REPORT TO THE GOVERNOR

UMATILLA BASIN GROUND WATER TASK FORCE

MAY 30, 1986

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REPORT

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RECOMMENDATIONS:

1. The Governor, the Water Resources Commission and the Water Resources Department support for passage by the 1987 Oregon Legislature the statutory revision to the Ground Water Permit Law relating to recharge in the form attached as Appendix A.

2. The Governor, the Water Resources Commission, the Department of Fish and Wildlife and other groups continue support of the Bureau of Reclamation Umatilla Basin Project to enhance streamflow and restore anadromous fish populations in the Umatilla River.

3. The state and other relevant parties provide coordinated comprehensive planning in the Umatilla Basin. The preferred solutions to ground water problems require technical study and a coordinated effort like the effort with the Bureau of Reclamation for restoring and enhancing anadromous fish populations (see Appendix G).
   The preferred options presently include:
   - Columbia River pumping project of the Bureau of Reclamation
   - Upstream storage on Umatilla River at North Fork Meacham Creek or Patawa Creek
   - Ground water recharge using Umatilla River flows
   - Conservation with conserved water dedicated to offsetting ground water use
   - Interbasin transfer from Snipe Creek in the John Day Basin

4. The Governor support formation of a Umatilla Basin water management group representative of all water users which could follow up on the recommendations of the Umatilla Basin Ground Water Task Force.

SUMMARY REPORT

The Task Force members, following their appointment beginning April 15, 1985, held an organizational meeting on May 9, 1985, and thereafter met at least monthly through May 1986. The Governor's Executive Order No. EO-85-3 appointing the Task Force outlined that a central purpose for the Task Force was to evaluate solutions to the water supply problem in the Umatilla Basin.

Each of the members had some information about the Umatilla Basin water problems and all members learned a great deal during the year. There are several forces pulling in different directions on the water of the basin. Some of these are identified as follows:

1. Land in the Umatilla Basin is highly productive and can produce crops with an economic return if efficiently irrigated.

2. The Umatilla River is the source of much of the irrigation water.

3. The Umatilla River is the source of the Confederated Tribes claim for a salmon run for its people, which means that the Umatilla River cannot be entirely utilized for irrigation. The Tribes have an undetermined water right in the Umatilla River for domestic, livestock, industrial, irrigation and other beneficial uses.

4. Ground water sources have been used for domestic, livestock, irrigation, industrial and municipal beneficial uses. The water level in the basalt wells has been declining for several years. This fact has caused the Water Resources Department to stop further development of the ground water sources and to restrict uses of some already developed ground water sources in four control areas.

5. Electricity costs have increased dramatically, making further development of water from the Columbia River uneconomical for private irrigation development.

6. Declining farm gate prices and surpluses of nearly all farm products threaten the economic health of many farms, which in turn threatens farm-related industries and farm communities.

7. Government funding for water projects is nearly unattainable.

On the bright side, Oregon's first recharge project is moving ahead in the Umatilla Basin area, however, the current water law statutes do discourage recharge efforts. Much progress is being made in both conservation of power and water under the direction of Umatilla Electric Coop and Bonneville Power Administration (BPA). The Umatilla Basin Project is a thoroughly studied, well directed and coordinated project to increase the water available from the Umatilla River. The project includes plans for increasing the flow of water for fish, irrigation, and municipal and industrial needs, including supplementing the Umatilla River flow from the Columbia River. The biggest problem with the project is cost.

The Snipe Creek project is an interbasin transfer project that would provide additional surface water to much of the area affected by the Butter Creek Ground Water Order which restricts development and use of basalt ground water. Preliminary studies financed by farmers indicate it is a workable project. Again, the cost of this project is the biggest hurdle to further progress.

The Cities of Umatilla and Hermiston, along with the Port of Umatilla, have prepared proposals and sought financing for projects that would use Columbia River water for municipal and industrial purposes. Applications have not succeeded in getting the needed financing.

Part of the frustration of the Task Force is that there is no coordinated water policy plan for the area but there has been study on study of the water basin for more than 50 years. The Water Resources Department is about to embark on a study. The Confederated Tribes call for a complete study of the water resources of the basin but not solely under the direction of the State of Oregon. Water from the Umatilla River has been withdrawn from further appropriation so it can be studied. There is a great concern that technology is not adequate to permit answers to the issues to be studied.

The municipalities in the county have varying water problems, depending on location. For example, Pendleton, Adams, Echo and Stanfield are short of water. Irrigon is concerned about water quality; and Hermiston is concerned about adequate water, both in quality and quantity, for a growing population and anticipated industry. Only the City of Umatilla has adequate water for the foreseeable future.

Agri-industry must have adequate, good quality water to process and produce quality food for the marketplace. Agri-industry is also vitally concerned that adequate water be available for farmers at an affordable cost. If it is not, there is no future for agri-industry.

The Task Force has developed into a concerned, productive citizen group under the able assistance of the Water Resources Department. Collectively, the Task Force members identified water problems and whether there is an ongoing attempt to solve the problems. It has encouraged all efforts being made by other individuals, municipalities and associations to solve the Umatilla Basin water problems. The Task Force provided the Oregon Water Resources Department, as well as water users and producers, with a concerned forum to deal with water issues.

The Task Force has identified its most productive issue as recharge of ground water from surface sources. There is no other identified coordinated effort to encourage recharge within the Umatilla Basin. How to encourage water conservation is an issue that has been identified. Sufficient time has not been spent on this issue to recommend solutions. The Water Resources Department needs a citizen group to assist its Umatilla Basin study. This Task Force or a similar group may be able to meet that need.

CONCLUSIONS

1. Surface water gained through Columbia River pumping, recharge with Umatilla River flood water, conservation programs and storage projects provide opportunities for meeting identified water needs.

2. Improvements to the ground water situation should be coordinated with other actions in the basin to restore fish runs and preserve water supply for cities, industry, agriculture and the Confederated Tribes.

3. Implementing improvements requires ongoing planning and coordination at the basin level. Unless there is a continuation of the basin planning, the problems may not be solved or if they are the "solutions" implemented may cause other problems. Planning is needed to prevent further aquifer depletion and to address the needs of all users in a constructive forum.

4. Some otherwise viable options may be implemented only if state water law is changed. Changes are needed tnat address recharge and conservation.

Charles R. Norris, Chairman
Umatilla Basin Ground Water Task Force

Lawrence B. Rew, Secretary
Umatilla Basin Ground Water Task Force

INTRODUCTION

Governor Victor Atiyeh established the Umatilla Basin Ground Water Task Force on February 18, 1985, by Executive Order No. EO-85-3. The fifteen members represent various sectors of the local community. Included were representatives of agriculture, banking, the legal profession, general business, municipalities and the Confederated Tribes of the Umatilla Indian Reservation. The Task Force was charged with investigating and recommending alternative ways of providing water to meet the needs of agriculture while protecting water for domestic use and stock watering. The Task Force was to consider, at a minimum, the feasibility of the following approaches to enhancing the supply of water for irrigation:

a. Conservation practices
b. Multiple-storage projects
c. Columbia River pumping projects
d. Interbasin transfers of water
e. Surface water recharge projects
f. Use of low-cost financing, such as the Water Development Loan Fund, to encourage projects that use other sources of water

The Task Force recognized that ground water supply problems for irrigation could not be resolved without giving adequate consideration to all water uses in the basin. During the first six months, the Task Force received many presentations on problems and possible solutions. Subcommittees discussed the options for specific groups of users. Recommendations were discussed by the entire Task Force to develop a consensus for this report. While the solution of declining ground water supply has been the main focus, there are also recommendations for resolving other water supply problems in the basin. The report includes an Executive Summary. Attachments include interim actions of the committee.

BACKGROUND ON WATER USE CONCERNS

Irrigation with Surface Water

Irrigation is the predominant use of both surface and ground water in the Umatilla basin. The earliest water right issued by the State of Oregon dates from 1870, and the natural summer flow in the Umatilla River was fully appropriated before the Oregon Water Code was enacted in 1909. The Bureau of Reclamation started assisting agricultural development in 1906 and, by 1927, had completed the Umatilla Project. It consists of Cold Springs Dam and Reservoir, Feed Canal and diversion dam; Maxwell diversion dam and canal, Threemile Falls diversion dam; West Extension Canal and McKay Dam and Reservoir. Long diversion canals serve areas that would not otherwise have had access to a surface water supply. The Bureau project provided sufficient delivery and storage to supply the needs of 25,000 acres of land. Most of the land in northern Morrow and western Umatilla Counties is irrigable. More land was identified for irrigation than has been developed.

Many of the diversions have major losses before delivery to the farms. Much of the surface water irrigation has been converted from flood to sprinkler application, but many smaller parcels still use flood irrigation practices. Due to higher energy costs, some sprinkler systems are reverting to flood irrigation. There are opportunities for surface water conservation in both water delivery and application on fields. The concern is that conservation may reduce the recharge of shallow ground water and the overall supply during critical periods. Areas around Stanfield and Hermiston are converting from agricultural to rural residential land use with small farms that produce a minor source of income for the owner. The existing water laws provide little incentive to help rural farmers upgrade the efficiency of irrigation systems.

Irrigation with Ground Water

A large expansion in irrigated land occurred after 1966 when farmers began increasing appropriation of ground water for center pivot irrigation. A high capital investment was made but, within a decade, ground water level declines were threatening the development. A critical ground water area was established in the Ordnance area in 1976. Farmers responded by conserving water on the farm. The County Line Water Improvement District was formed and developed a successful ground water recharge program using flood flows of the Umatilla River. The designation of critical areas has put a cap on new irrigation. The ground water supplies in the County Line Water Improvement District have stabilized and are being put to highly efficient use.

A critical ground water area order was adopted in 1986 that affects the Butter Creek area. It limits the annual pumpage in each of several subareas. Ground water use in the Butter Creek area has declined dramatically since 1976 when the Water Resources Department first drafted a critical ground water area order. Some land use has been removed from irrigation due to other factors. In some sub-areas, pumpage has been reduced, presumably due to rising energy costs and/or declining prices for farm commodities, prior to declaration of the critical area. Some farmers are using more surface water and others are applying water more efficiently through changes in equipment and scheduling. Until there is some experience with implementing the 1986 Butter Creek order, the full effect on developed land cannot be determined. Additional cutbacks may be required in some subareas due to the pumping limitations in the critical ground water area order. Economically feasible water sources are very limited in the Butter Creek area. The only reasonable alternative water source in the higher Butter Creek elevation is an interbasin transfer of water from Snipe Creek in the John Day Basin to Butter Creek. This has been considered by irrigators for years and warrants future economic study.

Two new areas are currently under a ground water area study, and additional ground water development has been halted. The Ella Butte area is in Gilliam and Morrow Counties, and the Stage Gulch area is in Umatilla County. Stage Gulch appears to have more options for alternate water supplies than the Butter Creek area. Several interim actions of the Task Force focused on water supply issues for the Stage Gulch area.

Municipal, Domestic, and Livestock Use

Municipal supply may become a major issue if projected growth occurs. Only the City of Umatilla has large, developed surplus capacity. Basalt and alluvial aquifers and springs are the present sources of municipal supply. Water supply for rural domestic and stock use will become a problem if aquifers are depleted. Cities in the lower basin have supported a regional system which would use water from the Columbia River or use ground water infiltration from the Columbia River gravels. Feasibility studies have been completed, but issues such as formation of a regional district need to be resolved. Alternative actions are also being considered by the City of Hermiston.

The City of Pendleton has experienced water level declines of nearly five feet per year in the basalt aquifer. The subbasin of the Umatilla, including Pendleton and upstream, is geographically separated from many of the solutions possible in the lower basin. The cities of Pendleton, Adams and Athena, the Confederated Tribes and industries in the area want a basinwide planning approach that includes resolution of upper basin concerns. Ground water recharge is an attractive solution for municipal supply for Pendleton. The basalt aquifer may serve as a natural reservoir for holding surface supplies. Pretreated recharge water would be both secure from contamination and available when spring water is too turbid or insufficient for the demand.

Agricultural Industry Use

Major food processing companies in the area also have water supply concerns. Good water quality is essential for most food processing supply needs. Ground water is the best source to reduce costly treatment. Food processors internally recycle processing water to reduce water needs. The final wastes are disposed of on land because the nutrient content is too high to discharge into the river. The wastes contain high nitrogen levels and must be used with other water sources to avoid ground water contamination. Presently, industries need irrigable land available and a supply of ground water or surface water available so the waste water application will be adequately diluted.

The Lamb-Weston and Simplot potato processing plants are both dependent upon ground water and lie in or close to designated Critical Ground Water Areas. Although their present water supplies are adequate, they have concerns for the future. Food processing companies would like to be given priority for good quality ground water sources. The economic development of the Umatilla Basin would be aided by protecting enough supply to expand industry. Food processors, however, emphasize their dependence on a thriving agricultural base. The expansion of industry cannot come at the expense of irrigated agriculture.

Umatilla Tribes and Reservation

The Confederated Tribes of the Umatilla Indian Reservation have treaty rights (Winter's reserved rights) to a quantity of water necessary to fulfill the purposes of the tribal homeland (reservation). The Winter's right includes both present and future needs but has not been quantified. In addition to their rights to use water, the Tribes, as a sovereign government, have asserted their authority and responsibility to manage tribal waters and to regulate development and use of water resources on the reservation.

The Tribes have been working with the Bureau of Reclamation, Northwest Power Planning Council, Oregon Department of Fish and Wildlife, irrigation districts, and local businesses to restore and enhance anadromous fish populations in the Umatilla Basin. A local steering committee of the Umatilla Basin Project, co-chaired by a tribal member who is also a Task Force member,* is promoting a Bureau of Reclamation streamflow enhancement project for the Umatilla River (the Umatilla Basin Project). The project would initially provide streamflows needed to pass fish through critical reaches of the river by offsetting Umatilla River flow currently diverted for irrigation purposes with water pumped from the Columbia River. The project has received broad support from the Tribes, local, state and federal agencies, and a favorable review from Oregon congressional delegates. Later phases of the project include investigating ways for augmenting water supplies to meet on-reservation and off-reservation needs for consumptive uses of water. This effort also includes studying the relationship between ground water depletion and water storage in the basin.

One of the tribal goals is to develop and maintain a stable and diverse economic base on the reservation. Good quality water in sufficient quantities will be required to meet this goal. In the foreseeable future, the Tribes will continue to rely on ground water supplies to meet the increasing demand for domestic, municipal, industrial, and irrigation uses on the reservation.

As a user and manager of water resources, the Tribes are very concerned about the potential for aquifer depletion extending onto the reservation. The Tribes want to promote and participate in water management activities that will protect ground and surface water supplies. As demand for water increases, the Tribes believe water use conflicts in the basin will intensify. The Tribes support development of comprehensive water management for the entire Umatilla Basin to minimize or prevent conflicts among the various users. The plan should strive to augment water supplies, conserve water resources, maintain or improve water quality, and allocate fairly water among the various users for all beneficial uses.

(*Three other Task Force members also serve on the steering committee, reflecting the cooperation and close coordination between ground- and surface water action groups.)

DISCUSSION OF ALTERNATIVES

CONSERVATION PRACTICES

Center-Pivot Irrigation: The main opportunities for reducing water use with center-pivot systems include irrigation scheduling and cropping-pattern strategies. Other opportunities include changes in irrigation equipment such as low-pressure sprinkler heads, energy-efficient pumps, and irrigation during low power-load demand for rate savings. Energy savings can help pay for water-savings programs, such as irrigation scheduling which requires field moisture measurement. The Umatilla Electric Cooperative Association is working closely with irrigators on such techniques, and BPA offers several programs encouraging energy and water use efficiency. Some funding is available for initiating programs.

Surface Water Use for Irrigation: Many farms use surface water during the early season and then tap wells for supplemental irrigation in late summer. There are opportunities for conserving surface water. One plan is to modify the Westland Irrigation District distribution system by lining open ditches or replacing them with pipelines. Improving the efficiency of use of stored water could reduce the needs to use ground water as a supplemental source. On November 29, 1986, the Task Force submitted a special interim report requesting a three-year delay in the final proof survey of Permit No. 7400 for waters stored in McKay Reservoir. It is possible that water conserved by the Westland I.D. improvements could be applied to lands that would conserve ground water presently used for irrigation. The Bureau of Reclamation is now required to have conservation plans for federal projects. One concern is whether the gains from increasing irrigation efficiency with surface water will be experienced as losses in ground water recharge. Certification of water permits under final proof surveys of the Water Resources Department may reduce the surface water available to irrigation districts. The present state law does not provide any incentive for water conservation. There are few opportunities for recovering any voluntary or required conservation investments. The volume of water that could be saved by efficient surface water irrigation is estimated to be substantial.

Surface water conservation may have major benefits for instream flows, especially in early summer, because more water would be left in the river. Conservation may, however, reduce ground water discharge to the river in late summer. Surface water conservation has considerable potential but without some legal and financial incentive, most irrigators cannot afford a conservation program on their own.

MULTIPLE-STORAGE PROJECTS

Existing Storage: Cold Springs and McKay Reservoirs provide irrigation supply as the primary and only authorized use. Wildlife refuges have been established around the reservoirs. The present authorization limits other uses. The future use and operation of McKay is tied in with the Bureau's Umatilla Basin Project and with the present authorization. Westland and Stanfield Irrigation Districts have proposed using McKay water (not to exceed present diversions) to offset ground water use within the two districts. Water savings would originate from improvements in the Westland Canal. See reference to Permit No. 7400 above. Proposed changes in the operation of Cold Springs Reservoir are expected to improve Umatilla River streamflow without reducing irrigation benefits. Cold Springs has not been suggested as an alternative source for replacing ground water irrigation.

New Multiple-Purpose Reservoirs: The Bureau of Reclamation has studied, and filed upon, several reservoir sites in the basin. Major sites with the greatest support include:

1. North Fork Meacham Creek at Bear Creek.
2. An off-channel site on Patawa Creek near Pendleton, to be filled from the Umatilla River.
3. An off-channel site on Snipe Creek, to be filled from Camas Creek in the John Day Basin with part of the water to be transferred to Butter Creek.

The North Fork Meacham Creek reservoir could augment streamflow in the upper river and possibly be used for irrigation in the lower river. Patawa could provide irrigation, municipal and industrial supplies and augment streamflow in the lower river. Snipe Creek could supply irrigation in Butter Creek and the North Fork John Day River and possibly provide flow enhancement in the North Fork John Day. It is worth noting that the Umatilla is one of the few major drainages in Eastern Oregon with no storage reservoir on the mainstem.

New Single-Purpose Reservoirs: One large private storage reservoir has been proposed off-stream from the lower Umatilla River. It would supply the Teel Irrigation District and could offset ground water use in parts of the Stage Gulch area. Economic feasibility of the project is unknown. The potential effect on streamflow in the Umatilla River is a significant concern. If instream flows and existing uses can be adequately served and sufficient surplus water exists, private single-purpose storage may help relieve localized problems.

COLUMBIA RIVER PUMPING

Importation of Columbia River water offers the most viable alternative for improving instream flows in the Umatilla River. It may also prove to be an economic source to offset ground water declines in the Stage Gulch area. Several different pumping locations have been studied. The proposal that has been submitted to Congress includes a pumping plant near the mouth of the Umatilla River as an alternative surface water supply for West Extension Irrigation District and a pump upstream on the Columbia River near Cold Springs that would supply Hermiston and Stanfield Irrigation Districts. Umatilla River and McKay Reservoir supplies that are saved would be used to augment streamflow.

Municipalities have also considered pumping from the Columbia River. The Port of Umatilla presently holds Permit No. 49497 for diversion of 155 cfs from the Columbia which could be the base for a regional system for municipalities and industry. Funding and development of this system could be a key factor in assuring future water needs for non-agricultural users in western Umatilla County.

INTERBASIN TRANSFERS OF WATER

Two prominent interbasin transfer plans which have already been identified are Snipe Creek Reservoir in the John Day Basin and the Columbia River pumping. A possible obstacle to the Snipe Creek project may be the objection of water users in the John Day basin to a project that includes any diversion out of the basin. However, the Task Force believes this project should be the object of continuing study for physical and financial feasibility.

The Columbia River pumping projects are not expected to have adverse impacts. The water used would come from the John Day or McNary Dam pools of the Columbia River and would be replaced with an equivalent amount of water from the Umatilla River. The Bureau of Reclamation proposal includes a donation of power from BPA to run the pumps as part of the Fish and Wildlife Conservation Program.

SURFACE WATER RECHARGE

Recharge of ground water using surface water is a relatively new development. The County Line Water Improvement District is one of few documented successful recharge projects for irrigation in the country. There may be additional potential for recharge in the basin. The local success lends strong hope that more recharge could be developed. At present, both legal and policy issues impede new recharge projects. Oregon statutes make recharge water rights inferior to later priority rights for other uses. A recharge permit can be granted only if it is found that the water would otherwise "flow to waste." No such requirement has ever been placed on other water uses. The concept of "flowing to waste" is ill-defined and probably difficult to establish. A more reasonable standard is needed.

The Bureau of Reclamation is sponsoring a recharge demonstration project grant. Pendleton and irrigation districts in the Umatilla Basin are planning to apply for funds under this project. These planned projects would use water from the Umatilla River; however, the Umatilla River is presently withdrawn by the Water Resources Commission from further appropriation until December 31, 1988. The withdrawal was ordered in response to a local request to stabilize limited surface water supplies for completion of Umatilla Basin Project studies. At this time, the availability of surplus water is uncertain. The Task Force is concerned that the withdrawal will reduce the chances of taking advantage of the federal funding for artificial recharge.

The alluvial and basalt aquifers in the Umatilla Basin do not appear to be connected. It may be desirable for municipal or industrial users to recharge the basalt aquifer from alluvial ground water sources. The law presently does not allow this option. The Task Force has been unable to determine the legislative reason for excluding recharge of one aquifer from another. The basalt aquifer, which contains relatively isolated compartments, may be a natural subsurface reservoir. The recharge, by law, would have to meet rigid water quality standards. With that condition, it seems unimportant whether the recharge supply comes from surface water or ground water.

For recharge to be a legally and financially viable alternative, the Task Force has concluded that amendments to ORS 537.135 are essential. Recommended revisions are attached hereto and by reference made a part of this report.

LOW-COST FINANCING

Financing is a major obstacle. The main financial assistance sources identified are:

BPA: Water and Energy Conservation Programs for direct cost-saving and ongoing energy savings.

BUREAU OF RELCAMATION: Federal Water Development funds are difficult to obtain, but the Bureau of Reclamation does have a small projects loan fund available (PL 984).

WATER DEVELOPMENT LOAN FUND: ORS Chapter 541 provides for low-interest loans for feasible projects.

ONGOING BASIN PLANNING

The only way to implement any of the projects is to have an ongoing coordinated effort for study, design and financing. Many solutions tend to be single-purpose. It is important to make sure that the solution to one problem will not create a new one. The Umatilla Basin Project pumping plan is an example of coordinated planning. The primary purpose of the project is to restore and enhance anadromous fish populations of the Umatilla Basin. Through continued and close cooperation with the local agricultural interests, it was designed to avoid any adverse impact on existing agriculture.

The Water Resources Commission's basin program for the Umatilla was first approved in 1964. There was no significant revision until 1985, when minimum streamflows were added. The Commission responded to a local request and withdrew the Umatilla River and tributaries from additional appropriation in December 1985. This action was taken to help stabilize conditions for project planning.

Statewide basin planning that is comprehensive in scope can help identify water supplies and resolve possible conflicts. Residents of the Umatilla Basin area need to continue active guidance in water management issues. A local water management board could represent all major user groups and advise local, state and federal agencies on needed projects and programs.

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RECOMMENDED REVISION OF THE RECHARGE STATUTE

[] Brackets indicate deletion of existing language.
__ Underlined parts are new wording

537.135 Permit required to appropriate [surface] water for recharging ground water sources; appropriation of excess ground water. (1) The appropriation of [surface] water for the purpose of recharging ground water basins or reservoirs is declared to be for a beneficial purpose. Permits for such appropriation may be granted by the Water Resources Commission on application made thereof. Any such application shall substantially comply with ORS 537.140 and shall be subject to the provisions of ORS 537.150 to 537.230, as are other applications and permits to appropriate water.

(2) Approval by the Commission of an application for a permit to divert [surface] water for the recharging of a ground water [basin or] reservoir, separate from that which is the source of the recharge water, shall constitute permission to [divert] appropriate only [those waters which have been determined by the Commission to be surplus and which if not diverted would run to waste.] to such extent that such appropriation does not interfere substantially with prior rights to ground or surface water or with minimum streamflow having an earlier priority date. The conditions of the diversion appropriation shall be stated in the permit to [divert] appropriate the [surface] waters for recharge purposes and may include special provisions or requirements relating to recharge that, in the opinion of the Commission, are necessary for the protection of the ground water supply to be recharged.

[(3) Any person or public agency holding a permit to appropriate surface water for the purpose of recharging ground water basins or reservoirs as provided in subsection (1) of this section and who has perfected the right by actual recharge of a ground water basin may apply to the commission for a permit to withdraw from the recharged ground water basin or reservoir any water which the person or public agency can establish, to the satisfaction of the commission, as available for withdrawal as a result of this recharge and in excess of the ground water which would be available if the recharge were not practiced].

(3) Any person proposing to apply to a beneficial use the water stored artificially in any such ground water basin or reservoir shall file an application for permit, to be known as the secondary permit, in compliance with the provisions of ORS 537.130 and 537.140 to 537.240. The application shall refer to the artificially recharged ground water basin or reservoir as a supply of water and shall include the written consent of the holder of the primary diversion recharge certificate right to the specific withdrawal being applied for.

(4) Any permit issued under this section shall be subject to cancellation for abandonment as provided in ORS 540.610 to 540.650.

AGRICULTURE SUBCOMMITTEE

INTRODUCTION FOR IRRIGATION CROPS

The economical importance to Oregon of the Umatilla Basin irrigation cropland with our estimate farm gate value of all crops at $182,000,000 and added value of processors payroll of $35,000,000 all in west Umatilla and northern Morrow Counites. Because of the critical ground water supply in the Umatilla Basin, need to reestablish fish runs, the agricultural committee of the task force has come up with these solutions.

1. Columbia River Pump Stations
   A. Cold Springs
   B. West Extension

2. Recharge
   A. Alluvial
   B. Surface

3. New Storage Sites
   A. Snipe Creek Reservoir
   B. Patawa Reservoir
   C. Bear Creek Reservoir

4. Conservation
   A. Upgrading existing canal system
   B. Advanced technology in equipment
   C. Cropping patterns

5. Fish Run Restoration

6. Management Board

7. Legislative
   A. Recharge water right priority
   B. Water saved by conservation to be used in other critical areas
   C. Interbasin transfers to be continued

EXPLANATION

1. Columbia River pump stations can supply water to Cold Springs Reservoir and West Extension Canal to make water available for fish restoration. Bureau of Reclamation has completed design, study and approval. BPA has committed to furnish power for operation.

2. Recharge - using flood water in the off season for both ground water storage and surface water storage, in the area where appropriate. One successful ground water recharge system in operation in the Ordinance Area.

3. New Storage Sites
   A. This is an old plan first explored in the early 1900's. Water would be diverted from Camas Creek into a canal to Snipe Creek Reservoir. During snow melting season, Snipe Reservoir with a total capacity of 260,000 acre feet would supply water to Butter

Creek through a three mile tunnel. Annual yield of this system is 55,000 to 60,000 acre-feet. Water flowing down Butter Creek would enter the critical ground area at a high elevation. This water would gravity flow to a major portion fo the areas served at present by deep basalt wells. This could also serve all the irrigation districts in the area.

B. Patawa - an off stream - upstream storage southeast of Pendleton.

C. Bear Creek - on stream - upstream storage, a tributary of Meacham Creek.

4. Conservation

A. Sealing, lining, piping existing canals built in 1903, 1906 and 1916 by horse drawn equipment. Some of this work is underway at present.

B. Umatilla Electric Co-op has supplied leadership in this field. Night time irrigation, low pressure, neutron probe, irrigation scheduling, crop pattern rotation, latest technology in equipment design are some of the major conserving practices being implemented.

C. Crop rotation patterns are being used so high water use crops do not conflict with each other.

5. It is recognized and encouraged. Fish restoration must be established. Irrigators, BPA, Bureau of Reclamation, the Confederated Tribes, Corps of Engineers and all irrigation district must work with great cooperation to solve this problem.

6. Because of the work of the Governor's appointed task force of 15 members, we recommend establishment of the Umatilla Basin Water Management Board to consist of seven members representing industry, Confederated Tribes, irrigators, irrigation districts, recreational interests and fish and game. This board would continue and carry out the plans of the task force.

7. Legislative

A. Recharge - We feel that the recharge laws make recharge a bastard step sister of the priority water rights in the state. Before any more projects or money will be spent, the laws governing recharge need to be rewritten so they will have some support. Identity and strength, not a second class water right.

B. Legislative changes should be made to allow some incentive for conservation so water saved by conservation could be used in other critical areas by the entity.

C. Interbasin transfers need to continue to be a viable alternative solution to water shortage problems. Attempts to legislatively prohibit interbasin transfers must be avoided.

SNIPE CREEK

This is an old plan first explored in the early 1900's. It is envisioned to divert water from Camas Creek into a canal to Snipe Creek Reservoir. The Snipe Creek Reservoir located about six miles north of the town of Ukiah, would have a total capacity of 260,000 acre-feet off stream storage. A tunnel some 3 miles long would release water directly to the Butter Creek natural channel which would need to be improved along approximately 30 miles.

This plan is an interbasin transfer which would yield 55,000 to 60,000 acre-feet annually.

In 1977, the Butter Creek Irrigation Association contracted with the Engineering firm of CH2M Hill to do a "Reconnaissance Study" of this project. That study is the source of our figures for this part of our report. A copy of that study is attached. It is noted that some features set forth in the study have been made unusable because of high electric costs etc., the basic facts remain i.e., capacities yield, distance etc.

During spring months, Camas Creek and the others in the area take a tremendous amount of snow melt water down to the John Day River and out to sea via the Columbia. Since this snow melt covers at the same time as other snow melt in the northwest, the Columbia River dams cannot utilize this water for power generation, fish passage, or any beneficial purpose. It would therefore seem very beneficial to save some of this water for our use. The Snipe Creek project plan would take only the water above minimum streamflow and adjudicated water right amounts into the reservoir.

The Snipe Creek project water would totally offset use now being served by wells in the Butter Creek critical ground water area. It is realized, however, that the Sand Hallow area would probably be too far from Butter Creek to use this water. It might be possible to allow Sand Hollow Irrigation to continue pumping from deep wells if the wells closer to Butter Creek were stopped from using deep basalt water.

Snipe water could be used on some new lands in the area or possibly used in the area between Butter Creek and echo where wells pumping levels are declining.

A feasibility study must be made to give us a more accurate figure on costs and benefits. Such a study would cost $100,000 plus and include core drilling of the tunnel route. Since the tunnel is the most variable piece of the project, it is more important study the geology of the tunnel route very closely. If a tunnel cannot be drilled without lining the whole project will probably be unfeasible.

Future conservation could release water for municipal industrial users. Some incentive should be developed whereby irrigators could benefit financially by investing in new equipment and practices in order to release some of their water to municipal industrial needs.

Other advantages of this project; fisheries would be developed immediately both on the Snipe Reservoir and Butter Creek which at present does not run year round. Potential for power general when needed in the future.

It is realized that there are some interests in the John Day area which will object to this plan. There is however, some benefit to the John Day River people. Water could be stored and released in a timely manner down Snipe Creek for use in lower Camas and the North Fork John Day River.

4092D

CH2M HILL
engineers
planners
economists
scientists

23 November 1977

P11243.A0

Butter Creek Irrigation Association
Morrow and Umatilla Counties
Oregon

Gentlemen:

During the fall of 1977 the Butter Creek Irrigation Association authorized CH2M HILL to update the "Snipe Creek Project Report" originally done by the Bureau of Reclamation. We have re-evaluated, revised, and updated cost for the project.

A special thanks goes to Mr. Jerry Myers for his assistance during the study. Several association members, including Ed Johnson, Mike McCarty, and John Madison also provided valuable assistance and guidance.

Working with the association has been a most enjoyable experience. If you have questions, or need further clarification on any aspects of the project, please call.

Sincerely,

Robert W. Charley
Project Manager

RWC/h

APPENDIX

A possible alternative to constructing a tunnel between Snipe Reservoir and Butter Creek is to pump water over the barrier separating the two drainage basins. This would require a 25,000-horsepower pump station and 16,000 feet of 6-foot-diameter steel pipe. Estimated cost to construct the pump system would be:

Pipeline	$4,800,000
Pump station	2,500,000
TOTAL	$7,300,000

The estimated cost for a tunnel is between $3,200,000 and $5,300,000, which is about half the pump system cost. In addition, the pump station will require annual costs of $250,000 for electricity, operation, and maintenance. Annual operation costs for the tunnel will be less than $5,000.

It appears that pumping water from Snipe Reservoir to Butter Creek is not feasible unless the water could be used for power generation before it is discharged into Butter Creek. A power plant built at the mouth of Tunnel Canyon would have a gross head of 600 feet. To use this head for generating power would require an additional 10,000 feet of 6-foot-diameter pipeline. The costs for this development would be as follows:

Pipeline	$ 3,000,000
Power plant	8,000,000
Transmission line	250,000
TOTAL	$11,250,000

The plant would produce about 32,400 megawatt-hours per year. Since the energy would be prbduced during June, July, and August, its value would not be as high as energy produced during the winter. According to figures from Columbia Power Co-op, the energy would be worth about $208,000. The repayment on the construction cost would be $755,000 per year at 5-1/2 percent interest (30-year repayment).

BUTTER CREEK IRRIGATION PROJECT

INTRODUCTION

Purpose

This report was authorized by the Butter Creek Irrigation Association. It is intended to provide information on the costs for developing a system to irrigate 15,000 to 20,000 acres of land along Butter Creek in northeast Oregon. As part of the Umatilla Basin project, the Bureau of Reclamation in 1967 proposed diverting water from Camas Creek through a canal into Snipe Reservoir; the water would be carried from the reservoir through a tunnel and into the upper reaches of Butter Creek. This would augment the natural flows in Butter Creek, providing additional water for irrigation. The purpose of this report is to re-evaluate the project proposed by the Bureau of Reclamation, determine the maximum number of acres that can be irrigated, and update the construction and operation costs.

Conclusions

1. There is sufficient water available in Camas, Owens, and Snipe Creeks to irrigate about 18,000 acres in the Butter Creek Basin with 3 acre-feet of water per year.

2. The proposed project includes a pump station/diversion dam located on Camas Creek below Cable Creek, a canal, a reservoir, a tunnel, and improvements to the Butter Creek channel.

3. Construction cost for the system will be between $15,710,000 and $18,370,000 depending on the rock conditions encountered in the tunnel. We expect good rock.

4. The per-acre project cost is $873.

5. Operation and maintenance costs for the system will be about $110,000 per year or $6.10 per acre per year.

PROJECT DESCRIPTION

Irrigation Needs

Irrigation is presently limited by the natural flow in Butter Creek. High runoff occurs in the spring (March, April, and May) and declines rapidly around June 1. Irrigation starts with the spring runoff and continues until flows drop in June.

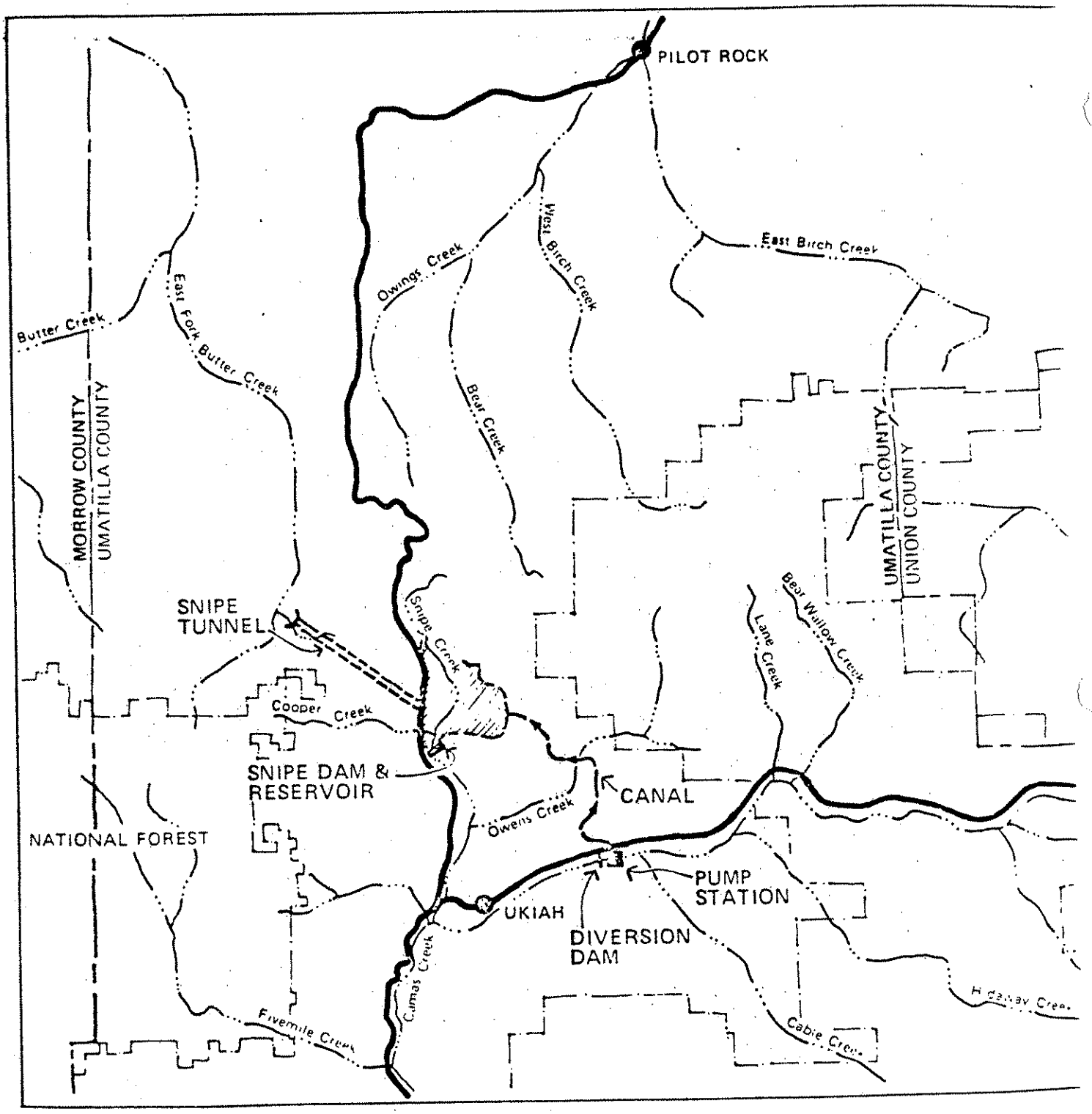
The system and costs developed in this report are based on the need to supply 3 acre-feet of water per acre per year after June 1 when irrigation normally stops. If water is available for irrigation during June, July, and August, farmers will be able to increase production and grow more valuable crops.

Water Source

Water for irrigation along Butter Creek will come from Snipe Reservoir, located on Snipe Creek in the John Day River Basin. Inflow to the reservoir is from Snipe Creek, Owens Creek, and Camas Creek. Water from Owens and Camas Creeks will be carried to the reservoir via a canal (see Figure 1). By locating the diversion dam on Camas Creek below the confluence with Cable Creek rather than above the confluence of Hidaway Creek as the Bureau proposed, sufficient water would be available to irrigate 18,000 acres. During the average year the total runoff at the diversion site on Camas Creek is 87,000 acre-feet, of which 48,000 acre-feet can be diverted to Snipe Reservoir. Average annual flow from Owens and Snipe Creeks totals 16,000 acre-feet, giving a total reservoir inflow of 64,000 acre-feet.

To provide 3 acre-feet of water per acre per year it is necessary to release 3.3 acre-feet of water (10 percent instream losses) from the reservoir. Accounting for reservoir evaporation and instream losses, approximately 18,000 acres can be irrigated during the average year using 3 acre-feet per acre.

Snipe Reservoir provides enough carry-over storage to continue irrigation during dry years. From 1934 to 1941 (lowest period on record) flows in Camas Creek were below normal. Total inflow to Snipe Reservoir during this period was 44,000 acre-feet. To meet the irrigation needs of 18,000 acres along Butter Creek, 147,000 acre-feet of water would be required from storage during the 8-year period. This is well within the capacity of the reservoir, which could be built to store up to 260,000 acre-feet with little added project cost.



↑N Figure

SYSTEM FACILITIES
Butter Creek Irrigation Association

Diversion of water from Camas Creek was considered only when flows were above the minimum levels established by the Oregon Department of Fish and Game. Natural inflow below the point of diversion on Owens and Snipe Creeks was sufficient to meet minimum fish flow requirements and therefore all flow could be diverted. Natural inflow below all diversions is also sufficient to meet downstream water rights.

Proposed System

The proposed system will divert water from Camas, Owens, and Snipe Creeks in the John Day River Basin to Butter Creek in the Umatilla River Basin. A small diversion dam on Camas Creek below Cable Creek will form a pool from which water will be pumped up into a canal leading to Snipe Reservoir. A dam on Snipe Creek forms the reservoir. Owens Creek and other local tributaries will empty directly into the canal and thus into Snipe Reservoir. From Snipe Reservoir water will be diverted through a tunnel into Butter Creek. A description of each component in the system follows.

Camas Creek Diversion Dam. This dam will be a 30-foot-high earthfill structure located just below the confluence with Cable Creek. Rock for the embankment will be obtained from the streambed in the pool. A 150-foot-wide spillway will be cut into rock on the left abutment. The dam will provide a small amount of storage to catch some of the peak flows. A fish ladder will be built to provide fish passage. Highway 244 will require minor relocation.

Pump Station. The pump station located at the diversion dam will pump water 160 feet up to the canal leading to Snipe Reservoir. The station will pump at the rate of 350 cubic feet per second and will require 8,000 horsepower. An electric transmission line near Ukiah, 3 miles away, will provide energy for the plant.

Canal. The canal will carry water from the pump station outlet on Camas Creek to Snipe Reservoir. The canal will be 7 miles long, unlined, with a bottom width of 10 feet, 2 to 1 side slopes, and a capacity of 350 to 400 cfs. Flow from Owens Creek and most other drainages which cross the canal will be channeled into the canal. Several county bridges will be required.

Snipe Dam and Reservoir. The dam and reservoir will be on Snipe Creek near U.S. Highway 395 about 6 miles north of Ukiah. The dam will be an earthfill structure with a maximum height of 130 feet above streambed and a crest length of 2,100 feet. The reservoir capacity will be 260,000 acre-feet, of which 220,000 acre-feet will be usable for irrigation and 40,000 acre-feet will be dead storage. The surface area of the reservoir at full pool will be 4,400 acres. Relocation of Highway 395 and a county road on the northeast side of the reservoir will be required. Minor utilities will also need to be relocated.

Tunnel. A 16,000-foot tunnel will carry water from Snipe Reservoir to the upper reaches of Butter Creek. The tunnel will be at about 3,600 feet mean sea level and will empty into either Tunnel Canyon or the East Fork Butter Creek. We estimate the tunnel will be 7 feet by 8 feet, unlined, with 5 rock bolts for every 5 linear feet of tunnel. The tunnel crosses one major fault and will require additional structural support at this location.

Butter Creek. The natural channel of Butter Creek will be used to convey water from the tunnel outlet downstream. Since flows in the creek will be increased significantly by this project, improvements to 30 miles of the channel will be necessary. The improvements will include enlarging the channel, placing rip rap in areas subject to erosion, and replacing bridges. The amount of work required is difficult to estimate without a detailed investigation of the channel. This report did not fully evaluate necessary improvements required in Butter Creek.

ESTIMATED PROJECT COST

The total estimated cost for construction of the facilities proposed in this report is between $15,710,000 and $18,370,000, depending on the quality of rock encountered in the tunnel excavation. The breakdown of costs for each major item is listed below.

o	Camas Creek diversion dam	$ 700,000
o	Pump station and pipeline	1,800,000
o	Canal with structures	1,420,000
o	Snipe Creek Dam	2,000,000
o	Tunnel good rock	3,200,000
o	Tunnel control tower and east portal excavation	200,000
o	Highway relocation:	
	Highway 244 and county roads at diversion dam	410,000
	Highway 395	700,000
	County road at Snipe Reservoir	200,000
o	Butter Creek channel improvements	1,000,000

Subtotal	$11,630,000
Contingency (15%)	1,740,000
Subtotal	13,370,000
Engineering & Legal (10%)	1,340,000
Land Cost	1,000,000
TOTAL	$15,710,000

The amount of channel improvement needed on Butter Creek is uncertain at this time. The estimate given here is based on limited information. Initial improvements to Butter Creek should be at locations where obvious damage will occur. In areas of uncertain damage, a set-aside fund could be used for channel improvements as problems occur. These problems will generally be caused by eroding streambanks and Butter Creek trying to relocate into areas where land is valuable.

Although we are fairly confident in the tunnel cost presented, fair rock instead of good quality rock will increase estimated tunnel cost to $4,000,000. Poor quality rock will increase the estimated cost to $5,300,000.

In addition to construction costs, there will be annual operation and maintenance costs. Columbia Power Co-op indicated that annual power costs will average $60,000. The costs for operation and maintenance will average about $50,000 per year.

If 18,000 acres are included in the project, the per-acre construction cost will be $873. Fair and poor quality rock will increase the per acre cost to $929 and $1,020, respectively.

The per-acre annual operation and maintenance costs and construction repayment costs will be as follows:

Operation and maintenance $6.10/year

Construction repayment, good tunnel rock:

5-1/2%	6%	9%
$58.60	$62.00	$83.90

Total construction repayment and O&M cost for good tunnel rock is then:

5-1/2%	6%	9%
$64.60	$68.10	$90.00

The above annual debt is based on a 32-year repayment period.

Based on our site visit and review of geologic data, we anticipate good rock in the tunnel. We have more confidence in the estimated tunnel cost than we do in the estimated cost for Butter Creek improvements.

PROJECT IMPLEMENTATION

If the Butter Creek Irrigation Association decides to implement the Snipe Creek project, the following major items of work must be completed.

- Feasibility Study
- Environmental Impact Statement
- District Formation
- Secure Financing
- Secure Land and Rights-of-Way
- Engineering Design
- Construction
- Operation

The time needed to complete some of these steps is difficult to estimate. Figure 2 shows the estimated times for each of the above steps. This schedule is typical and could possibly be reduced in time.

CONSTRUCTION SCHEDULE

The project will require two years to construct. Snipe Creek Dam will be built the first year. During the second year, water will be diverted to the dead pool space in Snipe Reservoir. The following year water will be diverted for irrigation purposes and will be available at that time for irrigation along Butter Creek, that is, water will be available for irrigation 26 months after start of construction.

Nearly all construction will be done during the first year. The tunnel and some road relocation will be completed in the second year.

MISCELLANEOUS

Our analysis includes a land cost of $1,000,000. This estimated cost is based on a requirement of 5,000 acres at $200 per acre. Additional investigation by a land appraiser is necessary to refine this cost.

The above reimbursable cost of $68.10 per acre does not include any benefits that recreation and fish and wildlife interests might contribute to the project. The Bureau of Reclamation report, Umatilla Basin Project, April 1970, had in excess of $6,000,000 contributed to the construction. We estimate that at least $2,000,000 was attributed to Snipe Reservoir. If $2,000,000 were contributed, the per acre cost would be reduced $111 to $762. The annual repayment cost would then be $54.10. A feasibility study will identify these benefits in detail to determine the amount of money that might be granted toward the project.

If Federal money is involved in supporting the Snipe Creek project an environmental impact statement will be required. This money might be a loan, or in the case of fisheries benefits, a grant. If the project is financed by the recent Oregon State Water Bond law, an environmental impact report may not be required. The State of Oregon has no mandatory requirements for environmental statements.