The statement you quote was intended to point out that the basic direction of land use in the area has already been set, i.e., commercial and residential development in the areas to be served with sewers. These areas are already largely committed to these uses via County zoning and the existence of present development and subdivision plats. The sewage system will, of course, tend to reinforce the location of these type land uses in the sewer service area.

The potential land use impacts of the proposed system have been the major point of discussion on this project. It is only because Grand County has agreed to enact non-point pollution controls and because the sewerage system is compatible with local land use planning that we have been able to proceed with the project. However, we do believe the sewerage system can be a positive force in growth control and locational decisions at Three Lakes.

The residents of the Three Lakes area have expressed support of the proposed system via their passage of a local bond issue and through their statements at numerous public meetings held on the sewerage project and on the County land use plan. The system will surely lead to some higher level of development than currently exists yet without some major economic boost such as a ski area we do not believe that the growth rate attributable to the sewerage system will "overwhelm" the present residents. Again, we are of the opinion that the system can be used to not only benefit water quality, but can also be a positive factor in local land use and environmental control.

We hope we have answered your questions on the draft EIS. We especially appreciate your recognition of the efforts which we, and many others, have expended on this project and its many ramifications. Since it is our understanding that your agency has not given A-95 approval to this project, pending our answer to your comments, we would ask that you review our answers and give us your response as soon as possible. We would intend that your response back to EPA be either your formal A-95 approval of the project or, if you do not agree with our response, your continued disapproval. We will be happy to meet with you at any time on this project if you believe it would be helpful. We are sure that Grand County, the 208, and the Sanitation District would also be more than willing to meet with you also.

Again, thank you for your interest in the Three Lakes project and your concern with land use and environmental impacts in this beautiful area.

Sincerely yours,

Charles W. Murray, Jr.
Director, Water Division

Enclosures

cc: Sam Hazelbart, Chairman, Three Lakes Water and Sanitation District

Evan Dildine, Secretary, Colorado Water Pollution Control Commission

Stan Broome, Manager, Grand County

Philip Schmuck, Director, Colorado Division of Planning

Frank Rozich, Water Quality Bureau, Colorado Department of Health

Department of Local Affairs
Colorado Division of Planning

Philip H. Schmuck, Director

1876

Richard D. Lamm, Governor

MEMORANDUM

TO: State Clearinghouse DATE: February 8, 1978

FROM: Division of Planning

SUBJECT: Final Wastewater Treatment Facilities Plan
#77-502500-008

On February 7, 1978 the Division of Planning received a letter from Mr. Charles W. Murray, Jr. of the Environmental Protection Agency (EPA) concerning the above referenced project. Mr. Murray's letter dealt at length with the concerns that we raised in our review of EPA's draft EIS on the Three Lakes Wastewater Treatment Facilities.

Generally, we feel that Mr. Murray's letter adequately addresses our concerns. As a result of this information, the Division would like to recommend approval of the Willow Creek Lagoon System.

Prepared by: Pete Naseth
Pete Naseth, Planner

Reviewed by: Phil Schmuck
Philip H. Schmuck
Director

PN/btm

1313 Sherman Street, Denver, Colorado 80203 (303) 892-2351

[redacted]

Department of Local Affairs
Colorado Division of Planning

Philip H. Schmuck, Director

STATE OF COLORADO 1876

Richard D. Lamm, Governor

COLORADO CLEARINGHOUSE

REVIEW SUMMARY

TO: THREE LAKES WATER AND SANITATION DISTRICT DATE: February 9, 1978
Attn: Sam Haszelbart

STATE I.D. NO. 77-502500-008

SUBJECT: Final Wastewater Treatment Facilities Plan

The Colorado Clearinghouse has reviewed your notice of intent to apply for federal aid and has submitted it to appropriate state agencies. As a result of this review:

__X__ Based on information available at this time, it has been determined that the project does not appear to conflict with state plans, programs, or objectives.

_____ However, it is recommended that the following conflicts, difficulties, or conditions be met or solved:

The clearinghouse has no objections to the funding of the project when the above have been resolved.

_____ A request has been received from one or more state agencies that the final application be submitted for review. The project cannot be signed off until the application has been reviewed.

_____ It is recommended that approval of the project be withheld, for reasons stated in the attached letter from

Stephen O. Ellis
Principal Planner

This form and all attachments must accompany your application to the Federal funding agency.

cc: Northwest Colorado Council of Governments
Environmental Protection Agency

SOC-4, Revised August 1977

520 State Centennial Building, 1313 Sherman Street, Denver,

United States Department of the Interior
OFFICE OF THE SECRETARY
MISSOURI BASIN REGION

BUILDING 67, DENVER FEDERAL CENTER
DENVER, COLORADO 80225

IN REPLY REFER TO:

ER 77/929

NOV 17 1977

Mr. Alan Merson
Regional Administrator
Environmental Protection Agency
Region VIII, Suite 900
1860 Lincoln Street
Denver, Colorado 80203

Dear Mr. Merson:

This is in response to your September 2, 1977, request for Department of the Interior review of the Draft Environmental Statement (DES) for the Wastewater Treatment Facilities and Sewerage for the Three Lakes Water and Sanitation District. We have completed the requested review and have the following comments:

General Comments

(1) 1. The environmental statement and final facility plan are generally adequate in their presentation of existing fish and wildlife resources. The impacts associated with each of the alternative plans are addressed, but those related to the primary and secondary impacts to fish and wildlife resources should receive more attention and clarification. Based on our review, it appears that the Regional System minimizes damages to fish and wildlife and satisfies the wastewater management requirements.

(2) 2. Grazing privileges for the public lands affected by the preferred Willow Creek Lagoon alternative are leased to the Stillwater Cattle Company. If converted to sewage treatment use, the impacted area will represent a loss of approximately 4 AUMs out of a total of 84 AUMs of Federal grazing privileges. Presently the season of use is May 1 to September 30, and the class of livestock is cattle.

(3) 3. Severe erosion occurs in the unnamed tributary to Willow Creek. There is no right-of-way for the Red Top Valley Ditch crossing the public lands. Prior to any BLM use authorization for the Willow Creek Lagoon site, it would be necessary for the operator of the ditch to obtain a right-of-way under the provisions of Title V, P.L. 94-579.

4. Descriptions of the Willow Creek Lagoon site in Chapter 7 and in Appendix G of the Final Waste Water Treatment Facilities Plan show the proposed access road following the east boundary of the public
(4) land. From preliminary field review, this does not appear to be an appropriate location for an access road because the route crosses timbered land, and the natural contour would require large cuts and fills to remain within 8 percent grade parameters. Access from an existing road within the Stillwater Estates subdivision would require less construction and may be preferable.

(5) 5. We suggest that the preferred alternative should receive at least qualitative evaluation of impacts on water supply at this stage. Since this alternative would involve reuse of effluent for crop irrigation, the statement should consider the potential for impacts on ground water, particularly because of the commonly very shallow water-table conditions.

6. The water rights issue is mentioned or discussed at several points
(6) in the DES (pages 11, 32, 96, and 108). The discussion on page 96 most accurately describes the current situation with respect to the concerns of the Bureau of Reclamation and the Northern Colorado Water Conservancy District. We concur in this assessment of the situation and EPA's stipulation as to what is expected prior to proceeding to Phase 2 of the proposal.

7. The Intermountain Field Operations Center of the Bureau of Mines is interested primarily in the effects of such projects upon mineral
(7) resources and the mineral industry. Few, if any, direct impacts of this nature are identifiable, except perhaps for a limited and temporary need for sand and gravel for construction purposes. Thus, we have no objection to the environmental statement and facilities plan as written.

8. The Environmental Protection Agency has well discussed the issues, especially the nonpoint type water pollution effects which could result
(8) from the project. As emphasized, nonpoint pollution is the major water quality problem of the Three Lakes area, not point pollution for which the project is designed. The basic conclusions on page 75 support this point.

9. We note that EPA has compiled a list of the known prehistoric and
(9) historic sites in the area of the Three Lakes Water Treatment Facility (p. IV 27-29 of Final Wastewater Treatment Facilities Plan). However, the final statement should provide clarification of apparent problems concerning the cultural resources section of the draft statement. Page 106 of the draft environmental impact statement refers to an archeological survey, but the report is not specifically cited. While we appreciate that the report has been distributed to those agencies

with the greatest concern for the cultural resources of the area, it would seem desirable to fully document in the environmental statement the measures that have been undertaken. The name of the archeologists conducting the survey and the affiliated institution or corporation should also be included. With known historic and prehistoric resources in the area (pp. IV 27-29, Final Wastewater Treatment Facilities Plan), it is essential that a 100 percent survey of the project area be conducted to prevent loss of any cultural values which may exist in the area. This would be in keeping with the letter and spirit of the National Environmental Policy Act, Executive Order 11593 and the Advisory Council on Historic Preservation Procedures for the Protection of Historic and Cultural Properties (36 CFR 800). In addition, the final statement should also reflect measures to be implemented in the event that previously unknown cultural resources are encountered during construction.

(10) 10. A letter from the State Historic Preservation Officer should be included along with his comments concerning the survey(s) of the project area. It appears that none of the National Register Sites in the area will be affected by the proposed project. However, this should be confirmed in the letter from the State Historic Preservation Officer.

Specific Comments - DES

(11) 1. Page 2: The introduction, summary, and other sections where necessary, should clarify that the neighborhood systems will continue to discharge to the Three Lakes Basin.

(12) 2. Page 6, first paragraph: According to water analyses results in the area described, the statement that the Shadow Mountain holding lagoon is a source of point pollution is incorrect.

(13) 3. Page 10, second paragraph: Although revised National Recreation Area (NRA) planning is in the preliminary stage, the National Park Service's objectives for the west and south shorelines of Lake Granby are to provide more open space by eliminating nonconforming obtrusive uses and to provide more visitor day use opportunities through provision of increased accessibility and day use facilities.

(14) 4. Page 25: The additional growth stimulated by each alternative plan may have adverse secondary effects on fish and wildlife resources. According to the DES, the growth rate associated with the Regional System (80 taps per year) is unacceptable, yet page 94 states that the nonpoint impacts associated with each alternative plan are similar. Specifically, what are the objections to the Regional System's growth rate and how are these objections mitigated with the Willow Creek alternative?

(15) 5. Page 26: The secondary impacts associated with each alternative plan are major considerations in selection of the preferred alternative. We believe development of lands proposed for addition to the NRA would not be in the best interest of fish and wildlife resources. However, in view of the zero discharge design of the Regional System, it should be clarified whether the presence of a sewer line will necessarily result in the development of lands proposed for addition to the NRA. Could the NRA merely serve as a right-of-way for sewered service to Sunset Point?

(16) 6. Page 41: The type of land use controls to be implemented by Grand County should be specified in the DES if the facilities plan will not accompany the DES for public review.

(17) 7. Page 53: Column 3 of the table that appears at the top of this page only totals 83 percent. Either a category of ownership was missed or incorrect percentages have been included.

(18) 8. Page 82, third paragraph: Although the COMARC study considered 16 factors of resource and land uses to develop a number of interpretive and constraint maps for land use capability, it did not consider visual vulnerability. The primary thrust of the COMARC study was water quality, as stated on page 43 of the draft environmental statement. In contrast, the Three Lakes Regional Planning Study (CNC/NHPQ 1973) considered visual vulnerability a key factor in developing its land use capability maps. The present NRA plan considers visual vulnerability a key element in developing its suggested land acquisition and facilities development programs, not only for Neighborhood "L," but Neighborhood "M" and part of Neighborhood "K," as well. Most of the undeveloped lots are either in area "L" on the steep, unforested slopes of Table Mountain, or in area "M" on an open, flat grass/sagebrush ecosystem quite visible from U.S. 34 and Colorado 150. Area "K" involves several nonconforming obtrusive commercial developments which the National Park Service would obliterate in conformance with the above-mentioned NRA objectives. The erosion hazard evaluation on page 92 of the draft environmental statement does not consider the steep terrain outside of the interceptor critical to resolving the NRA issue.

(19) 9. Page 100: We believe the use of vacuum lines would be detrimental to aquatic resources. It would be helpful to clarify whether or not this technique is incorporated in the Regional System.

10. Page 110: A complete summary of the COMARC analysis should be
(20) included in the DES. Also, the impacts expected to wildlife resources at each alternative site should be specified.

Specific Comments - Facilities Plan

1. Page IV-9, Fish/Wildlife: Discharges are proposed for Red Top
(21) Valley Ditch, the unnamed tributary and the North Fork of the Colorado River. This section should, therefore, include an assessment of these tributaries' aquatic resources.

2. Page V-5, Facilities Plan: The National Park Service will be issued a discharge permit for the Stillwater Campground facility in the near future. Although BOD criteria are still in excess of the effluent BOD
(22) criteria of 30 mg/l, use of the trailer dump station has been terminated. The facility will be monitored closely in 1978 to determine if toxic chemicals utilized by trailer owners inhibit the treatment process.

3. Page VI-1: According to the results of recent water analyses,
(23) the statement that the Shadow Mountain lagoon is a source of water pollution is incorrect.

4. Page VI-18, Fish/Wildlife: The potential disturbances to elk,
(24) deer, bighorn sheep and other wildlife resources should be specified for each alternative plan.

5. Page VII-2, Water Quality: Will the entire volume of treated effluent be utilized for irrigation? An analysis (similar to the
(25) analysis of the Sun Valley Ranch effluent), of the impact the Willow Creek and Sunset Point Plant effluents may have on receiving waters would aid in evaluating the impacts to fish and wildlife resources.

6. Page VII-4: There is recent evidence to document that chlorine
(26) may adversely affect fish resources at concentrations near the limits of detection. We believe the potential impacts to fishery resources associated with the chlorinated effluent deserves further evaluation.

Sincerely yours,

John E. Raybourn

JOHN E. RAYBOURN
Regional Environmental Officer

(1) We believe that the primary and secondary impacts to fish and wildlife resources from the proposed sewerage system (Willow Creek lagoons) will be minimal. In terms of primary impacts, the areas that will be served by collection lines (also the areas where "new" growth will tend to locate) are already developed and thus any loss of "critical" elk, deer, etc., habitat to development has already occurred. The wildlife species currently using these developed areas for habitat would be ones adapted to human presence and should not be greatly effected by a moderate amount of growth as is expected (see response to Colorado Division of Planning for a discussion of expected growth impacts). The lagoon site is located in an area classified as "general" deer winter range. Though approximately 30 acres of land in this category would be lost to the lagoons and associated structures, this is a very small percentage of the total land in the general area under such classification. Operation and maintenance of the lagoons would present a minimum of human activity, especially in the winter, and should be of little impact to wintering deer.

Primary impacts on fisheries should be minimal (See letter from Colorado Division of Wildlife). One primary reason for recommending the Willow Creek Lagoon site is that this system would eliminate sewage effluent discharge to the lakes (except for the two proposed small neighborhood units). This will be a definite benefit to the lakes' fishery resource.

The Willow Creek lagoons are also considered advantageous because the effluent they discharge during the peak use warm months will be applied to hay meadows. This arrangement, in effect, adds a "land treatment" component to the system and thus provide additional reductions of nitrogen, phosphorus, total suspended solids, and BOD.

Secondary impacts from the proposed system are much more difficult to anticipate. In our opinion, the basic secondary impact from the proposal would be that related to any possible generation of growth and additional population in the Three Lakes area. Again, these matters are discussed at length in our response to the Colorado Division of Planning letter, but, in summary, we do not believe that the system by itself will lead to any extreme amount of new growth. The growth that will occur should be controlled by Grand County. At the same time, we believe the proposed system will have definite value in concentrating future area growth in the sewer service area and thus tend to hold down more random and dispersed type development.

2. The Three Lakes Water and Sanitation District is responsible for negotiation and final settlement for use of any land needed for their sewerage system. These matters must be finalized before EPA approves construction funds

3. Money has been allocated in the Three Lakes Facility Plan for improvements to the Red Top Valley Ditch. The necessary rights-of-ways must be obtained before proceeding to the construction phase of the project.

4. The final layout of the road will be part of Step II (design and specifications) of the sewage treatment planning and construction process. Any necessary road changes can be made at this time and as part of the Three Lakes Water and Sanitation District's necessary compliance with BLM regulations.

5. Based on a peak summer effluent flow of 1.34 mgd (2.0 cfs) a maximum effluent NO_3N concentration of 30 mg/l, a 3 month application period, and 900 acres of irrigated hay meadow, the maximum application of NO_3N would be 33 pounds/acre-year. From communications with Burn Sabe, CSU Agriculture Department, this is a very low rate of application. At this loading rate, it is very likely that all applied NO_3 will be taken up by the crop irrigated. CSU's experience at Hayden, Colorado, indicated that at a loading rate of 50 pounds/acre-year there was no noticeable increase in groundwater NO_3N concentrations. Because the wastewater treated is domestic in nature, no other constituent in the effluent should present any adverse impact to groundwater supplies. (data supplied by Three Lakes District's consultants, NHPQ).

6. As we have stated numerous times, EPA will not approve the construction of the Three Lakes sewerage project until the water rights issue is resolved. The draft EIS did, however, incorrectly state that this resolution must take place before Step II of EPA's construction grant process. Because Step II will begin as soon as funding is approved for the project -- the same time frame during which the final resolution of the water rights issue must be completed -- the issue must be resolved before proceeding to Step III (construction). The use of the beginning of the Step III phase for resolution of water rights problems allows the Step II (design and specifications) phase to be used to work out the specifics of the resolution.

7. No comment necessary.

8. No comment necessary.

9. The cultural resources survey was conducted by Gordon and Kranzush-Archaeological Consultants, Boulder, Colorado. Gordon and Kranzush is a firm approved by the State Archaeologist and is one with wide experience in this type work.

Gordon and Kranzush performed a 100% survey of the proposed sewer interceptor route, the Willow Creek lagoon site, and the two small treatment plant sites. The report from this survey has been submitted to and has gained approval from, the State Historic Preservation officer and the State Archaeologist. The abstract from this report is attached.

EPA was adivsed not to publish the full text of the report because of the possibility that it might be used by "pot hunters" to locate some

potentially significant archaeological resources which were discovered. EPA will require the Three Lakes Water and Sanitation District to meet the stipulations as discussed in the abstract, i.e., archaeologist on the scene during construction and complete "testing" of the other site. EPA also requries a "stop work" and recovery if necessary, professional evaluation type procedure if cultural resources are found during any of the proposed construction activity. The above procedures will be in keeping with Section 800.4 and 800.5 of the Procedures For The Protection of Historic and Cultural Properties (36 CFR 800).

10. We have met with the Office of the State Historic Preservation Officer who concluded that no National Register Sites or potential sites (i.e. Town of Grand Lake) would be affected by the proposed project. Their letter is attached.

11. Statements about the discharge of the two proposed neighborhood treatment units has been added to the Introduction and Summary of the EIS. More complete discussion of these units is found on pages VI-32, VIII-2 thru VIII-5,, and 6-1 through 6-3 of the Facility Plan which is part of the EIS.

12. The draft EIS incorrectly gave the impression that the NPS facility was "polluting." The final EIS has been corrected.

13. Clarification noted.

14. EPA's objection to the original regional sewerage system as related to potential growth impacts was that local government (Grand County) was in no position to control non-point pollution that might arise from developmental activity. We also questioned the financial feasibility of a system that depended on the addition of 80 new taps a year.

We do not believe that the proposed sewerage system will be a major growth "generator" though it will release a certain amount of presently pent-up growth demand in the Three Lakes area (see our response to the State Division of Planning for a more complete discussion on this topic.) The important point about the whole project is that Grand County has agreed to enact non-point pollution controls (see letters in appendix of Facility Plan, sections in EIS on this subject, and response to State Division of Planning). This is the reason EPA's former objections to any centralized sewerage system in the area has been mitigated.

For purposes of financial feasibility analysis NHPQ, consultant's to the Sanitation District, used figures of 20 and 40 additional taps per year (page VII-9 through VII-12 of Facility Plan). This analysis revealed that the District could afford the proposed system if only 20 new taps were added per year. Twenty taps is approximately the current growth rate in the area and is well within Grand County's planning projections.

15. We have met with the National Park Service on numerous occasions in an attempt to not approve a sewerage system that is incompatible with the existing or proposed NRA. One very difficult aspect of the NRA question is that no specific NRA land use plan has been developed other than that first appearing in the NPS draft EIS on this subject several years ago. Though we believe it is unfortunate that the NRA proposal has not been finalized, we believe that the continued sub-standard effluent discharge of the Grand Lake treatment plant, probable continued septic tank pollution, and an ever lengthening time factor make it necessary for EPA and the District to move forward with a plan for sewage treatment for the area.

Our analysis of the proposed sewerage system leads us to believe that it would not be detrimental to fish and wildlife resources. This belief is based on the fact that the system will (1) eliminate presently poorly treated sewage to the lakes; (2) eliminate the majority of future effluent discharge to the lakes; (3) serve basically areas that are already developed and; (4) tend to concentrate the growth that will occur in the area as opposed to more random development dependent on septic tanks. We should also point out that the COMARC analysis performed for Grand County and EPA found no wildlife impacts due to sewering the areas proposed for service (this analysis was based on the area's resident big-game species).

As stated in numerous places in the EIS, we will not approve service to Area "L" (southwest shore of Lake Granby) until the NRA issue can be worked out. It has always been our understanding that prevention of development in this area was a priority with the Park Service. Sunset Point service is to be via a separate "neighborhood" treatment plant and not by sewer line connecting to the central Willow Creek lagoon system. No right-of-way to Sunset Point is thus required.

With the elimination of service to Area "L" (at least until the NRA issue is resolved) we do not believe there are any major incompatibilities with the NRA. The argument is still valid, however, that if some of the lakeside trailor court developments such as along Shadow Mountain Reservoir are sewered that might be considered for later NRA purchase, the cost would be higher than if they are not sewered. Quite frankly, our only conclusion about this possibility is that the Park Service should approach the Sanitation District about not initially serving these developments until the NRA issue is resolved. EPA will not fund actual service to these areas but will fund 75% of the major interceptor to which they would connect. Because of the definite advantages of the Willow Creek lagoon system, we are faced with an interceptor sewer running along the west side of Shadow Mountain Reservor and NW shore of Lake Granby. Future control of growth in these areas will be a function of Grand County and the Federal agencies involved.

16. The Facilities Plan was considered part of the draft EIS and in all cases accompanied the EIS when it went out for public review.

17. The category of ownership left out was water which totaled 17% of the COMARC analysis area.

18. Though the COMARC study did not specifically develop a visual vulnerability map EPA has given full recognition to the possible aesthetic impacts of the various sewerage system proposals throughout our deliberations on the Three Lakes project. Specific concerns related to the aesthetic impact issue have been centered around issues such as: sewer service to Area "L"; location of sewage treatment facilities below Lake Granby at the original proposed site; location of a treatment facility on the northwest shore of Lake Granby (near BuRec pumps); location of sewage lagoons in the open meadows area west of the northwest shore of Lake Granby; the location of the Willow Creek lagoons; sewage collection barges operating on the lakes; accelerated sedimentation and enrichment of the lakes; etc. Because of our concern for these matters, we believe the Willow Creek lagoons, coupled with Grand County's commitment to improved land use regulation, has a solid aesthetic and visual protection basis.

As stated in the EIS, EPA will not participate in funding for service to Area "L" until the NRA issue is resolved. Area "K" has a large amount of present development and we see no reason why "several nonconforming obtrusive commercial developments" could not be acquired before, or even after, construction of any sewer system.

Concerning Area "M", we have not been aware of any conflict between NRA objectives and the proposed sewerage system until receipt of Department of Interior comments on the draft EIS. Since this area is proposed to be served by a small neighborhood treatment unit which is a logical component of the entire system that could be "phased" or built at a later date (as suggested in the EIS) we would suggest the National Park Service approach the Three Lakes Water and Sanitation District on this subject. The District may well not have sufficient funds for this component anyway and could be receptive to deleting it until the NRA issue is resolved.

It is not correct that EPA has not considered the erosion hazards of lands outside the specific interceptor route. The erosion control regulations agreed to by Grand County apply to <u>all</u> private lands in the area, not just those that will be sewered. Also, the COMARC analysis covered the whole area, not just the land to be sewered. Though our discussion of the NRA issue is basically related to the potential for the sewer lines to allow development in areas the Park Service would prefer to leave undeveloped, the whole thrust of this project has been oriented to controlling the degradation of the NRA's basic resource, i.e., the water quality of the Three Lakes.

19. EPA has rejected the use of vacuum lines in the lakes. Vacuum lines will not be part of the sewerage system.

20. The summary of COMARC's analysis appears in the form of numerous large maps, computer printouts, and an overview of the COMARC process type document. These materials do not lend themselves to inclusion in an EIS and would, in EPA's opinion, only add bulk to an already too large set of documents. These documents can be reviewed at the Department of Development, Grand County, Hot Sulphur Springs.

COMARC analyzed the wildlife impacts of the proposed system at each alternative treatment plant site. The categories of wildlife analyzed are shown on the attachment (from COMARC's Summary Report and Map Directory for the Three Lakes project). The conclusions were:

(a) Treatment Plant Site for Alternate No. 3 - (not analyzed because this system was rejected for other reasons).

(b) Treatment Plant Site for Alternate No. 4 (Willow Creek lagoons) - Deer general winter range - 33.1 acres lost for this use.

(c) Treatment Plant Site for Alternate No. 5 (North Shore Plant) - no impact.

(d) Treatment Plant Site for Alternate No. 6 (Stillwater Creek lagoons) - Deer general winter range - 29.4 acres lost for this use.

21. The Colorado Division of Wildlife reports that the North Fork Colorado contains Brown, Brook, and some Rainbow trout. They are not, however, conducting creel census work at this time. Also, the North Fork is generally a dry stream from its confluence with Shadow Mountain Reservoir to the Red Top Valley Ditch diversion several miles upstream.

No information exists on the aquatic resources of the Red Top Valley Ditch nor the "unnamed" tributary. The Ditch could not be considered any type of valuable fishery because of its very nature and flow regime. The "unnamed" tributary is on private land and has not been studied by the Division of Wildlife.

22. No comment necessary.

23. This statement has been corrected in the EIS (see comment #12).

24. See comment #20.

25. The entire volume of treated effluent will not be utilized for irrigation. Discharges used for irrigation will occur between mid-May and mid-August. However, this three-month period accounts for nearly two-thirds of the annual wasteloads generated in the study area.

An analysis of the Willow Creek discharge similar to the one done for the Sun Valley Ranch has been difficult because of a lack of data. The Colorado Water Quality Control Division (see letter in Appendix A-Facility

Plan) has concluded, based on what is known, that the impact on the Willow Creek drainage will be minimal primarily due to the intermittent nature of the stream. They also concluded that the impact on the Colorado River would be slight due to the dilution factor and the travel time down Willow Creek before reaching the river.

Some of the major considerations leading to EPA's, and other's, decision to recommend the Willow Creek lagoon alternative were: (1) it would end major effluent discharge into the area's principle fishery resource, i.e., the lakes; (2) would avoid discharge to the Stillwater Creek fishery and subsequently the lakes; (3) would provide land treatment of effluent during the high sewage load summer season, and; (4) would discharge into an intermittent stream with less fisheries value. Though we do not believe the impact on Willow Creek will be major, there will probably be some long-term impact. This impact is considered an acceptable trade-off for the benefits to be gained from this sewerage system. We would also make reference to the letter from the Colorado Division of Wildlife contained in this section of the EIS.

In terms of the proposed Sunset Point discharge it should be pointed out that the data does not exist which definitely points out the benefits of taking the major discharge (that which would be treated by the Willow Creek lagoons) out of the lakes. In other words, EPA and others are following their professional judgments and experiences in recommending that the discharge go to Willow Creek. Quite frankly, the water quality standards of the State of Colorado would allow secondary level treated effluent to continue to be discharged to the Lakes. As stated, we do not believe this would be in the best long-term interest of the quality of these bodies of water.

The Sunset Point discharge would be quite small and would be into a very large body of receiving water. This dilution factor plus the fact that the discharge would be properly treated effluent lead us to believe that the discharge would have little impact. It is also a fact that because present water quality standards would allow the larger 1.34 MGD plant to discharge to the lakes the small Sunset Point unit (0.020 MGD) should be acceptable

26. NHPQ, the District's consultants, believe that with proper detention time in the lagoons, chlorination should not be necessary. The State Health Department will review the plans and specifications on this project and, at that time, judge whether or not they agree with NHPQ's conclusion. If the State believes chlorination is necessary, they can also require a dechlorination step in the treatment process if it is found that the chlorine would harm the fisheries resource.

Abstract

On July 5 and 7, 1977, surface reconnaissance for location and evaluation of cultural resources was conducted by Gordon and Kranzush - Archaeological Consultants for the Environmental Protection Agency - Region VIII under Purchase Order Numbers WO-7-0455-A and WO-7-0455-A-1 in four proposed sewage treatment facility project areas for the Three Lakes Water and Sanitation District, Grand County, Colorado. Evidence of cultural activity includes recent debris, one historic component in a trash pit, prehistoric sites 5 GA162 and 163, and Locality #2. The significance of these finds and the nature of the impact that would result from implementation of the proposed actions are assessed in the section of this report entitled "Interpretations of Data and Impact Assessment". None of the resources located, with the possible exception of 5 GA162, is eligible for nomination to the National Register of Historic Places.

Professional archaeological monitoring of ground disturbing activities is recommended for the 5 GA163 and Locality #2 area, and testing of 5 GA162 is recommended to determine the depth of cultural deposits and assess eligibility for nomination to the National Register of Historic Places. These recommendations and others are discussed in the section of this report entitled "Conclusions and Recommendations".

undertaken by the Colorado State Forest Service. All information was supplied on the four U.S.G.S. 7.5' quadrangles encompassing the study area.

Label #	Name	# of Cells	Area (Acres)
0	Water	2181	8011
1	Low Hazard	3911	14365
2	Medium Hazard	253	929
3	High Hazard	5109	18766
4	No Data	1058	3886

3.12 Wildlife

Contained on the four U.S.G.S. 7.5' quadrangles covering the study area, all information was mapped by the Regional Resources Planning Program (Colorado State University, 1975). It should be noted that where wildlife habitats overlapped, unique labels were given to show the composite areas.

Label #	Name	# of Cells	Area (Acres)
0	Water	2181	8011
1	Deer - general winter range	438	1609
3	Elk - critical winter range	1225	4500
4	Elk - calving grounds	808	2968
6	Raptor - nesting sites	4	15

Label #	Name	# of Cells	Area (Acres)	% of Site
7	An overlapping coverage of Elk critical winter range and Elk calving grounds	12	44	.10
8	An overlapping coverage of Deer winter range and Elk critical winter range	3	11	.02
9	A triple overlapping area of Deer general winter range and Elk critical winter range & Elk calving grounds	94	345	.75
10	No Data	7747	28455	61.92

3.13 Proposed Wastewater Collection and Treatment Facilities

Provided to Comarc by Nelson, Haley, Patterson and Quirk, Inc. (NHPQ) at a scale of 1:30,000, this map showed the location of three proposed alternative wastewater facilities and associated collector and interceptor lines.

Label #	Name	# of Cells	Area (Acres)	% of Site
0	Water	2181	8011	17.43
1	Proposed Common Interceptor Lines	120	441	.96
2	Collection Lines - Neighborhood A	20	73	.16
3	Collection Lines - Neighborhood B	8	29	.06
4	Collection Lines - Neighborhood C	15	55	.12

STATE OF COLORADO
Richard D. Lamm, Governor
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE
Jack R. Grieb, Director
6060 Broadway
Denver, Colorado 80216 (825-1192)

November 17, 1977

RECEIVED
NOV 25 1977
DIV. OF PLANNING

TO: Philip H. Schmuck, Director
Colorado Clearinghouse

FROM: Jack R. Grieb, Director
Colorado Division of Wildlife

SUBJECT: Draft Environmental Impact Statement Review, Three Lakes Wastewater Treatment Facilities

We have reviewed both the Draft Environmental Statement prepared by the Environmental Protection Agency and the Facilities plan prepared by the Environmental Consultants which covers their proposal. We just recently received the Review of the Land Use Laws Related to Water Quality Protection by White and Burke but have not reviewed this publication. The primary concerns of this Division, as always, is how the several proposals may affect or enhance fish and wildlife habitat.

This is a popular recreation area so we favor the alternatives that best protect water quality and will not accelerate eutrophication in the three lakes, Grand Lake, Granby and Shadow Mountain Reservoir. Impacts on wildlife habitat appear to be tolerable as the actual habitat losses will not be great and migration routes should not be blocked under present plans. Better land use controls by Grand County should help control both growth and erosion thus eliminating many of the nonpoint sources of pollution that eventually find their way to the lakes. Apparently, the question of water rights has or can be solved. A central system should help eliminate further, possible pollution from septic tanks or at least reduce the number of new tanks that will be constructed.

The Willow Creek alternative appears to be the best choice from the fish and wildlife point of view as the discharge would be on hay meadows and not into a lake or stream.

Overall, the statement appears to be inclusive and objective. No mention is made of any possible impacts on the Colorado River below Granby Reservoir. Apparently no impacts are visualized.

We appreciate being given the opportunity to review and comment on the statement.

JRG:cs

cc: H. Sherman
P. Olson

DEPARTMENT OF NATURAL RESOURCES, Harris Sherman, Executive Director • WILDLIFE COMMISSION, Thomas Farley, Chairman
Sam Caudill, Vice Chairman • Roger Clark, Secretary • Jean K. Tool, Member
(9) Jay K. Childress, Member • Michael Higbee, Member •

Response to State Division of Wildlife

No comment necessary.

COLORADO DEPARTMENT OF HEALTH

4210 E. 11TH AVENUE DENVER 80220 PHONE 388-6111 EXT. 329

ANTHONY ROBBINS, M.D., M.P.A. EXECUTIVE DIRECTOR

DATE: November 15, 1977

SUBJECT: NON-STATE ASSISTANCE

REVIEW AND COMMENTS

RECEIVED
NOV 16 1977
DIV. OF PLANNING

TO: Phil Schmuck
Division of Planning
Dept of Local Affairs

TO: NA

PROJECT TITLE: DEIS AND FEIS Wastewater Treatment Facilities for Three Lakes, Colorado

STATE IDENTIFIER: #77-129

COMMENTS DUE BY: 11/18

Yes [X]	No [ ]	Is this project consistent with the goals an objectives of this agency?
Yes [ ]	No [X]	Is there evidence of overlapping of duplication with other agencies?
Yes [ ]	No [X]	Is meeting desired with applicant?
Yes [ ]	No [X]	A 15-day extension is requested.

Comments:

Ron Simsick (994)
Name, Title & Phone
Ron Simsick, Program Administrator

SOC-3, Feb 77

Response to Colorado Department of Health

No comment necessary.

GRAND COUNTY BOARD OF COMMISSIONERS

HERBERT A. RITSCHARD, Chairman
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COURT HOUSE, HOT SULPHUR SPRINGS, COLORADO 80451
PHONE: 303-725-3332

S. R. (STAN) BROOME
County Manager

December 9, 1977

Environmental Protection Agency, Region VIII
1860 Lincoln
Denver, Colorado

Dear Sir:

Grand County has reviewed the draft environmental impact statement of Wastewater Treatment Facilities for Three Lakes.

Grand County supports the selected alternative referenced as the Willow Creek Lagoon.

Grand County would note that positive action is presently in progress concerning more effective control of non-point source pollution through the development of a comprehensive land use plan using innovative planning methods as pointed out in the draft environmental impact statement. In addition, the suggestions contained in the White and Burke regulatory review, which were promulgated in cooperation with EPA, are being used as guidelines for this effort.

Sincerely,

Herbert A. Ritschard

Herbert A. Ritschard
Chairman

HAR/jh

Response to Grand County

No comment necessary.

REGION XII

NORTH WEST COLORADO COUNCIL OF GOVERNMENTS

Holiday Center Building - Suite 200
P. O. BOX 739
FRISCO, COLORADO 80443

(303) 468-5445

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DILLON
FRISCO
SILVERTHORNE

December 9, 1977

Mr. Allan Merson, Regional Administrator
Environmental Protection Agency
1860 Lincoln St., Suite 105
Denver, Colorado 80202

Re: Three Lakes Draft Environmental Impact Statement

Dear Mr. Merson:

Thank you for the opportunity to review the subject Environmental Impact Statement. I apologize for our delay in transmitting comments regarding the proposed project.

As you are aware, the NWCOOG has been involved with the Three Lakes Area in our role of developing a 208 Water Quality Management Plan for Planning and Management Region 12. Our primary concern has been with identification and control of non-point source pollutants arising from land development and other land use activities tributary to the lakes. We feel that the DEIS, along with the recommendations of the 208 Plan (to be released in January, 1978), will adequately mitigate the effects of these activities associated with the proposed wastewater treatment facilities. The efforts of EPA and Grand County in this area are commendable and should set an example for cooperation throughout Colorado. (1)

The level of treatment, service area and population projections developed for the facility are three other concerns which the 208 Program has regarding facility plans within the designated area.

Level of Treatment

As noted in the DEIS, the proposed alternative eliminates the need for discharge of treated effluent to the lakes at present. No advanced waste treatment requirements are therefore proposed for the recommended alternative. This is compatible with the recommendations of the 208 Areawide Plan. However, it should be noted that with future water resource (2)

developments (i.e. Windy Gap Project) nutrients from the wastewater discharge, as well as, other discharges to the Fraser River drainage could be cycled back to the Three Lakes, thereby frustrating the District's goal of eliminating waste discharges to the lakes.

The Draft 208 Plan recognizes this future possibility and would require a permit to be issued by Grand County for any future water diversion project, specifying how the applicant would mitigate the adverse water quality effects of such a water diversion project.

Population Projections

The design population planned to be serviced by the proposed facility appears to be in agreement with Grand County's projections used in the development of desired growth distributions utilizing the COMARC System.

Service Area

The service area for the proposed facility appears to be compatible with Grand County's preliminary land use planning efforts.

Thank you again for the opportunity to comment on the proposed facilities.

Sincerely,

Phil Overeynder
208 Coordinator

PO:vg

Response to Northwest Colorado Council of Governments

1. No comment necessary.

2. We have long recognized that the proposed Windy Gap project could serve to recycle nutrients back to the lakes. If this project is constructed, the Willow Creek lagoon system would have the benefit of land treatment for the high sewage load summer season thus lessening the potential impact of "recycling" of nutrients.

Department of Local Affairs
Colorado Division of Planning

Philip H. Schmuck, Director

STATE OF COLORADO 1876

Richard D. Lamm, Governor

November 22, 1977

Mr. Alan Merson
Regional Administrator
U.S. Environmental Protection Agency
1860 Lincoln Street
Denver, Colorado 80202

SUBJECT: Draft Environmental Impact Statement
Three Lakes Wastewater Treatment Facilities

Dear Mr. Merson:

The Colorado Clearinghouse distributed copies of the above-referenced environmental impact statement to relevant state agencies. Enclosed please find the comments of those agencies.

In addition to the written comments enclosed, some agencies made oral comments to the Clearinghouse indicating that they found merit in the statement at the top of page 7 of the EIS that "there is no need to serve everyone in the district with a centralized collection system, especially those outlying developments where expense and environmental considerations argue against it." If the district largely confined service to presently highly populated areas and refrained from extending collector lines to undeveloped or low density areas, it would assist in mitigating growth impacts due to service line extensions. Some flexibility then seems appropriate in the district's service plans. This would support the contention that septic systems could continue to be used on a limited basis in outlying and sparsely populated areas. It would also cut down on costs of extending collector lines to remote areas with few residents and correspondingly few tap fees.

Thank you for the opportunity to review this proposal.

Very truly yours,

Charles G. Jordan
Senior Planner

Reviewed: Philip H. Schmuck, Director

CGJ/vt - Enclosures
cc: See attached list

1313 Sherman Street, Denver, Colorado 80203 (303) 892-2351

Mr. Alan Merson
Re: Three Lakes DEIS
November 22, 1977

cc: Office of the Governor
Department of Local Affairs
Department of Natural Resources
Department of Health
Department of Highways
Northwest Colorado Council of Governments

Response to Comments by the
Department of Local Affiars
Colorado Division of Planning

The proposed sewerage system is designed to serve only those areas within the boundaries of the Three Lakes Water and Sanitation District which presently are areas of relatively high density development. The neighborhood areas and associated existing/future PE (population equivalents) are:

Area "A" - South Shore Grand Lake - 173/195 (1976 PE/Year 2000 PE)

Area "B" - North Shore Grand Lake - 50/75

Area "C" - Greater Town of Grand Lake - 885/2300

Area "D" - Greater Columbine Lake - 603/1945

Area "E" - Sun Valley Ranch - 137/160

Area "F" - Shadow Mtn. Reservoir Shoreline - 51/75

Area "G" - West Shadow Mtn. Reservoir - 694/950

Area "H" - No. Fork Colo. R and NPS Hdq. - 370/800

Area "I" - Interlakes Area - 420/930

Area "J" - No. Shore Lake Granby - 534/2550

Area "K" - NW Shore Lake Granby - 832/2410

Area "L" - SW Shore Lake Granby - 220/600

Area "M" - Sunset Point - 49/390 (See page VI-7 and VI-8 in Three Lakes Facility Plan).

As we point out in the EIS, EPA will not approve service to Area "L" until the National Recreation Area situation can be resolved between the National Park Service and Grand County. Also, we have urged the Board of Directors of the Sanitation District to consider phasing the proposed system (especially as related to the two small separate neighborhood treatment units) until they have acquired sufficient funding.

There is no intention of serving sparse or undeveloped areas, though the general nature of development in the area, i.e. "clusters" of development result in the interceptor sewer line traversing areas of relatively light development. A fairly large amount of these undeveloped areas are, however, in Federal ownership and thus not subject to development. Possible development of the areas in private ownership will be subject to Grand County land use regulation (the sewer lines are compatible with Grand County land use plans - see comment letter from Grand County). As we discuss at length in response to Mr. Naseth's letter (comment letter #2 which follows your letter and this response) Grand County has made significant strides toward revision and improvement in its land use planning and control functions.

Septic systems will continue to be used in outlying and sparsely populated areas after the proposed sewerage system is built. The actual boundaries of the Three Lakes Water and Sanitation District encompass a great deal more land area and a considerable amount of existing and possible development than is proposed to be served by sewers. The cost of serving these type areas with central sewers tends to preclude this type sewage collection, unless, of course, some private developer were to generate the necessary capital to meet the costs.

Two major hurdles that have to be faced in designing a sewerage system for the Three Lakes area are (1) the need to avoid discharge of effluent to the lakes and (2) the present pattern of development. The system, as

proposed, has attempted to meet these problems by (1) serving the major clusters of development and (2) placing the treatment plant discharge at the most logical location in relation to these clusters and, at the same time, discharging away from the lakes themselves.

COLORADO
HISTORICAL
SOCIETY

The Colorado Heritage Center 1300 Broadway Denver, Colorado 80203

Office of the State Archaeologist 839-3391

November 28, 1977

Mr. Philip H. Schmuck
Department of Local Affairs
Colorado Division of Planning
520 State Centennial Building
1313 Sherman
Denver, CO 80203

RECEIVED
NOV 28 1977
DIV. OF PLANNING

RE: Draft Environmental Impact Statement and the Final Wastewater Treatment Facilities Plan, the Three Lakes Water and Sanitation District; and the Cultural Resource Inventory Report, Three Lakes Water and Sanitation District, submitted as a supplemental report with the Final Plan: Archaeological Resources

Dear Mr. Schmuck:

The Office of the State Archaeologist of Colorado has received and reviewed the Draft Environmental Impact Statement and the Final Wastewater Treatment Facilities Plan, Three Lakes Water and Sanitation District; and the Cultural Resource Inventory Report, Neighborhood Treatment Plant Site "E:, Neighborhood Treatment Plant Site "M," Lagoon Site, Sewage Interceptor Route, Three Lakes Water and Sanitation District, requested by U.S. Environmental Protection Agency--Region VIII. (The State Historical Society's Department of Historic Preservation will independently comment upon architectural/historical resources.)

I. Our comments on the Cultural Resources Inventory Report prepared and submitted by E. Kinzie Gordon and Kris J. Kranzush are as follows.

The report is excellent in regard to the adequacy of the "Description of the Study Area," "Inventory Methodology," and "Known Cultural Resources." However, there are areas of inconsistency that should be clarified:

(1) Abstract: A reference to sites 5GA164, 5GA165, and "Locality No. 1" (referred to on p. 11) should be included in the Abstract.

(2) P. 11: Mention is made of sites 5GA164, 5GA165, and "Localit

No. 1," but it should be stated, as shown on the map in Appendix B, that these sites are not within the area of direct impact. Also, will there be any adverse impact on these archaeological resources?

(3) P. 17, par. 1: The recommendation was made to avoid site 5GA164. What are the recommendations for 5GA165 and "Locality No. 1"?

(4) Appendix A, Catalogue and Analysis--Lithic. The same problem exists: site 5GA164 and 5GA165 should be included in this Appendix.

(5) Glossary: A definition for "Locality" was included in the Glossary, but why are the "Localities" not considered by the authors to be sites? Perhaps there can be a clarification in this matter, but ordinarily a locality would have a site number and form.

(6) There are no Site Inventory Records for sites 5GA164 and 5GA165. If proper safeguards exist, these could have been included in the report; at any rate, the forms must be sent to the State Archaeologist.

(According to phone consultation by Gordon and Kranzush, Archaeological Consultants, a supplemental report will be submitted directly to this Office that will clarify these above comments.)

II. The Federal Agency involved in the Draft Environmental Impact Statement and the Final Wastewater Treatment Facilities Plan has not adequately considered archaeological resources in the proposed impact area.

Why did the Federal agency request a cultural resource inventory and not incorporate the information supplied by Gordon and Kranzush in the Draft EIS or the Final Plan? None of the archaeological resources identified and evaluated by Gordon and Kranzush were included in the reports, nor were the mitigation measures for these resources considered.

The archaeological resources that are listed on Table IV-7, and located on Figure IV-16 have not been properly evaluated by the criteria set forth in 36 CFR 800.10, nor have plans been made for avoidance or mitigation of Adverse Effect upon these resources according to 36 CFR 800.5(e) and (f).

Therefore, the Federal agency has not complied with the Federal legislation pertaining to cultural resources as set forth in the National Historic Preservation Act, implemented by 36 CFR 800, and Executive Order 11593.

If this Office can be of continued assistance, please contact EIS Reviewer Betty LeFree.

For the State Historic
Preservation Officer

Bruce E. Rippeteau, Ph.D.
State Archaeologist Colorado

BER(BJL):ng
cc: Gordon and Kranzush
Nelson, Haley, Patterson and Quirk, Environmental Consultants

Response to State Archaeologist

Though EPA funded a complete cultural resources survey of the Three Lakes sewerage project (including each principle alternative) we did not correctly convey this fact in the draft EIS. Because cultural resources were found EPA also incorrectly failed to explain the steps that will be taken to protect these resources in compliance with Federal law. A meeting between EPA and the State Archaeologist's office has taken place and the following paragraphs and attachment explain the results.

EPA will follow the recommendations contained in the cultural survey done by Gordon and Kranzush -- Archaeological Consultants (see attached abstract from that report). This will entail requiring the Three Lakes Water and Sanitation District to have a qualified archaeologist on site during the initial lagoon construction activity (5GA162 and Locality #2 area.) It will also require further testing of the 5GA162 site.

If subsurface archaeological resources are identified by encounter during construction of any part of the project, work will stop until the resources are properly evaluated in terms of the National Register of Historic Places eligibility criteria (36 CFR 800.10). Adverse impacts upon eligible resources will have plans for avoidance or mitigation (36 CFR 800.5(e) and (f). Both considerations will involve consultation with the State Archaeologist.

Abstract

On July 5 and 7, 1977, surface reconnaissance for location and evaluation of cultural resources was conducted by Gordon and Kranzush - Archaeological Consultants for the Environmental Protection Agency - Region VIII under Purchase Order Numbers WO-7-0455-A and WO-7-0455-A-1 in four proposed sewage treatment facility project areas for the Three Lakes Water and Sanitation District, Grand County, Colorado. Evidence of cultural activity includes recent debris, one historic component in a trash pit, prehistoric sites 5 GA162 and 163, and Locality #2. The significance of these finds and the nature of the impact that would result from implementation of the proposed actions are assessed in the section of this report entitled "Interpretations of Data and Impact Assessment". None of the resources located, with the possible exception of 5 GA162, is eligible for nomination to the National Register of Historic Places.

Professional archaeological monitoring of ground disturbing activities is recommended for the 5 GA163 and Locality #2 area, and testing of 5 GA162 is recommended to determine the depth of cultural deposits and assess eligibility for nomination to the National Register of Historic Places. These recommendations and others are discussed in the section of this report entitled "Conclusions and Recommendations".

THE STATE HISTORICAL SOCIETY OF COLORADO

Colorado State Museum, 1300 Broadway, Denver, Colorado 80203

October 27, 1977

RECEIVED
NOV 2 1977
DIV. OF PLANNING

Philip H. Schmuck
Director
State Clearinghouse
520 State Centennial Building
1313 Sherman Street
Denver, Colorado 80203

RE: Three Lakes Wastewater Treatment Facilities

Dear Mr. Schmuck:

This office shall comment concerning only architectural and historical properties that may be located within the potential environmental impact area of this undertaking; the office of the State Archaeologist will comment concerning archaeological properties.

It is our understanding that compliance with the environmental impact requirements of Section 201 (2)(C) of the National Environmental Policy Act and regulations thereunder should include compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, and Executive Order 11593. This statement is incomplete in that it does not contain evidence of such compliance nor does it contain provisions to insure future compliance.

We note that in the Facilities Plan prepared by the firm of Nelson, Haley, Patterson, and Quirk, numerous historical properties are identified in the impact area of the project. It appears, however, that these sites have been excerpted from the Colorado Inventory of Historic Sites, the record of an ongoing survey conducted by the state which is incomplete for this area. Thus, it appears that the Environmental Protection Agency (EPA) has not fulfilled its responsibility to identify all properties included in or eligible for inclusion in the National Register of Historic Places as required by the Advisory Council on Historic Preservation's regulation 36 CFR Part 800.4(a).

We also note that the EPA has not consulted with the State Historic Preservation Officer (SHPO) to evaluate the eligibility for inclusion in the National Register of the few properties that have been identified. Further, there is no evidence that the EPA has evaluated the effects upon eligible properties or developed feasible mitigation for their effects in accordance with the procedures set forth in 36 CFR Part 800. We advise the EPA that to fulfill its responsibilities for this project as set forth in Section 106 of the National Historic Preservation Act of 1966, as amended, it should address these issues prior to making a decision regarding the proposed undertaking.

If we may be of assistance in this process, please contact Michael C. Quinn at 839-3394 or at the above address.

FOR THE STATE HISTORIC PRESERVATION OFFICER

Sincerely,

James Edward Hartmann
Curator, Historic Preservation

Response to State Historic Preservation Officer

EPA funded an archaeological survey of the Three Lakes project area, including the major alternatives considered by the firm of Gordon and Kranzush -- Archaeological Consultants. This report was sent only to the State and Federal agencies with jurisdiction and concern for cultural resources because of a desire to avoid making public knowledge of the presence of potentially valuable resources.

EPA has met with the offices of both the State Archaeologist and the State Historic Preservation Officer in an attempt to clear up this matter. Though we incorrectly did not properly explain in the draft EIS the cultural survey work which had been done, the following two letters explain the results of our recent efforts. These efforts should ensure our full compliance with State and Federal law on cultural resources.

COLORADO
HISTORICAL
SOCIETY

The Colorado Heritage Center 1300 Broadway Denver, Colorado 80203

February 22, 1978

Gene Taylor
Environmental Evaluation Branch
Water Division
Environmental Protection Agency
Region VIII
1869 Lincoln Street
Denver, Colorado 80203

RE: Three Lakes Wastewater Treatment Facility

Dear Mr. Taylor:

Thank you for meeting with Michael Quinn of my staff on October 27th to discuss this project.

After reviewing the project description and the cultural resource survey, we concur with the Environmental Protection Agency that no architectural or historical properties will be affected by the proposal. In making this finding we have considered possible impacts upon the town of Grand Lake, which, in the opinion of the State Historic Preservation Officer, is eligible for inclusion in the National Register. Based upon the information provided, the wastewater treatment facility will have no effect upon the architectural and historical attributes of the town.

The Environmental Protection Agency will have no further responsibilities under the National Historic Preservation Act of 1966, as amended, after retaining documentation of this finding.

FOR THE STATE HISTORIC PRESERVATION OFFICER

Sincerely,

James Edward Hartmann
Curator, Historic Preservation

cc: Mayor, Grand Lake
Regional Council of Governments
County Land Use Administrator
Three Lakes Water and Sanitation District (Martha H. Winters)

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
P. O. Box 17107, Denver, Colorado 80217

November 18, 1977

Mr. John A. Green
Regional Administrator
United States Environmental Protection Agency
1860 Lincoln St.
Denver, Colorado 80203

20150

Dear Mr. Green:

Thank you for sending us a copy of the Draft Environmental Impact Statement for Wastewater Treatment facilities for Three Lakes, Colorado. We have reviewed the draft EIS and facilities plan and have the following comments to offer.

(1) Soils The regional soils map (Fig IV-6) and the interpretations (Figure IV-1 indicate severe limitations for sewage lagoons and shallow excavations for the Willow Creek lagoon area. In addition, the soils interpretations indicate high shrink-swell potential and steep slopes (6-15% or greater). In view of this, we believe the final EIS should show what measures will be taken to control eroison during and after construction and the measures to overcome construction limitations. This should include the sewage lagoon as well as the buildings, roads, sewer lines and related facilities.

(2) Wastewater Application - Page VII-2 - It appears that treated effluent from the lagoon system will be used to supplement irrigation water on 900 acres of hay meadows. We suggest the final EIS quantify the amount of effluent applied per acre per year and evaluate any limiting factors of land application of effluent; such as soil infiltration and percolation rates and toxic levels of micro nutrients.

Non-Point Pollution

(3) We compliment you on your discussion and recognition of non-point sources of pollution as a significant impact on the environment. We would like to mention the technical assistance available from the Soil Conservation Service, through the Soil Conservation Districts, to private landowners in planning and applying conservation practices for control of non-point sources of pollution. In addition, we can provide technical and financial assistance to county governments and other units of government to control non-point sources of pollution.

We appreciate the opportunity to review and comment on this project.

Sincerely,

George R. Kusty, acting
Robert G. Halstead
State Conservationist

184

NOV 29 1977

cc: R. M. Davis, Administrator, SCS, Washington D. C.
Office of the Coordinator of Environmental Quality Activities
Office of the Secretary, USDA, Washington, D.C.
Council on Environmental Quality (5 copies)

Response to Soil Conservation Service:

1. The specific measures to be taken to control on-site erosion and shrink-swell problems will be developed during Step II (preparation of plans and specifications) of the project. Examples of measures that could be taken would include disturbance of as little land as possible, re-vegetation, check dams, etc.. Neither EPA nor the State Health Department will approve a Step II that doesnot adequately address these problems through a definite work plan.

2. Again, specific soils information and formulation of an effluent application program will be accomplished under Step II of the construction grants process. The approval of the specific feasibility of the system and its operating plan will be made before proceeding to Step III (construction).

Based on year 2000 estimates, there will be a peak load of 4 a/ft. per day of effluent applied to the 900 acres (1.34 mgd effluent for a 120 day irrigation season). This would result in about 1/2 ac/ft per acre per year. Phosporous will be used by the plants or absorbed by the soil. Nitrates will be applied at a rate of about 33 pounds acre/ year (see response #5 of Department of Interior). Heavy metals should not be a problem in the type effluent involved.

3. No comment necessary. EPA will certainly bring this comment to Grand County's attention and encourage its planning department to make full use of SCS expertise and programs in water pollution control.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
REGION VIII
FEDERAL OFFICE BUILDING
19TH AND STOUT STREETS
DENVER, COLORADO 80294

NOV 18 1977

20195

OFFICE OF THE
PRINCIPAL REGIONAL OFFICIAL

Alan Merson
Regional Administrator
U.S. Environmental Protection Agency
1860 Lincoln Street
Denver, Colorado 80203

Dear ~~Mr. Merson:~~ Alan

Thank you for the opportunity to review the layered environmental impact statement to safeguard the water quality of three Colorado Lakes, Grand Lake, Shadow Mountain Lake, and Lake Granby.

It appears that the impacts expected to result from this proposed project and reasonable alternatives thereto have been adequately addressed.

Sincerely yours,

Wellington

Wellington E. Webb
Principal Regional Official

cc:
Office of Environmental Affairs
HEW, Washington, DC (1 copy)

Council of Environmental Quality
Washington, DC (2 copies)

191.5

NOV 30 1977

Response to Department of Health, Education, and Welfare

No comment necessary.

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
11177 West 8th Avenue
P.O. Box 25127
Lakewood, Colorado 80225

8430

November 29, 1977

Alan Merson, Regional Administrator
Environmental Protection Agency
1860 Lincoln Street, Suite 103
Denver, Colorado 80295

Dear Mr. Merson:

Thank you for the opportunity to review the Draft Environmental Impact Statement for the Wastewater Treatment Facilities for Three Lakes, Colorado. We have no comments.

Sincerely,

S. H. HANKS
Deputy Regional Forester, Resources

6200-11 (1/69)

Response to U.S. Forest Service

No comment necessary.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
REGIONAL OFFICE
EXECUTIVE TOWER - 1405 CURTIS STREET
DENVER, COLORADO 80202

REGION VIII

November 15, 1977

IN REPLY REFER TO:
8DE

Mr. Allen Merson
Regional Administrator
Environmental Protection Agency
1860 Lincoln Street
Denver, Colorado 80203

Dear Mr. Merson:

This is in response to your request for review of the Draft Environmental Impact Statement (EIS), Wastewater Treatment Facilities for Three Lakes, Colorado. On the basis of the information presented, the proposed facility appears acceptable.

We appreciate this opportunity to review the Draft EIS. If we can be of further assistance, please contact Mr. Walter Kelm of my staff at 837-3102.

Sincerely,

Walter Kelm

for Robert J. Matuschek
Assistant Regional Administrator
Community Planning and Development

Insuring Offices
Casper, Wyoming · Denver, Colorado · Fargo, North Dakota · Helena, Montana · Salt Lake City, Utah · Sioux Falls, South Dakota

Response to Department of Housing and Urban Development

No comment necessary.

7 October 1977

Mr. Jerry Raisch
Acting Regional Counsel
EPA
1860 Lincoln Street
Suite 103
Denver, Colo. 80295

Lizzy and Clint Alston
Box 18
Fraser, Colo. 80442

Mr. Raisch,

We are sending this letter in response to the enviornmental impact statement (EIS) and the sewage collection and treatment plan submitted to the public as a course of action to safeguard the water quality of the Three Lakes Water and Sanitation District.

This proposal does not include the alternative of on-site
(1) waste treatment by use of composting non-polluting organic waste treatment systems. By placing a comparison of these systems in the proposal and a public meeting to inform the concerned individuals we believe it would be a much more complete document of all the possibilities our society and technology has to offer.

We also believe that steps should be taken to change the
(2) law regarding the funding of waste treatment systems. Presently, only water transportation collection type systems are eligible for funding. This is discriminatory if nothing else.

The facts are that water transportation systems only produce
(3) more problems than the orginial waste itself. The five gallon flush toilet is a pollution monster. With an ever increasing population and a limited amount of water, it becomes evident that if we are to continue to survive that we need to conserve our valuable natural resource, water, second only to air in importance of survival for all living species.

On-site waste treatment composting type systems cost less. Complete individual systems can be installed to handle all
(4) human waste and household garbage and a greywater filter system for less than $1100.00 on a mass installation. These would be one time costs and would be for permanent systems that do not pollute as there is no use of water.

The proposed collection and treatment system would cost each individual in the district, wheather served by the system
(5) or not, between $6000.00 and $15,000.00, not to mention additional plumbing costs, hookup fees and monthly service charges. Also collection lines have a life expectency of less than 50 years and the extimates of NHPQ are that this system would need to be increased in size as early as 1990 with the projected growth of the district. This system would pollute more than it would protect.

The major drawbacks of the proposed system are as follows;

(6) 1) Construction would cause erosion and resultant sedimentation.

(7) 2) There will be a loss to the deer herd of 33 acres of grazing land.

(8) 3) Local residents will have to pay monthly service charges and will be taxed to pay for the system.

(9) 4) 10,000 gallons of water per person per year will be polluted that use the system.

10) 5) $5,719,000.00 in taxpayer's monies would be wasted.

By using composting on-site waste treatment systems there
11) would be no erosion, no land wasted, no increase in taxes, no monthly service charges, no polluted water and no wasted funds.

We propose that instead of having the federal government come up with 75% of the $6.0 million dollars, which really comes from taxpayers, that the government make $500,000.00 available in the form of low interest loans to individuals desiring the advantages of taking care of their own waste problems by using composting on-site organic waste treatment systems.

We presently have such a system in operation in our home and would be happy to have persons interested in preserving water, the environment and lowering taxes, inspect it in order to see and understand the advantages of a waterless, non-mechanical waste treatment system.

Thank you,

Lizzy & Glint Elston

Lizzy and Glint Elston
Box 18
Fraser, Colo. 80442

Response to Lizzy and Clint Elston:

1. You are correct. The draft EIS does not contain a specific evaluation of a Three Lakes area sewage treatment alternative based on the use of the on-site waste treatment composting type systems. EPA, the Three Lakes Water and Sanitation District, Grand County, and the State Health Department have however discussed the possibility of the use of individual type treatment systems for the area. Though these type systems (septic tank/leach fields) will still be in widespread use in the area, it is the opinion of those agencies mentioned above that a centralized collection and treatment system for the main areas of concentrated development is needed.

It is our understanding (conversation with Leroy Scott, Director, Department of Development, Grand County) that the County requires your proposed system to have a leach field. Inadequate leach-fields and an area not suitable for their use is one of the major factors leading to a preference to centralize sewer areas of concentrated development.

It is also our understanding that you have made a presentation of your proposed system at an open public meeting of the Three Lakes Water and Sanitation District and that the District has chosen not to support its use. Though EPA certainly supports innovative use of technology (land treatment systems, for example) sewerage projects must also be endorsed and partially funded by the local sponsors. In the Three Lake case, the local sponsor has voiced opposition to use of your system.

2. The Federal law under which EPA funds waste treatment systems, the Federal Water Pollution Control Act Amendments, and subsequent regulations issued by EPA provide for funding of individual type treatment systems when it is shown that they are cost-effective and operate adequately. The decision for actual funding of individual systems must be made by the local sponsor and receive subsequent state and federal approval.

3. The proposed sewerage system for Three Lakes area is not expected to cause any water shortage problem. Actually, by giving present poorly treated sewage adequate treatment a net increase in clean water should be realized. The proposed system also has a land treatment component as an added advantage.

4. Though we do not have the specifics of the type system you are proposing, we do not believe that any mechanical device can be built, installed, and operated as a "permanent" system. All systems, to our knowledge, require eventual repair and/or replacement, though this may vary considerably in time from one system to the next.

5. It is not clear how the "$6000 to $15,000" cost figure was derived. The financial analysis of the proposed sewerage system appears in Chapter VII of the Facility Plan which was mailed out as part of the draft EIS.

The voters in the Three Lakes Water and Sanitation District have approved a $1.3 million bond issue to finance the local share of the sewerage system. This $1.3 million will be financed via a property tax mill levy and by new tap fees. The exact burden of this debt per individual property owner will vary according to the value of his property. The remainder of the funds needed to build the system will come from funds allocated by the U.S. Congress to pay for public sewage collection and treatment projects.

Though individual property owners in the Three Lakes area may individually pay more than the $1100 figure you quote as the cost of installation of your proposed system, these same property owners have collectively made the decision that the sewerage system, as proposed, is worth the cost of the project. The Federal share of the cost would be spread amongst all taxpayers in the nation. Congress has made the decision that this is an appropriate use of everyone's tax dollar. Given the fact that the majority of the sewage load at Three Lakes is generated by summer tourists visiting a National Park and National Recreation Area, it would seem appropriate that Federal funds are used in this manner at Three Lakes.

We do not agree that the proposed system would "pollute more than it would protect." This could be true if the sewerage system were to lead to uncontrolled growth. However, Grand County has committed itself to controlling non-point (erosion and sedimentation) type pollution that could result from growth.

6. Some sedimentation will undoubtedly result from construction. EPA will, however, require careful control of construction activity to keep this pollutant at a minimum.

7. The 33 acres is classified as "general deer winter range" and its loss is not expected to affect local deer populations to any significant degree (see comment letter from Colorado Division of Wildlife). By tending to concentrate growth the proposed sewerage system may tend to diminish more dispersed type development with its attendant use of wildlife range.

8. This is correct. The local citizens have, however, elected to assume this burden in an open and public election.

9. We agree that in relation to a system that uses no water the proposed system will add human and other waste to clean water. At peak summer capacity in the year 2000 the total quantity of water that would be processed by the system would be 1.34 MGD. The sewage will receive adequate treatment and under applicable State and Federal law and regulations will meet health and in-stream water quality standards.

10. EPA, the State, Grand County, Three Lakes Water and Sanitation District, Congress, and many others (see comments) do not consider this project a "waste of money." The project will result in definite water quality benefits and those secondary benefits resulting from preservation of this quality at Three Lakes.

11. The actual construction of the proposed sewerage system will cause minimal erosion and will be controlled. The major erosion potential from the project comes from possible development -- an issue previously discussed as being addressed by Grand County (also see EPA response to State Division of Planning). Taxes will increase and a service charge will replace the expense property owners currently incur via use of septic tanks. Again, we do not believe the project to be a waste of funds nor a "polluter" of waters.

Federal law and regulations do not permit EPA to make low interest loans available to individuals for the financing of waste treatment systems. The law requires that projects be of a public nature. EPA, along with the State, may fund individual treatment systems. However, only the "public" aspects of such systems -- such as an inspection program, common septic tank, etc. are eligible, individual components such as toilets are not.

EPA appreciates the merit of innovative technology and the possible cost savings, "no discharge", etc. aspects of individual treatment systems. We also appreciate the interest of people who are attempting to offer alternatives to capital intensive projects. We believe, however, that the merits of the proposed Three Lakes system justify our support and that the system will help improve the long-term environment of the area.

TECHNICAL REPORT DATA

(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-908/5-78-002	2.	3. RECIPIENT'S ACCESSION NO.
4. TITLE AND SUBTITLE Final Environmental Impact Statement - Wastewater Treatment Facilities For Three Lakes Colorado		5. REPORT DATE
		6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) Gene Taylor, 8W-EE, EPA		8. PERFORMING ORGANIZATION REPORT NO.
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16. ABSTRACT

This EIS describes and analyzes the environmental impacts of a proposed regional sewage collection and treatment system for the Three Lakes Water and Sanitation District, Colorado. The proposed sewerage system will serve presently unsewered developed areas, eliminate present sub-standard septic tank and treatment plant discharge to the lakes, and discharge a properly treated effluent to a stream non-tributary to the lakes. Growth and non-point issues are being addressed by Grand County. The project is expected to result in water quality and land use improvement for the Three Lakes area.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
EIS, wastewater treatment facilities, non-point pollution, erosion, National Recreation Area, land use planning, Park Service, EPA, construction grants.	Three Lakes, Grand Co., Colorado, Rocky Mountain Nat. Park, Shadow Mtn. Nat. Recreation Area, Grand Lake, Shadow Mtn., Lake Granby.	

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