Renewable Resource Grant and Loan Program

Project Evaluations and Funding Recommendations
For the 2005 Biennium

and

2003 Biennium Status Report

Prepared by the

Montana
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And Conservation

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LIST OF ABBREVIATIONS

BMP ..... best management practice
BOD ..... biological oxygen demand
CDBG..... Community Development Block Grant Program
cfs ..... cubic feet per second
CST..... Coal Severance Tax
DEQ ..... Montana Department of Environmental Quality
DFWP..... Montana Department of Fish, Wildlife and Parks
DNRC..... Montana Department of Natural Resources and Conservation
DOC ..... Montana Department of Commerce
DOT..... Montana Department of Transportation
EA ..... environmental assessment
EDU..... Equivalent Dwelling Unit
EIS ..... Environmental Impact Statement
EPA..... U.S. Environmental Protection Agency
EQIP..... Environmental Quality Incentive Program
FEMA ..... Federal Emergency Management Agency
FY ..... Fiscal Year
GIS ..... Geographic Information System
gpd ..... gallons per day
gpm ..... gallons per minute
GWIC..... Groundwater Information Center
GWUDISW..... groundwater under the direct influence of surface water
HUD ..... Housing and Urban Development
MBMG ..... Montana Bureau of Mines and Geology
MCA ..... Montana Code Annotated
MDA ..... Montana Department of Agriculture
MDSA..... Montana Dam Safety Act
mg/l ..... milligrams per liter
MRWS..... Montana Rural Water Systems, Inc.
MSU ..... Montana State University
NEPA..... National Environmental Policy Act
NFIP ..... National Flood Insurance Program
NPS..... National Park Service
NRCS ..... Natural Resources Conservation Service, U.S. Department of Agriculture
O&M..... Operation and Maintenance
PER..... preliminary engineering report
pmf..... probable maximum flood
Psi..... pounds per square inch
RC&D..... Resource Conservation and Development Area
RD..... Rural Development
RFP..... request for proposal
RRGL ..... Renewable Resources Grant and Loan Program
SID ..... Special Improvement District
SSA..... Sole-Source Aquifer
TMDL..... Total Maximum Daily Load
TSEP..... Treasure State Endowment Program
USBR ..... U.S. Bureau of Reclamation, Department of the Interior
USDA ..... U.S. Department of Agriculture
USFS..... U.S. Forest Service, U.S. Department of Agriculture
USFWS..... U.S. Fish and Wildlife Service
USGS ..... U.S. Geological Survey
VNRP ..... Voluntary Nutrient Reduction Program
WRD..... Water Resources Division, DNRC

ALPHABETICAL INDEX OF PROJECTS

Applications for Funding During the 2005 Biennium

This table provides an alphabetical list (by applicant) of the 73 grant and loan proposals submitted in 2002 that have requested funds during the 2005 biennium. Page numbers correspond to the project evaluation contained in this report.

INTRODUCTION

The Renewable Resource Grant and Loan Program provides funding for projects that conserve, manage, develop, or preserve the beneficial use of renewable resources. Governmental entities may apply to the program to obtain funding for resource-related projects. Past projects have included the construction of municipal water and sewer systems, irrigation system rehabilitation, reforestation, watershed restoration, resource studies and engineering and feasibility studies for construction projects. Applications are due May 15 of each even-numbered year. Montana Department of Natural Resources and Conservation (DNRC) staff reviews and ranks proposals from public entities and then presents a list of projects recommended for funding to the legislature during the regular legislative session. Recommendations for the 2003 legislative session are contained in the report.

This biennium, grants of up to $10,000 each were available to fund the technical efforts necessary for the development of renewable resource projects. Applications that satisfied project and applicant eligibility criteria were funded on a first come, first serve basis.

Private entities are also eligible for both grant and loan funding for water-related projects under the Renewable Grant and Loan Program. Montana's constitution prohibits the legislature from appropriating funds directly to private entities. Therefore, selection of projects occurs under a different process that involves review by DNRC staff and final approval by DNRC's director. Loan applications from private entities may be submitted anytime during the biennium. Private grants for water resource development or improvements, are limited to $5,000 or 25 percent of the project's cost, whichever is less.

CHAPTER I

The Renewable Resource Grant and Loan Program

Background

The former Renewable Resource Development Program was established by the legislature in 1975 to promote the development of our renewable resources. Funds generated by the use of non-renewable mineral resources were pledged toward the development of more sustainable resource-based industries. Only governmental entities were eligible to apply for funding. Funds were provided for the purchase, lease, planning, design, construction, or rehabilitation of projects that conserved, managed, developed, or preserved land, water, fish, wildlife, recreation, and other renewable natural resources.

The former Water Development Program was established by the Montana Legislature in 1981 to promote and advance the beneficial use of water, and to allow Montana's citizens full use of the state's water by providing grants and loans for water development projects and activities. Under the Water Development Program, both governmental entities and private persons were eligible to apply for funding.

In 1993, the Renewable Resource Development Program was combined with the Title 85 Water Development Program. DNRC's role under Title 85 was expanded to provide for DNRC's coordination of the development of the state's renewable resources. The Resource Development Bureau of DNRC thus assumed the responsibility of administering the Renewable Resource Grant and Loan Program as stipulated under Title 85, part 6, Montana Code Annotated (MCA). Combining the two programs streamlined program administration but did not change applicant and project eligibility criteria.

Purpose

The purpose of the Renewable Resource Grant and Loan program is to further the state's policies, set forth in Section 85-1-101, MCA, regarding the conservation, development, and beneficial use of renewable resources. The goal of the program is to invest in renewable natural resource projects that will preserve for the citizens of Montana the economic and other benefits of the state's natural heritage.

Project and Applicant Eligibility

Grants and loans are available for projects that conserve, manage, develop, or preserve the state's water, land, vegetation, fish, wildlife, recreation, and other renewable resources. The majority of projects funded under this program are water resource projects, but forestry, soil conservation, and solid waste projects have received funding in the past. Project funding is available for construction, research, design, demonstration, and planning. Watershed projects that preserve and improve water quality, and projects that help plan for the future management and protection of water sources (such as groundwater assessment studies) have received funding in the past. Chapter VI of this report provides more examples of previous public grants and projects funded by the legislature.

Private Entities

Funding is also available to private entities. These applicants include individuals, associations, partnerships, for-profit corporations and not-for-profit corporations. Funding for private grant projects is limited. In 2001, the legislature appropriated $100,000 for grants to private entities. By law, grant funding for a single project may not exceed 25% of the total estimated cost, or $5,000, whichever is less. Statute provides that grants and loans may be made to private entities for water-related projects that conserve, manage, use, develop, or preserve the state's water. Only water-related projects may be funded. They must have quantifiable benefits that will exceed costs. Projects must also provide public benefits in addition to any private benefits. Applicants must hold or be able to acquire all necessary lands other than public lands and interests in the lands and water rights necessary for the construction, operation, and maintenance of the project.

Private grant and loan applications are managed under a process separate from state and local government entities. Montana's constitution prohibits the legislature from appropriating funds to a private entity directly. Therefore, funds appropriated by the legislature are used to issue individual awards to private grantees. Criteria for the award of funds to private entities are specified in the law. Each application is reviewed and, based on statutory criteria, funding recommendations are made to DNRC's director. The director has final authority over grants to private entities.

Irrigation system improvement projects, such as the conversion from flood irrigation to sprinkler irrigation, are the most common type of projects funded through private loans. Projects to convert to gravity flow irrigation systems are another typical project. Loans have also been provided for the development and improvement of rural water supply systems. Chapter IV of this report provides more examples of previously funded private loan projects. Private loans must be secured with real property. Projects that are not water-related or that are unable to provide real property to secure a loan have not been funded. Irrigation water users associations have applied for loans in the past but have not qualified for funding because the association had no common property that could be offered as security.

Loans are made only to private applicants who are credit worthy and able and willing to enter into a contract for a loan repayment.

Emergency Grants

Statute allows DNRC to request up to 10% of the funds available for grants in a biennium to use for emergency grants. DNRC may provide grant funds for up to $30,000 for a total of $125,000 to governmental entities to resolve water-related emergencies. Emergency funds may be granted for projects which if delayed until the next regular legislative session would result in substantial damages or legal liability. Requests for emergency funds are reviewed by DNRC staff and approved by DNRC's director. Chapter V of this report provides information about the applications for emergency assistance received in 2001 and 2002.

Funding Limitations

The law does not impose specific limitations on the amount of grant funding that the legislature may provide for renewable resource projects proposed by governmental entities. Grant recommendations presented to the Long Range Planning Subcommittee by DNRC are for limited amounts. These limits are consistent with limits imposed by the legislature in the past and have been imposed to obtain optimal public benefit from the investment of public funds. Guidelines used to develop funding recommendations were developed with input from the Long Range Planning subcommittee. Proposed funding levels do not constrain the legislature's ability to appropriate grants and loans in amounts deemed appropriate based on testimony presented in legislative hearings and consistent with current legislative priorities.

Grants to private entities are limited by law to 25% of the project cost. Loans to private entities may not exceed the lesser of $200,000 or 80% of the fair market value of the security given for the project.

Funding Authority

A total of $4.3 million was available over the 2003 biennium for grants to public entities for renewable resource projects. An additional $300,000 was available for grants to assist public entities in the planning and design of projects eligible for funding under RRGLP, and $100,000 was available for private grants. The loan program is funded through the issuance of general obligation and coal severance tax bonds.

Program Implementation

Part 6 of Title 85 specifies DNRC's role in the management of the Renewable Resource Grant and Loan Program. 85-1-605, MCA, allows DNRC to make project-funding recommendations only. The legislature approves by appropriation the actual awards of those grants and loans to governmental entities that it finds consistent with the policies and purposes of the program. In presenting recommendations to the legislature, DNRC provides information about each project for legislative consideration. All public grant

projects are ranked by DNRC to show the legislature the potential value of a given project compared to all of the other grant projects requesting funds. Grant projects that do not meet minimum technical and financial standards are not recommended by DNRC for funding. All recommendations made by DNRC may be rejected by the legislature in favor of other considerations that it holds as higher priorities. Once the legislature makes an award, DNRC manages the authorized grants and loans according to conditions set out in DNRC's report to the legislature and in the legislative appropriations bill.

Acting within the limits of the authority provided by statute, DNRC provides the staffing necessary to administer state and local government assistance rendered under the Renewable Resource Grant and Loan Program. Each legislative session, members of the Long Range Planning subcommittee review the funding recommendations provided by DNRC. In response, the committee provides DNRC direction for the future.

Statute clearly prescribes DNRC's role in the administration of grants and loans to private entities. 85-1-606-614, MCA, is specific with respect to the parameters for the award of these funds. DNRC is directed to publicize statutes and rules governing these grants and loans and to set application deadlines. Only water-related projects are eligible. Additional eligibility criteria and the criteria used for project evaluation are set out in 85-1-609 and 610, MCA.

Rule-Making Authority

DNRC's role of administering the Renewable Resource Grant and Loan Program is limited to a coordinating role. Limited by its authority to adopt rules, DNRC cannot expand or limit the mission of the Renewable Resource Grant and Loan Program beyond legislative intent. DNRC does not have the authority to limit the amount of public grants or to narrow the range of eligible grants based on DNRC priorities. Title 85, MCA, directs DNRC to adopt rules that prescribe the application fee and content for grant and loan applications. DNRC also determines the ranking criteria used to evaluate and prioritize public grant applications and the process for awarding grants and loans to private entities according to statutory criteria. DNRC authority provides for the servicing of loans and determination of the terms and conditions for making grants and loans.

Program Goals

DNRC's goals for administering the Renewable Resource Grant and Loan Program are carried out through the solicitation of applications; the evaluation of applications to provide the legislature with a basis for the selection of projects that best support the purposes and stipulations of Title 85, MCA; and the administration of grants and loans to comply with the conditions of the authorization and applicable laws.

DNRC seeks to:

1. Inform the public and private sectors that grant and loan funding for water and other renewable resource projects is available, that certain applicant eligibility criteria for obtaining funds exist, and that projects that meet the purposes of Title 85, MCA, qualify for funding. To promote the program, DNRC provides specific information:

    a. about the grant and loan program to state and local government entities that are most likely to sponsor projects eligible for funding. Information is provided through press releases, news articles, brochures mailed directly to potential applicants, and workshops held in communities across the state.

    b. to targeted private entities to obtain applications for grant funds that will result in significant public benefit. Information is provided through press releases, news articles, and direct contact.

2. Coordinate with other state and federal agencies to provide information about government funding sources for water and other renewable resource projects, to facilitate a uniform application process, and to award funds without duplication.

3. Solicit public comment and suggestions for improvements to the program through the administrative rule-making and legislative processes, during the solicitation for grant applications, and throughout the review of projects for funding.

4. Evaluate grant projects on the basis of technical merit and the resource benefits established in statute.

5. Effectively administer grants and loans to ensure that funds are used for allowable costs and that projects are executed in accordance with any conditions set by the legislature and in compliance with Title 85, MCA, and other applicable laws without undue burden to the recipient.

6. Offer loans at the most affordable rates available through the sale of public bonds.

7. Adequately secure loans to protect the investment of public funds.

8. Advise the legislature concerning DNRC's efforts to effectively administer the program according to statute and legislative intent.

CHAPTER II

Renewable Resource Grants to Public

Application Administration and Project Review Procedures

DNRC's Resource Development Bureau accepts applications for public grants and loans that are submitted or postmarked by May 15 of each even-numbered year. A $250 application fee is required with each application. Exceptions are made for organizations that also provide voluntary expert review of DNRC grant applications. Those state agencies and units of the university system or other organizations that contribute to DNRC's extensive grant review process may request an application fee waiver.

Project Solicitation

Project applications are solicited broadly because DNRC seeks to maintain the competitive nature of the program. Those projects that most closely meet statutory priorities rank the highest and are most likely to rank above the cut-off point for available funding. Projects that do not rank competitively and fall below the projected funding line are less likely to receive legislative approval.

An extensive mailing list is used to promote the program and to solicit applications from eligible applicants. Mailing lists were originally obtained from divisions within DNRC and other state agencies. Included are contacts from the university system, state agencies, municipalities, environmental organizations, water users associations, irrigation districts, water and sewer districts, tribal leaders, conservation districts, and federal agencies.

Promotion for the 2002 application cycle began with press releases in January. The press releases were sent to all Montana daily newspapers and provided general program information, a telephone number, e-mail address, and address to request more information and application forms and guidelines.

Applications for this cycle increased to 73 applications requesting $7.1 million in grant funding. In the previous cycle, 71 applicants requested $6.9 million in grant funding.

The application for this cycle requested the following information:

- A proposal abstract describing the project's merits.
- A technical narrative to describe the proposal's purpose, project history, and of prior efforts; specific goals and objectives are provided, as well as a discussion of project alternatives. Technical documentation is requested to support the technical narrative.
- A financial narrative and budget forms describing the funding structure.
- Affordability data, used to evaluate the local financial commitment and ability to pay of applicants that have the potential to generate revenue through fees or taxes.
- A project management plan which outlines the steps that will be made to ensure successful project implementation.
- A discussion of the public and natural resource benefits achieved by the proposed project.
- An environmental checklist that provides information necessary to assess the extent of any adverse environmental impacts that may occur as a result of the project.

Application Review

All applications received by the deadline are evaluated for completeness. Those missing documentation, application fees, or other basic requirements are notified and provided time to submit additional material. Applications are then distributed to a team of key reviewers for evaluation. **Figure 1** shows the flow of the grant application review and ranking process.

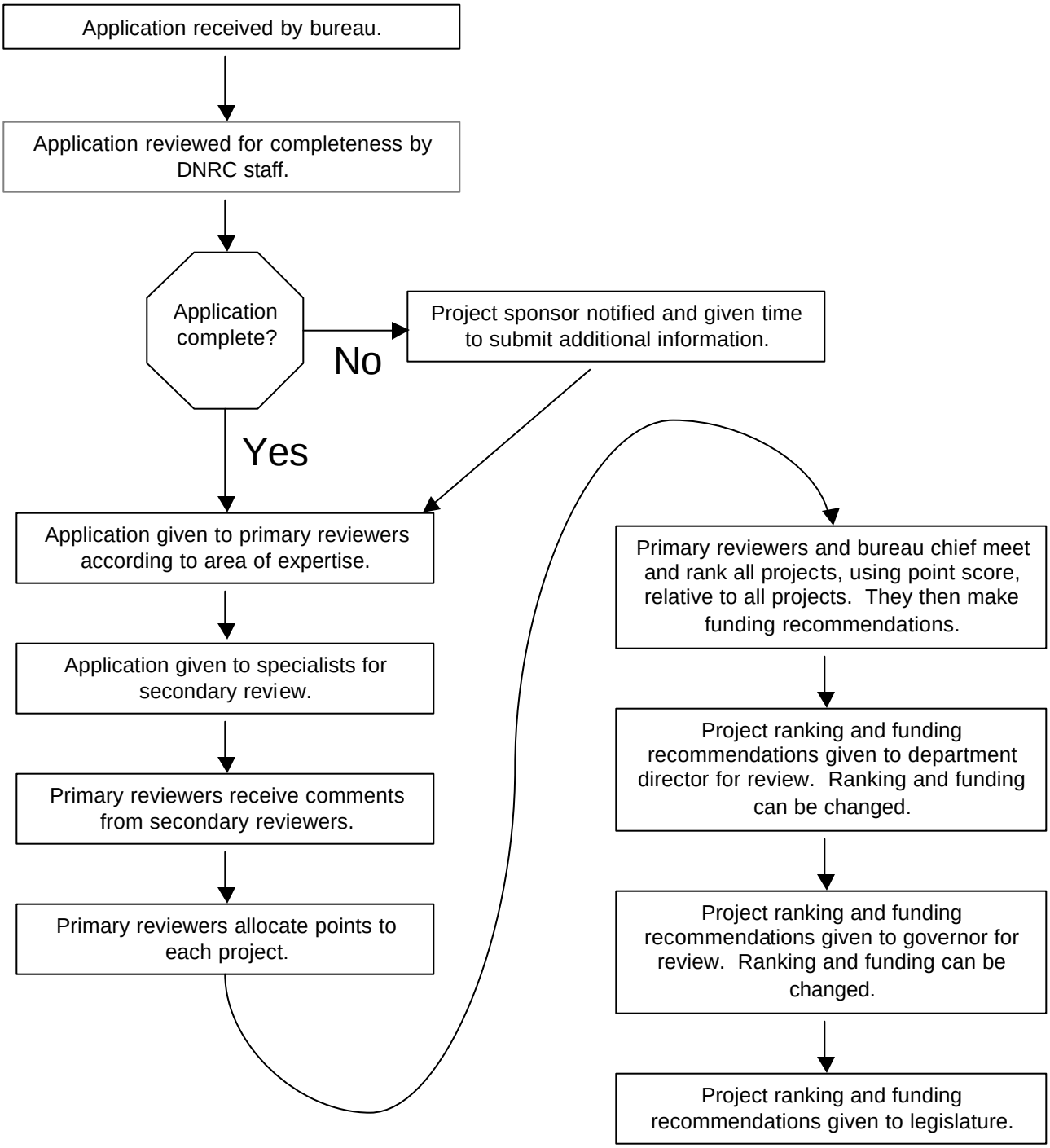
To review applications for the 2002 cycle, DNRC assembled a technical review team of 17 key reviewers. Key reviewers include staff from other divisions within DNRC and contracted private engineering firms. Each key reviewer was asked to coordinate the review of six projects. Projects are assigned to reviewers based on the reviewer's area of expertise. Key reviewers are given information about the program, application materials, and guidelines for reviewing applications.

DNRC's technical review team evaluates each application to ensure that the proposal is technically and financially feasible. During project review, additional detailed technical and financial information may be requested if necessary. With the results of their own evaluations and comments from agencies and outside experts, key reviewers assess and document the merits of each proposal based on standard review criteria outlined in the ranking form.

Each project is evaluated for the potential to cause adverse environmental impacts. In the event that long-term environmental impacts could occur as a result of the project, contingencies are attached to the funding recommendations to minimize impacts and to ensure that appropriate steps are taken to protect the environment.

State law requires DNRC to solicit views of interested and affected parties. Local, state, and federal agencies, environmental groups, private organizations, and universities are solicited for input during the technical review of applications. Guidelines, developed specifically for application review, are used to provide a consistent basis for reviewing applications.

FIGURE 1 Flowchart of Grant Application Review and Ranking Process



Project Ranking Criteria

To obtain an objective evaluation of all applications, DNRC developed a standard ranking form containing review instructions and guidelines. Each key reviewer completes a ranking form for each application to document the merits of the proposal and the resulting score.

Each key reviewer assigns a score to reflect project merit under the following five primary categories:

1. Financial Feasibility (-100 points)

   Financial feasibility is determined based on information included in the application. DNRC evaluates the financial feasibility of the proposed project or study based on the budget submitted with the application, the affordability of the project to the users, and the feasibility of the proposed funding scenario. Deficiencies in the financial plan are determined and could result in the loss of up to 100 points.

2. Adverse Environmental Impact (-100 points)

   Each application includes an environmental evaluation prepared by the applicant or its consultant. In the case of public facility project applications, the environmental evaluation is part of the Uniform Application and is reflected in the Preliminary Engineering Report. Short-term impacts, including temporary construction impacts, should be addressed as well as long-term impacts, both positive and negative. Inadequately evaluating environmental impacts, or selecting alternatives which will result in adverse environmental impacts, could result in the loss of up to 100 points.

3. Project Management and Implementation (-100 points)

   Each application includes a project management and implementation plan. DNRC evaluates the plan to determine the adequacy of the applicant to manage or provide for the management of the proposed project, including records management and grant and loan administration. Specific areas that will be evaluated include staffing and coordination, public involvement, and contract management (including the management of all grant agreements), contracts with consultants, and construction contracts. Deficiencies in project management and implementation could result in the loss of up to 100 points.

4. Technical Feasibility (400 points)

   Outlines are included in the application guidelines for the Technical Narrative or, in the case of public facility projects, the Preliminary Engineering Report. To facilitate the review of the Technical Narrative or Preliminary Engineering Report, it is recommended that these outlines be followed in preparing the application. Each application is evaluated on the basis of the following criteria:

   A. Compliance with the prescribed outline and required information;

   B. Adequacy of the alternative analysis;

   C. Adequacy of cost estimates for potential alternatives and the preferred alternative;

   D. Soundness of the basis used in selecting the preferred alternative;

   E. Feasibility of the project's implementation schedule; and

   F. The quality of supporting technical data submitted with the application. The Technical Narrative or, in the case of a public facility project application, Preliminary Engineering Report

provide DNRC with the information used to evaluate the technical feasibility of the proposed project and could result in the award of up to 400 points.

5. Resource and Citizen Benefits (600 Points)

   As stated in 85-1-601 MCA, the purpose of the Renewable Resource Grant and Loan Program is to further the state's policies set forth in 85-1-101 MCA regarding the conservation, development, and beneficial use of water resources and to invest in renewable natural resource projects that will preserve for the citizens of Montana the economic and other benefits of the state's natural heritage. Resource and citizen benefits of proposed projects are evaluated by DNRC and could result in the award of up to 600 points. Resource and citizen benefits associated with each application are evaluated on the basis of the following criteria:

   A. Renewable Resource Benefits

      1) Resource **conservation.** Will the project ensure measurable future renewable resource benefits through the implementation of new or improved efficiencies and utilization practices? Will it improve water-use efficiency through the installation of new or improved water meters or other measuring devices?

      2) Resource **development.** Will the project provide new benefits or enhance existing benefits through the development of a renewable resource? Will it support the development of state, tribal, or federal water projects including regional water systems? Will it develop off-stream or tributary water storage or develop hydropower or other alternative renewable energy resources?

      3) Resource **management.** Will the project improve the measurable benefits of a renewable resource through better stewardship or other improved use of the resources?

      4) Resource **preservation.** Will the project protect and thereby preserve the existing quality of a renewable resource? Will it reduce agricultural chemical use or prevent point sources of pollution?

   B. Citizen Benefits and Public Support

      1) Multiple uses. Will the project provide or enhance natural resource based recreation? Will it enhance Montana's fisheries or wildlife habitat?

      2) New and permanent jobs. Will the project directly result in new permanent jobs?

      3) Public support. Does the application include documented public support? Does the application contain letters of support? Have citizen groups (e.g., watershed councils, sportsmen groups, development councils) enlisted support for the project? Have public meetings been held (attach attendance lists)?

After each key reviewer determines the score for assigned projects, all of the key reviewers and the bureau chief meet to discuss the projects and scores proposed. During this process, the key reviewer gives a short presentation about each project reviewed and the score given. After all the projects are presented, the individual scores for each category on the scoring sheet are discussed. The team then decides the scores each project should receive in relation to all projects. Discussion by the team reduces inconsistencies between scores given by individual reviewers. Final team scores are recorded on a ranking spreadsheet to document the ranking process.

DNRC's ranking system is used to determine the relative merit of every proposal submitted for grant funding. Ranking scores are used as a guide for the staff to select projects that best serve the program's objectives as stipulated by statute and to summarize information for DNRC's director. Proposal recommendations are presented to the Governor for grant funding in the order DNRC staff ranks them.

Ranking scores are not binding. Either DNRC's director or the Governor may make any adjustments to the recommendations prepared by DNRC deemed necessary to reflect their assessment of natural resource and other policy priorities. Based on the Governor's priorities, an appropriations bill is drafted and introduced to the legislature. Actual funding decisions are made by the legislature. Not bound by DNRC's review criteria or the Governor's final ranking, the legislature ultimately will authorize funding for the projects in the order of priority and in the amounts that it judges will best serve the state.

Funding Recommendations

All feasible grant requests are ranked according to standard criteria to select those that most efficiently use the state's natural resources in accordance with statutory guidelines. Then, in conjunction with its recommendation for funding priority, DNRC makes its recommendations concerning the amount of funding to be awarded each project **(see Figure 2)**. The 2002 grant applications recommended for funding during the 2005 biennium are illustrated by project type in **Figure 3**.

With the Governor's approval, final funding recommendations are presented to the legislature as part of this report. These recommendations do not impose any limit on the amount of funding the legislature may provide to any governmental entity for a single grant project.

Although grant funding for public projects is not limited by statute, in the past the legislature has limited its grant funding awards to a maximum of $100,000 per project. This policy reflects the legislature's interest in providing funding for a large number of projects. This policy prompts the leveraging of additional grants, loans, and in-kind services and encourages greater geographical distribution of limited grant funds.

Project Management

After an appropriations bill is enacted to authorize grants and loans, DNRC notifies the applicants of their funding status. Sponsors of funded projects are reminded that work on their projects may not begin prior to entering into a grant or loan agreement with DNRC. DNRC does not reimburse any project costs incurred before the legislative authorization is given or before a formal funding agreement is executed.

Project Monitoring

Procedures for monitoring projects are driven by a project grant contract agreement between DNRC and the project sponsor. The equivalent of two full-time staff administers the 80 or more active construction, planning, research, and public information grants.

DNRC’s goal is to make site inspection visits to all projects during the construction phase. Site visits are made to spot check for problems or to respond to a request for assistance from the project sponsor. Budget and staffing constraints preclude DNRC's site involvement at every project site.

Grant agreements, as with contract instruments used for DNRC's other state and federal grant programs, require quarterly progress reports, expenditure reports, and a final report. During a project's contract term, the project sponsor must submit quarterly reports to DNRC. These reports must reflect the percentage of the project completed, the project costs to date, any problems encountered, and the need for any agreement amendment. Projects are closely monitored each quarter when quarterly reports are submitted. Program staff document decisions and conversations that affect ongoing projects, make notes to the file, and document important conversations with correspondence. Amendments to grant agreements are prepared and issued in response to any problems that require changes to the project's time line or budget.

Project sponsors submit claims and obtain reimbursement of allowable costs from DNRC. Invoices may be submitted monthly, and all costs must be supported by an invoice or receipt.

Project Evaluation

Through its ongoing monitoring efforts, DNRC evaluates grants funded under the Renewable Resource Grant and Loan Program. Upon project completion, DNRC requires submission of a final project report to document project history and the quantifiable results of the expenditure of grant dollars. This report summarizes grant expenditures, documents the work accomplished, and compares project objectives as presented to the legislature with the final project results. Evaluation of the project through a final project report enables DNRC to measure how well the projects implement the program goals of conserving, developing, managing, and preserving Montana's renewable resources. Projects are considered successful if they complete the scope of work outlined in the grant agreement.

FIGURE 2 2002 Grant Applications by Order of Ranking Recommendation

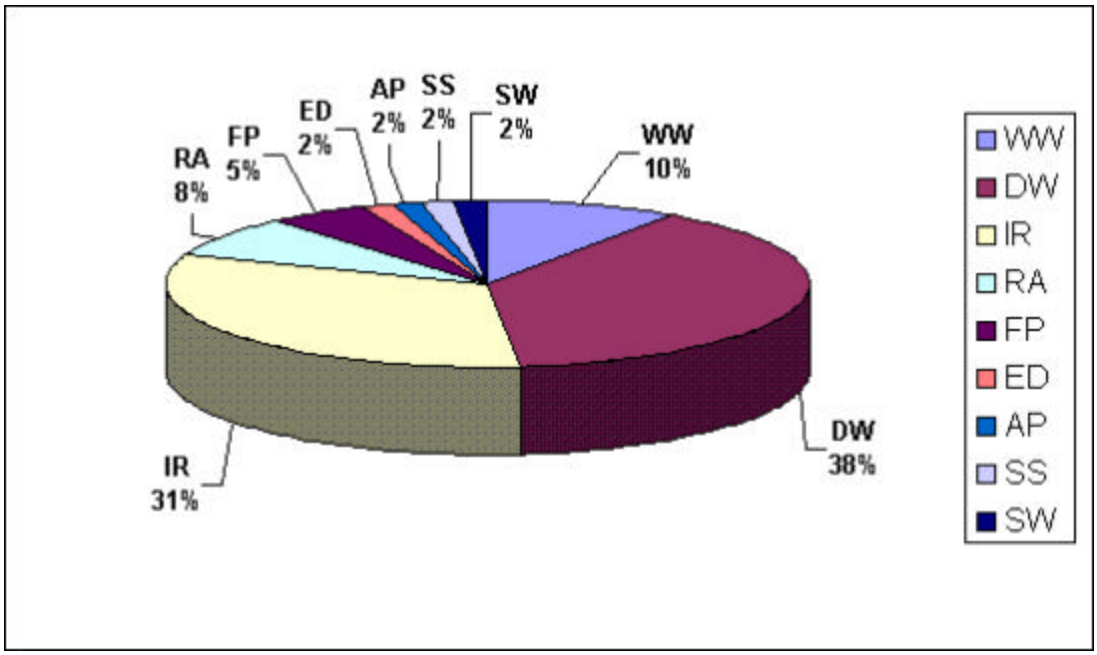
RANK	PROJECT SPONSOR / PROJECT	RECOMMENDED GRANT FUNDING	CUMULATIVE RECOMMENDED	RECOMMENDED LOAN FUNDING
1	**Scobey, City of** Wastewater System Improvements	$ 100,000	$ 100,000	
2	**Dawson County** Yellowstone River Floodplain Management Project	100,000	200,000	
3	**Flathead Basin Commission** Ashley Creek Headwater Restoration	99,700	299,700	
4	**Missoula, City of** Rattlesnake Neighborhood Sewer Collection System	100,000	399,700	
5	**North Powell Conservation District** Blackfoot River Habitat, Water Quality, and Restoration Enhancement	62,600	462,300	
6	**Montana Department of Agriculture** Expansion of Monitoring Well Network for Assessment of Agricultural Chemicals in Montana Groundwater	100,000	562,300	
7	**Paradise Valley Irrigation District** Hillside Lateral Upgrade	100,000	662,300	
8	**Ramsay County Water and Sewer District** Water System Improvements	100,000	762,300	
9	**Missoula County** Mullan Road Corridor Sewer Project - Phase I	100,000	862,300	
10	**Park County** Northern Park County Water Resources Protection and Management Plan	100,000	962,300	
11	**Sheaver's Creek Water and Sewer District** Water System Improvements	100,000	1,062,300	
12	**Stanford, Town of** Water System Improvements	100,000	1,162,300	
13	**Hamilton, City of** Water Distribution System	100,000	1,262,300	
14	**Park County-Cooke City Water District** Water System Improvements	100,000	1,362,300	
15	**Milk River Joint Board of Control** Saint Mary River Siphon Expansion Joint Replacement	100,000	1,462,300	
16	**Buffalo Rapids Irrigation Project** Refit of Glendive Pumping Plant	100,000	1,562,300	$ 1,215,000
17	**Mill Creek Irrigation District** Mill Lake Dam Rehabilitation	100,000	1,662,300	$ 472,000
18	**Montana Department of Natural Resources and Conservation** Seepage Monitoring Program - DNRC Dams	97,646	1,759,946	
19	**Sidney Water Users Irrigation District** Increasing Irrigation Efficiency	100,000	1,859,946	
20	**Stillwater County** Yellowstone River Floodplain Management Project	100,000	1,959,946	

RANK	PROJECT SPONSOR / PROJECT	RECOMMENDED GRANT FUNDING	CUMULATIVE RECOMMENDED	RECOMMENDED LOAN FUNDING
21	**Yellowstone County** Yellowstone River Floodplain Management Project	100,000	2,059,946	
22	**Worden-Ballantine Yellowstone County Water and Sewer District** Water System Improvements	100,000	2,159,946	
23	**Ryegate, Town of** Water System Improvements	100,000	2,259,946	
24	**Malta Irrigation District** Replacement and Modification of Check Structures	100,000	2,359,946	
25	**Judith Basin County** Geyser Water System Improvements	100,000	2,459,946	
26	**Blackfeet Tribe** Oki Mamii (Hello Fish)	23,581	2,483,527	
27	**Sheridan, Town of** Water System Improvements	100,000	2,583,527	
28	**Pablo-Lake County Water and Sewer District** Wastewater Treatment System Improvements	100,000	2,683,527	
29	**Fort Belknap Irrigation District** Sugar Factory Lateral	100,000	2,783,527	
30	**Montana Department of Natural Resources and Conservation** North Fork of the Smith River Dam Rehabilitation	100,000	2,883,527	$ 457,000
31	**Conrad, City of** Raw Water Intake and Pump Station Improvements	100,000	2,983,527	
32	**Lewis and Clark County Water Quality Protection District** Groundwater Sustainability in North Hills Area, Helena	100,000	3,083,527	
33	**Power-Teton County Water and Sewer District** Water System Improvements	100,000	3,183,527	
34	**Phillips County Green Meadows Water and Sewer District** Water System Improvements	100,000	3,283,527	
35	**Chinook Division Irrigation Joint Board of Control** Fresno Dam - Gate Leaf Seals	100,000	3,383,527	
36	**Upper Lower River Road Water and Sewer District** Water System Improvements	100,000	3,483,527	
37	**Gallatin Local Water Quality District** Dedicated Monitoring Well Network for the Gallatin Valley	99,883	3,583,410	
38	**Troy, City of** Water System Improvements	100,000	3,683,410	
39	**Montana Department of Corrections** Prison Ranch Dam Rehabilitation	100,000	3,783,410	

RANK	PROJECT SPONSOR / PROJECT	RECOMMENDED GRANT FUNDING	CUMULATIVE RECOMMENDED	RECOMMENDED LOAN FUNDING
40	**Fort Shaw Irrigation District** Water Quality and Quantity Improvements-Phase III	89,122	3,872,532	
41	**Butte-Silver Bow Local Government** Basin Creek Dams #1 & #2 Site Improvements	100,000	3,972,532	
42	**Hill County** Beaver Creek Dam Outlet Works Repair	100,000	4,072,532	$ 400,000
43	**Melstone, Town of** Water Conservation System	99,929	4,172,461	
44	**Glasgow Irrigation District** Vandalia Diversion Dam Rehabilitation Phase III – Struts and Walkways	100,000	4,272,461	
45	**Richland County Conservation District** Irrigation Potential of Groundwater Underlying the Lower Yellowstone Valley	85,212	4,357,673	
46	**Milk River Joint Board of Control** Nelson Reservoir Pumping Unit Design and Construction - Phase I – Final Engineering Report	100,000	4,457,673	
47	**Pablo-Lake County Water and Sewer District** Water Distribution System Improvements	100,000	4,557,673	
48	**Cut Bank, City of** Water System Improvements	100,000	4,657,673	
49	**Pleasant View Homesites County Water and Sewer District** Water System Improvements	100,000	4,757,673	
50	**Gardiner-Park County Water District** Water System Improvements	100,000	4,857,673	
51	**Huntley Project Irrigation District** Anita Reservoir Dam Safety Repairs and Sediment Removal	100,000	4,957,673	
52	**Whitefish, City of** Water Distribution System Improvements	100,000	5,057,673	
53	**Black Eagle Water District** Wastewater System Improvements	50,000	5,107,673	
54	**Montana Bureau of Mines & Geology** Irrigation Technical Assistance Program	99,925	5,207,598	
55	**Geraldine, Town of** Water System Improvements - Phase II	100,000	5,307,598	
56	**Harlem Irrigation District** Lower Harlem Irrigation Canal Improvements - Phase I	100,000	5,407,598	
57	**Meadowlark Water and Sewer District** Wastewater Collection System	100,000	5,507,598	
58	**Columbia Falls, City of** 4th Avenue West Water and Sewer Upgrade	100,000	5,607,598	
59	**Columbus, Town of** Stormwater Improvement	100,000	5,707,598	

RANK	PROJECT SPONSOR / PROJECT	RECOMMENDED GRANT FUNDING	CUMULATIVE RECOMMENDED	RECOMMENDED LOAN FUNDING
60	**Libby, City of** Johnston Acres Water System Improvements	100,000	5,807,598	
61	**Three Forks, City of** Water System Improvements	100,000	5,907,598	
62	**Lake County Solid Waste District** Solid Waste Transfer Station	100,000	6,007,598	
	TOTAL FUNDS RECOMMENDED	**$ 6,007,598**		**$ 2,544,000**
Projects below this line were not recommended for funding				
	PROJECT SPONSOR / PROJECT	**RECOMMENDED GRANT FUNDING**		
	Big Sky Water and Sewer District #363 Riparian Corridor Wetland and Stream Crossings Restoration	0		
	Cartersville Irrigation District Sand Creek Siphon Rehabilitation	0		
	Homestead Acres Water and Sewer District Water System Improvements	0		
	Hysham Irrigation District Structural Inventory and Hydraulic Analysis	0		
	Laurel, City of Groundwater and Salinity Management Feasibility Analysis	0		
	Lincoln Conservation District Bobtail Creek Water Quality and Channel Enhancement	0		
	Milk River Joint Board of Control Milk River Irrigation District Management	0		
	Richland County Valley View Water District Point-of-Use Reverse Osmosis Water Treatment System	0		
	St. Ignatius, Town of Wastewater System Improvements	0		
	Stillwater County Assessing the Development of Multi-User Groundwater Resources in the Lake Basin of South-Central Montana	0		
	West Crane Irrigation District Feasibility Study of Storage Alternatives	0		

FIGURE 3 Requested Funding by Project Type



WW - WASTE WATER

DW - DRINKING WATER

IR - IRRIGATION INFASTRUCTURE

RA - RESOURCE ASSESMENT & RESTORATION

FP - FLOOD PLAIN

ED - EDUCATION

AP - AGRICULTURAL CHEMICAL REDUCTION

SS- STORM SEWER

SW - SOLID WASTE

Project No. 1

Applicant Name	Scobey, City of	
Project Name	Wastewater System Improvements	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 130,000	Applicant
	$ 1,206,000	Pollution Control State Revolving Fund (PCSRF) Loan
	$ 500,000	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 1,936,000	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The City of Scobey's wastewater system consists of a gravity collection system, outfall line, and a two-cell facultative lagoon. The original gravity collection system was constructed in 1918, and now consists of approximately 33,000 lineal feet of mains. The original collection system discharged straight to the Poplar River with only an Imhoff Tank for treatment. The original portion of the collection system was constructed of 8-, 10-, 12-, 15- and 18-inch clay tile pipe, much of which is still in fair to good condition. Frequent plugging occurs within some of the substandard mains. Some of the manholes exhibit signs of structural deterioration. The collection system experiences increased infiltration during the spring high groundwater season. Infiltration is at its worst during spring runoff and in years with heavy spring and early summer precipitation periods.

In 1967, the city constructed a two-cell facultative lagoon southwest of the city for treatment of the wastewater. The project also included rerouting the outfall line to the lagoon site. The treatment system was designed as a two-cell facultative lagoon with discharge to the adjacent Poplar River. However, the system has always been operated as a non-discharging lagoon.. A discharge permit had been issued to the community for operation as a discharging system in 1968. In 1979, the discharge permit was not renewed by Montana Department of Environmental Quality (DEQ) due to historic lack of discharge. Currently, since the secondary cell does not hold water, the treatment lagoon is operated as a single-cell evaporation and infiltration basin. The existing treatment facility, if both cells could be utilized, is oversized for the current population. No significant improvements to the wastewater system have been completed since 1967.

The city's wastewater system has the following deficiencies:

- The lagoon leaks seven times the DEQ standard, resulting in pollution of local groundwater resources and the Poplar River.
- There are severe deficiencies with portions of the existing clay tile pipe gravity collection system. TV inspection revealed poor structural condition, cracked piping, low spots within the sewer grade, roots, offset joints, and alignment problems. The structural condition is so poor in some cases that collapse of the piping is imminent.
- The two-cell configuration of the existing lagoon offers little operational flexibility and does not meet the DEQ standard of three lagoon cells for facultative treatment systems.
- If the existing treatment facility was able to meet the DEQ leakage standards and discharged as designed, it would be unable to meet ammonia toxicity standards that DEQ places on discharge permits. In addition, the facility would not meet the fecal coliform limit that would be applied to a new discharge permit without a disinfection system. Discharge to the river with this facility would represent a significant threat to public health and safety due to the potential of human contact with undisinfected wastewater.
- The existing control structures, valves, and outlet/inlet piping at the lagoons are inoperable due to ice damage and rusting of the valves. The system cannot operate as designed because the hydraulic controls are inoperable.

The proposed project involves total replacement and/or rehabilitation of the sewer main piping identified in the TV inspection that is not expected to last throughout the 20-year planning period. The proposed work includes total replacement of 2.5 blocks of sewer main, in-place rehabilitation of 1 block of main, and 15 spot repairs of piping. The work also includes replacing seven manholes, new service connections, and pavement replacement.

The project includes an upgrade of the treatment facility. The new two-cell storage and irrigation facility will meet all DEQ treatment capacity and permit requirements throughout the 20-year planning period of the facility plan. The two-cell facility will be lined to prevent pollution of the local groundwater and surface water resources. The lagoon system will include a primary pond for treatment of the wastewater and a storage pond for wastewater effluent during the winter. Stored wastewater will be irrigated on the golf course immediately north of the existing lagoon site. A new building to house irrigation pumps, an ultraviolet disinfection system, controls, and piping will be constructed near the storage pond. The irrigation pump will deliver disinfected wastewater to the golf course's existing irrigation system for disposal.

Technical Assessment

Project Background

The City of Scobey is the Daniels County seat in northeastern Montana, near the intersection of Montana Highways 5 and 13. The proposed project involves a complete upgrade of the existing two-cell lagoon system and some limited work on problem areas of the collection system. The existing lagoon was constructed in 1967 and was designed to discharge to the Poplar River. The lagoon is not properly lined and all of the flow going to the system either leaks out of the bottom of the first cell or evaporates. If the system did discharge, anticipated discharge permit requirements would likely impose relatively stringent standards, requiring a degree of treatment the current system cannot provide. The lagoon services approximately 1,080 people at this time and population growth has been static over the past decade. The new system will be sized for a design population of 1,195.

Technical Approach

The project goal is to provide the community with a new wastewater lagoon system that will provide service for a 20-year period. Repairs will be made to improve the integrity of the sewage system. Four alternatives were evaluated in the preliminary engineering report. Each alternative considered used some type of lagoon system capable of meeting regulatory standards. Due to extremely low flows in the Poplar River, discharging options may be required to remove ammonia, which is a level of treatment that lagoons cannot typically provide in the colder months of the year. For this reason, three of the four options considered do not discharge to surface waters. The preferred alternative includes the construction of a two-cell facultative lagoon system, which delivers the treated effluent to a nearby golf course. The engineer is currently working with the Golf Course Board to secure permission to irrigate the golf course with wastewater effluent. Because many residents use water softeners, the wastewater could cause salt accumulations in the soil being irrigated. Irrigation scheduling may help alleviate the problem, or the effluent could be used to irrigate agricultural lands.

Project Management

City staff will take the lead in project management and appears to be well qualified for this task. The project budget allows for funding to support the city in the financial and administrative aspects of the project. All roles of the management staff for the project were well defined in the project management plan. The consulting engineer for the project has good experience in administering grant-funded projects and can serve as a well-informed resource to the city.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$143,000	**$143,000**
Professional & Technical	$100,000	$0	$165,000	**$265,000**
Construction	$0	$0	$1,528,000	**$1,528,000**
Total	**$100,000**	**$0**	**$1,836,000**	**$1,936,000**

The budget strategy provided in the application is sound and relies on other programs that fund public facilities. The applicant is a local government and has the ability to collect charges for debt and operation. Current charges for sewer service are approximately $8.00 per month, and the new costs will add approximately $15.10 per month in user charges for debt and O&M. The project charges affect an estimated 502 households.

Unit price cost breakdowns were provided for all alternatives considered for the new treatment and collection system. Prices appeared to be appropriate and consistent with current bidding practices. Engineering costs are within the typical range for a project of this magnitude.

The city is currently applying for a TSEP grant. PCSRF loan funds will be used to finance the project, and an application will be submitted to this program in the future. The application considered other options if the proposed funding package was not obtained.

Benefit Assessment

The proposed project provides multiple resource benefits. The new lagoons will prevent the discharge of partially treated wastewater to the underlying groundwater and the Poplar River. The storage and use of accumulated wastewater for irrigation of an adjacent golf course will conserve river water that would normally be used for irrigation, improving stream flows and conditions for resident wildlife. Indirectly, recreation will benefit through improved flows in the river. The nutrients in the wastewater will help promote the grass growth on the golf course and reduce chemical use. The impoundment of treated wastewater provides off-stream storage. The application included good evidence of public support for the project.

Environmental Evaluation

Environmental impacts associated with this project were thoroughly evaluated and no apparent adverse long-term impacts will result. Salt accumulation in the soil may be a problem due to the widespread use of water softeners in the community. Tests will be conducted during the summer of 2002 to determine the amount of salt in the wastewater and the effect of the salt upon the golf course. Options to address the problem include using more dilution water, partial discharge, and reduced irrigation or irrigation of croplands. The lagoons may generate odors, given the overall organic loading rate, which is high for a lagoon without supplemental aeration. Short-term construction related impacts would be controlled through permitting and proper specifications.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 2

Applicant Name	Dawson County		
Project Name	Yellowstone River Floodplain Management Project		
Amount Requested	$	100,000	Grant
Other Funding Sources	$	18,200	Applicant
	$	10,485	DNRC, Water Resources Division
	$	264,000	U.S. Army Corps of Engineers (COE)
	$	7,200	Yellowstone River Conservation District Council's Technical Assistance Committee
Total Project Cost	$	399,885	
Amount Recommended	$	100,000	Grant

Project Abstract (Prepared and submitted by applicant)

Unplanned development of the Yellowstone River floodplain within Dawson County poses a significant threat to stormwater management, water quality, wildlife habitat, public safety, and natural stream dynamics. At the City of Glendive, historic public infrastructure developments, such as a levee and the interstate highway bridge built during the late 1960s, have had a profound effect on channel and floodplain function. In and around the city, river ice poses a substantial flood threat during spring thaw by "jamming," thereby causing water to inundate adjacent bank areas not normally affected by flooding. Glendive has experienced approximately 32 ice jam floods since 1889.

In March 2002, COE published the results of an investigation that examined various alternatives aimed at reducing the severity and occurrence of flood hazards along the Yellowstone River at Glendive. The investigation identified two potentially feasible alternatives and a preferred alternative. The preferred alternative includes removal of the West Glendive levee, buyout of existing structures currently behind the levee, and re-establishment of a secondary channel. This alternative not only results in the greatest economic benefit, it also includes opportunity for environmental restoration by establishing lost floodplain function.

In partnership with DNRC's Floodplain Management Section and COE, the county will implement a Floodplain Management and Feasibility Project near the City of Glendive. By conducting detailed hydrologic and hydraulic analyses, feasibility level design information will be developed to address the existing flood hazard and restore floodplain function. Flood hazard maps will be made covering approximately 15 miles of river near Glendive. The feasibility project will help county officials decide whether to proceed to the construction phase of the project, and it will provide sound information on which to guide future development.

Technical Assessment

Project Background

The project will cover 15 river miles. This includes the City of Glendive, 3 miles south of Glendive, and 10 miles north of Glendive.

A Flood Insurance Study was conducted in 1980 that included the majority of the city west of the Yellowstone River in the 100-year floodplain. The City of Glendive failed to adopt the required floodplain management ordinance, and consequently the Federal Emergency Management Agency (FEMA) suspended the city from the National Flood Insurance Program (NFIP). Glendive continued to allow major development to take place in the floodplain during the 1980s. Since that time, however, the city has shown a commitment to floodplain management and in 1998 adopted a floodplain ordinance that complies with the Montana Floodplain and Floodway Management Act. Glendive has been granted temporary NFIP reinstatement on condition that the city actively pursues mitigation of the 13 non-compliant structures that were built in the floodplain since 1980.

In the past, the west Glendive area has been protected by a levee, which came dangerously close to being overtopped in 1969, 1986, and 1994. COE has recently concluded that the levee would be overtopped in a greater than 30-year flood.

The preferred preliminary alternative in the 2002 COE study includes installing a flood warning system, removing a portion of the west Glendive levee, expanding the U.S. Interstate 94 bridge to allow greater flood capacity, reestablishing a historic channel that was cutoff by construction of the Interstate 94 bridge embankment, and relocating and/or buying out existing structures currently between the levee and the Burlington Northern Santa Fe (BNSF) Rails. The buyout and/or relocation would include 100 trailer homes, 25 wood frame homes, and 27 commercial structures. All residential structures would be moved, and commercial structures would be relocated to existing facilities or purchased, demolished, and reconstructed. The buyout and bridge expansion would create approximately 650 acres of additional floodplain to store water during flood events. This area would be restored to recreational and wildlife habitat use. With this additional flood storage capacity, the BNSF railroad grade is high enough to act as a levee to provide 100-year flood protection to the structures behind it, which includes a shopping mall, KMart, and the Crisafulli Pump factory. This alternative is preferred because it has a higher cost-benefit ratio, provides 100-year flood protection, and meets NFIP requirements for the 13 non-compliant structures.

Technical Approach

The project goals are to preserve and maintain the resource value of the Yellowstone River floodplain within the county and to reduce private property damage associated with flooding by identifying flood hazard areas and quantifying base flood elevations within the project reach. Grant funds would be used to publish a flood hazard study and maps that will provide sound new information on 13 miles of the river in the county to guide future development and update 2 river miles of the 1980 study and maps in Glendive. Also, grant funds would help pay for a final COE feasibility report recommending and detailing a final construction alternative. A countywide educational and public awareness program will be developed emphasizing wise floodplain management and best management practices.

The flood hazard study, floodplain mapping, and final construction alternative study will take two years. Depending on the final scope, the flood mitigation project is estimated to take from two to three years. The preliminary cost of the preferred alternative, the construction and buyout project, is currently estimated at $18.2 million. The two potential major sources of funding for the construction and buyout project are a federal appropriation through the COE Assistance Program and FEMA's floodplain buyout program.

Project Management

The Dawson County Disaster and Emergency Services coordinator will coordinate public involvement, agency participation, and contracted services management. A part-time administrator, employed by the county, will carry out grant administration and coordination. Through required procurement procedures, an aerial photographer and pilot will be contracted to complete photogrammetric and topographic survey work and a qualified engineer contractor will carry out the hydrologic and hydraulic analyses and produce flood hazard maps. The DNRC floodplain administrator will conduct the floodplain adoption process and assist the county with development and adoption of flood hazard maps.

The partnerships involved in this project are appropriate and experienced enough to see this project to completion. DNRC has assisted many Montana communities to prepare and adopt flood hazard maps.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$7,300	$0	$27,385	$34,685
Professional & Technical	$92,700	$0	$272,500	$365,200
Construction	$0	$0	$0	$0
Total	**$100,000**	**$0**	**$299,885**	**$399,885**

The majority of grant funds ($92,700) will be spent on contracted services for the initial coordination and information search, initial field reconnaissance, ground control survey, aerial photography, and digital orthophoto and topographic map production. These costs were based on estimates from a similar project on the upper Yellowstone River in Park County. COE will contribute the bulk of the contracted services costs ($264,000) for the hydrology and hydraulic analysis, flood hazard map production, geomorphology and geotechnical study, structure inventory, and real estate appraisal.

Costs appear reasonable and adequate and there does not appear to be any overspending. Montana receives only about $40,000 to $50,000 a year for floodplain studies from FEMA. It is anticipated that COE will commit funding contingent on the Renewable Resource grant money coming through. A reduction in grant funds would cause a reduction in the match funds received from COE.

Benefit Assessment

This project primarily improves and promotes the beneficial management of the Glendive area floodplain. This project will help county officials make informed floodplain management decisions about growth and development in the floodplain. The project improves the accuracy of existing data along areas of the river that are currently regulated. When properly managed, conserved, protected, or developed, the floodplain is an important resource for allowing floodwater and ice jams to pass during a flood event. Also, this project will potentially provide the additional renewable resource benefits of recreation areas and wildlife habitat.

The City of Glendive must continue to show progress toward flood mitigation for the 13 non-compliant structures to maintain temporary status in the NFIP. This will allow property owners to continue to obtain flood insurance. NFIP coverage is the only affordable flood insurance available for structures in a designated floodplain. Lending agencies cannot make loans for structures in the 100-year floodplain unless they are adequately insured against floods.

Environmental Evaluation

No significant adverse environmental impacts will occur as a result of activities associated with the project.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 3

Applicant Name	Flathead Basin Commission	
Project Name	Ashley Creek Headwaters Restoration Project	
Amount Requested	$ 99,700	Grant
Other Funding Sources	$ 5,000	Ashley Creek Watershed Group (ACWG)
	$ 5,000	Flathead Basin Commission (FBC)
	$ 30,059	Montana Department of Fish, Wildlife and Parks
	$ 131,929	U.S. Fish and Wildlife Foundation Challenge Grant
Total Project Cost	$ 271,688	
Amount Recommended	$ 99,700	Grant

Project Abstract (Prepared and submitted by applicant)

The Ashley Creek Restoration Project is a locally led stream restoration effort aimed at improving water quality, soil conservation, and fisheries in the headwaters of Ashley Creek above Smith Lake. The project is located about 20 miles west of Kalispell and is being implemented under phase II of a comprehensive three-phased program designed to address major natural resource conservation needs of the watershed.

ACWG, in association with FBC, completed a comprehensive physical assessment of the overall health of the Ashley Creek watershed in early 2002. Seven sites, primarily on agricultural and rural development lands, were identified for excessive sediment loading, potential nutrient contributions, riparian degradation, and fisheries habitat degradation. Soil loss on agricultural lands was estimated in the hundreds of tons per year and has impacted local agricultural operations. ACWG decided to initiate a headwaters restoration effort focused on the watershed above Smith Lake to restore the impacted sites as part of developing a partnership with watershed landowners.

The results of the watershed assessment indicate that the main factors controlling the degradation of stream, riparian, wetland health, and fisheries are channel straightening and extensive vegetation removal from the riparian corridor. Historic and current land uses in the watershed, and an increase in rural homesite development, have led to streambank erosion throughout the headwaters. The results are increased siltation, suspended sediment loading, nutrient loading, and higher stream temperatures. Ashley Creek headwaters are also home to 99% pure-strain westslope cutthroat trout, and local interests include protecting these fish and restoring impaired habitat. A headwaters restoration plan was prepared to restore riparian vegetation, bank stability on severely eroding stream reaches, and fisheries habitat as part of the greater watershed restoration effort.

A water quality monitoring plan was also prepared to collect water quality data and biologic data to compare with baseline data. The plan will be implemented in tandem with restoration efforts and will be used to define trends in the stream corridor and water quality before and after restoration. Currently, Ashley Creek remains the highest nutrient load per unit area of the Flathead even though substantial improvements were made to waste water treatment and BMPs on forest roads in the 1990s. Ashley Creek is a tributary to Flathead Lake and a high priority for FBC to reduce basin nutrient loading.

Project landowners have agreed to work with ACWG to improve water quality, minimize soil loss, and protect fisheries. In addition to stabilizing streambanks, revegetating stream corridors will provide filtration for agricultural runoff and shade needed to improve fisheries. Restored riparian areas will provide forage and cover for wildlife and will provide for limited grazing by livestock under grazing management plans. Restoring cover and structure to streams will establish excellent fish habitat for cutthroat trout in areas currently unable to support healthy fish populations. The proposed restoration project will serve as a learning tool for the landowners in the Ashley Creek watershed and will be an example needed to increase public awareness and involvement in the three-phased Ashley Creek restoration program. Both a comprehensive watershed assessment and restoration plan are included with this application.

Technical Assessment

Project Background

Nutrient loading and sedimentation are common problems in the Flathead Basin. Studies have shown unacceptably high nitrogen and phosphorous levels in Ashley Creek and other tributaries flowing into Flathead Lake. Since the early 1990s, the City of Kalispell, Plum Creek Timber Company, Flathead National Forest, and DNRC have worked to improve water quality, conserve natural resources, and implement restoration projects in the Ashley Creek watershed. Private landowners are also committed to working with ACWG and FBC to achieve these objectives.

The project is a component of a three-phase program that seeks to improve water quality in Ashley Creek, restore riparian conditions in the headwaters, minimize sediment and nutrient loading, and enhance habitat for cutthroat trout and other fish species.

Technical Approach

On-the-ground objectives include revegetating riparian zones, fencing riparian areas, implementing grazing plans, reinforcing fish barriers for westslope cutthroat trout, installing brush bundles, stabilizing streambanks, regenerating aspen stands, installing water gaps, and preparing a feasibility report on potential road relocation and building. Gains in water quality will be monitored over several years to quantify benefits.

Project sponsors considered three alternatives: (1) integrated soft restoration techniques that enhance natural streambank strength while promoting riparian recovery, stream channel integrity, good water quality, and aesthetics; (2) hard restoration techniques (armoring the streambank artificially with riprap or gabions); and (3) construction of new channels and riparian corridors (reconstructing the channel with heavy equipment and installing rootwad revetment structures). The chosen alternative, integrated soft restoration techniques, is most suitable from a cost-benefit standpoint. The three-year implementation schedule contains a significant level of detail and appears to be reasonable.

Project Management

The project will be coordinated by the ACWG and FBC. Watershed Consulting, a vendor under FBC's nonexclusive term contract, will provide the majority of services in terms of final planning, permitting, implementation, and monitoring the restoration projects. Cooperating agencies and organizations include the U.S. Forest Service, Plum Creek Timber Company, and DNRC. ACWG meets monthly and there is a high level of involvement with area citizens, stakeholders, and agency personnel.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$12,000	$0	$0	**$12,000**
Professional & Technical	$31,700	$0	$39,296	**$70,996**
Construction	$56,000	$0	$132,692	**$188,692**
Total	**$99,700**	**$0**	**$171,988**	**$271,688**

The budget is well prepared and complete with the exception of costs associated with monitoring the project after the initial three years. Completion of the project depends on obtaining matching funds from the Montana Future Fisheries Program and the U.S. Fish and Wildlife Foundation Challenge Grant Program. Grant proposals have been submitted to each but decisions on grant awards have not been made. ACWG and the FBC will provide an in-kind match in the form of leadership support for the project. It is not clear how the proposed project would be impacted if one or more of the grant requests is unsuccessful. The private landowners on whose land most of the restoration would take place are not financial contributors to the project.

Benefit Assessment

The project will contribute to conservation of two populations of westslope cutthroat trout, one of which is 99 percent genetically pure. The project will conserve soil that is currently being lost to stream systems due to poor livestock management, historic stream channelization, and removal of riparian vegetation. The project will also reduce nutrient loading to Ashley Creek and ultimately to Flathead Lake by decreasing livestock-related nutrient input to the drainage.

Long-term benefits are dependent on landowner agreements that will eliminate or severely restrict livestock grazing along the project streams. These agreements, which have not yet been developed or signed, will be critical to protecting the public investment inherent in the grant request. If the riparian fencing projects are not implemented, the restoration efforts will be compromised.

The project will maintain or enhance the recreational fisheries of Ashley, Mount, and Truman creeks as well as Smith Lake by improving habitat and reducing sediment in the system.

Environmental Evaluation

There will be short-term impacts due to in-channel construction work, but the long-term benefits far outweigh these short-term impacts. There are no long-term adverse environmental impacts associated with this project.

Funding Recommendation

DNRC recommends grant funding of $99,700 upon approval of a project scope of work, administration, and budget.

Project No. 4

Applicant Name	Missoula, City of	
Project Name	Rattlesnake Neighborhood Sewer Collection System	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 1,013,267	Applicant – Revenue Bond
	$ 4,202,000	Applicant – Special Improvement District (SID)
	$ 500,000	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 5,815,267	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

In 1984 and 1995, the City of Missoula's Wastewater Facilities Plans identified the Rattlesnake Valley as a high priority area to receive sanitary sewer service. The Rattlesnake Interceptor, installed in 1986, provided a backbone for connecting neighborhood collector sewers to be installed in the future.

Most of the Rattlesnake Valley's existing on-site wastewater systems are substandard cesspool and seepage pit systems. A significant number of these systems have failed over the last 30 years. The city desires to reduce wastewater loading to groundwater and surface water to protect its sole source aquifer. Such actions also help the city comply with its Voluntary Nutrient Reduction Program (VNRP) agreement regarding the Clark Fork River.

The proposed project entails the installation of collector lines and stub-outs to serve approximately 600 existing parcels of land in eight neighborhoods of the Rattlesnake Valley. This project will alleviate all of

the problems mentioned above by connecting the Rattlesnake Valley to the city's wastewater treatment plant, which is currently undergoing a biological nutrient removal upgrade.

Technical Assessment

Project Background

The Rattlesnake Valley is located on the City of Missoula's north side, north of U.S. Interstate 90. Development has occurred along the Rattlesnake Creek corridor. The area was annexed by the city in the 1980s. The 1984 and 1995 Facility Plans identified the area as a "high priority" to receive sanitary sewer service due to the sole source aquifer designation of the Missoula Valley Aquifer. The Rattlesnake interceptor sewer was installed in 1986.

The Rattlesnake Valley is a developed area with a significant number of on-site wastewater treatment systems. Sewer system permits were not required until 1967 and drain fields were not required until 1974. Many of the homes are served by seepage pits, which are substandard systems no longer allowed under current regulations. Since 1967, of the 608 sewer permits issued, 58% are for seepage pits. Of the permits on record, 22.9% (140 systems) were issued to replace failed systems. An additional 217 systems exist that were installed prior to 1967. It is assumed that most of these systems are seepage pits.

The proposed project is intended to protect the Missoula Valley aquifer by eliminating on-site sewer systems. The project will also help meet the goals of the Clark Fork River VNRP of which the city is a participant. The VNRP was instituted to reduce nutrient loading to the river. The river has been designated as an impaired stream.

Technical Approach

The goal of the project is to eliminate over 500 substandard on-site sewer systems by providing sewer collection to the area. The Missoula wastewater treatment plant will provide treatment. The objectives of the project are to protect the sole source aquifer and to reduce nutrient loading to the Clark Fork River.

A facility plan covering the Missoula area was completed in 1984 and updated in 1996, 1999, and 2001. The Environmental Protection Agency (EPA) approved the document in 2000. The Rattlesnake Neighborhood was identified as a high priority area for sewer service. The Rattlesnake Neighborhood engineering report is an extension of the Missoula Facility Plan. The engineering report included an analysis of three alternatives to provide service to the planning area. These included standard gravity service, small diameter gravity service, and septic tank effluent pump systems. The report provides a detailed cost estimate for each alternative and operation and maintenance requirements and costs. The engineering report recommends serving the area with standard gravity collection mains.

The project is supported by EPA, the Tri-State Water Quality Council, Missoula City-County Health Department, the Missoula city engineer, Montana Department of Fish, Wildlife and Parks, and the Clark Fork Coalition. Agencies generally cited the importance of reducing nutrient loading to the Clark Fork River and protecting the sole source aquifer.

Project Management

A staff of engineering, project management, administration, and law professionals is proposed to administer the project. The Missoula city grants administrator will be responsible for coordination between the applicant and the funding agencies, consultant, and contractor. The city attorney will provide legal council. The city engineer will oversee the consultant engineer and construction project. The management staff is experienced and qualified to successfully mange the project for planning through completion and close-out.

The project management plan provides for thorough and well-organized public involvement. The process will include newsletters, letters to specific property owners regarding matters pertaining to their property,

and engineering contacts with property owners during design and construction phases. The SID formation process will also include a public information process. Neighborhood meetings will also be held.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$531,769	**$531,769**
Professional & Technical	$0	$0	$590,000	**$590,000**
Construction	$100,000	$0	$4,593,498	**$4,693,498**
Total	**$100,000**	**$0**	**$5,715,267**	**$5,815,267**

The proposed budget is sufficient to complete the project. The proposed funding scenario is reasonable, with a high probability of success. The applicant plans to obtain a Pollution Control State Revolving Fund (PCSRF) loan funding for 90% of the project budget. The applicant will need to form a SID in order to finalize loan funding. The project area is not currently served by public sewer facilities so there is no current assessment. The projected average assessment for service is $56.52 per month.

The cost per user to serve the project area is $10,184. This is within the range recognized as reasonable by the Department of Commerce funding programs. Project costs appear reasonable and adequate. The recommended alternative is the least cost alternative based on a present worth analysis presented in the PER. Project costs do not include equipment purchases.

Project funding is 90% committed. City funds ($1,013,267) are committed, and the PCSRF loan funds ($4,202,000) have been verbally committed with final approval contingent on the SID creation.

Benefit Assessment

The project is a major component in the VNRP to reduce nutrient loading to the Clark Fork River. The Clark Fork River has been designated an "impaired water body." Under the agreement, the city has agreed to provide biological nutrient removal in the treatment process (construction proceeding in summer 2002) and reduce the number of on-site septic systems in the valley by 3,400 by 2008. The Rattlesnake Neighborhood project has the potential to eliminate approximately 570 on-site systems. The project also supports the city's efforts to protect the Missoula Valley sole source aquifer.

The project has only limited potential for new jobs. An additional operator may be needed to maintain the system.

Environmental Evaluation

No significant long-term adverse environmental impacts will occur because of activities associated with the project. There are significant beneficial impacts including support of the VNRP and pollution of the Missoula Valley SSA. There will be the usual short-term impact associated with construction of this type.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 5

Applicant Name	North Powell Conservation District
Project Name	Blackfoot River Habitat, Water Quality, and Restoration Enhancement
Amount Requested	$ 62,600 Grant
Other Funding Sources	$ 63,000 Montana Department of Environmental Quality (DEQ)
Total Project Cost	$ 125,600
Amount Recommended	$ 62,600 Grant

Project Abstract (Prepared and submitted by applicant)

The Blackfoot River watershed encompasses about 1.5 million acres, extending from the headwaters of the Blackfoot River atop the Continental Divide at Roger's Pass, to its confluence with the Clark Fork River at Bonner, just east of Missoula. In its 132-mile journey, the river runs through some of the most productive fish and wildlife habitat in the northern Rocky Mountains. The North Powell Conservation District and the Blackfoot Challenge (BFC) are co-sponsoring this project to develop and implement an action plan needed to integrate habitat restoration and water quality planning and implementation efforts in the Blackfoot watershed. A total of $62,600 of RRGL funds will be used to provide technical support for the BFC's Habitat, Water Quality, and Restoration Enhancement Program working with its many partners, including the Big Blackfoot Chapter of Trout Unlimited, Montana Fish, Wildlife and Parks (DFWP), U.S. Fish and Wildlife Service (USFWS), and the Natural Resources Conservation Service (NRCS). A one-to-one cost share is provided through a DEQ 319 grant awarded to BFC for the Middle Blackfoot planning area.

Implementation of the habitat, water quality, and restoration enhancement project is focused primarily on coordination, management, and planning efforts, but is indirectly a construction and implementation effort needed for conserving and restoring natural resources. Coordination between numerous entities conducting projects in the Blackfoot is essential in order to identify restoration targets, goals, and joint projects, and to ensure a healthy and economically viable ecosystem. To this end, the focus of this project is to identify targets and implement actions that reduce basin impairment issues, and specifically improve Blackfoot River water quality by working with the DEQ Total Maximum Daily Load (TMDL) program. This grant is proposed to fund the technical support needed to oversee development of watershed restoration plans and targets, and work with stakeholders to see restoration and conservation measures implemented on the ground.

This is a two-year grant request with goals of improving water quality, soil conservation, and fisheries. Specific project goals include: 1) developing targets through the TMDL program needed to improve water quality and identify restoration projects, 2) reducing soil loss on agricultural lands and logged areas through minimizing soil bank erosion and implementation of road BMPs, and 3) improving fishery and aquatic habitat and recreation opportunities, and protect species of concern. These goals will be met through effective project management and administration, developing a basin-wide action plan, identifying water quality and restoration targets, coordinating restoration planning and implementation, grant writing to fund restoration funding, and promoting local participation in restoration efforts.

Technical Assessment

Project Background

The Blackfoot River flows westward from its headwaters near Rogers Pass to the Clark Fork River just east of Missoula. The watershed, which encompasses 1.5 million acres, contains exceptional forest, fish, and wildlife values. BFC is a nonprofit organization founded in 1991 to promote cooperative management of the Blackfoot River, its tributaries, and adjacent lands. Its mission is to coordinate efforts that will enhance, conserve, and protect the natural resources and rural lifestyle of the Blackfoot River Valley for present and future generations.

BFC is teaming with the North Powell Conservation District to develop and implement a plan that will integrate habitat restoration, soil conservation, and water quality improvement in the Blackfoot watershed. The district has a long history of protecting and enhancing natural resources in the watershed.

Other partners include DFWP, USFWS, the Big Blackfoot Chapter of Trout Unlimited, NRCS, DEQ, and private landowners. Projects already in progress with various partners include drought management, native fish species recovery, grizzly bear management, fire hazard reduction, and tributary restoration.

Technical Approach

This project is focused primarily on coordination, management, and planning. Coordination between numerous entities conducting projects in the Blackfoot is essential in order to identify restoration targets, goals, and joint projects, and ensure a healthy and economically viable ecosystem. To meet these project goals the following tasks have been identified:

1. Provide management and administration to oversee the project and administer the grant.
2. Develop a basin-wide action outlining the implementation strategy to develop water quality and habitat restoration plans for impaired water bodies in the four watershed planning areas from the headwaters to the Clark Fork River.
3. Identify water quality and restoration targets on impaired tributaries to work with DEQ staff, contractors, and partnering agencies to collect, analyze, and organize needed watershed data following the TMDL process and integrating BFC needs for identifying restoration projects.
4. Coordinate restoration planning and implementation to work with entities, such as Trout Unlimited, to implement restoration plans.
5. Seek restoration funding to prepare grant applications to fund implementation of restoration plans and water quality improvement efforts
6. Promote participation in restoration efforts to encourage agency personnel, landowners, and stakeholders to participate in developing water quality and restoration targets and implementing restoration/conservation action plans.

Project Management

The district will provide grant and contract administration services, while BFC will serve as project manager. Contractors will help identify water quality targets and habitat restoration goals, and develop specific conservation projects to achieve these goals. Cooperating agencies and stakeholders, especially Trout Unlimited, USFWS, DFWP, and DEQ, will be important contributors to this project.

Administration costs of $5,990 may be low for a project of this size.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$5,990	$0	$0	**$5,990**
Professional & Technical	$56,610	$0	$63,000	**$119,610**
Construction	$0	$0	$0	**$0**
Total	**$62,600**	**$0**	**$63,000**	**$125,600**

The proposed budget appears accurate and complete. The requested funding will allow the necessary planning to target some projects, but may not be adequate to assess all future needs.

Benefit Assessment

The applicants have a good record for coordinating and completing projects with significant water quality, soil conservation, wildlife, and habitat restoration benefits. Projects identified and implemented through this effort will result in reduced soil loss on agricultural lands and logged areas through minimized erosion.

Bull trout (a threatened species), westslope cutthroat trout, and other fish species will benefit through improved water quality and habitat restoration. Recreational opportunities will be increased as impaired river reaches are restored and fish populations are enhanced.

Environmental Evaluation

There are no adverse environmental impacts associated with this project; on the contrary, the entire effort focuses on improving environmental conditions in the Blackfoot River watershed.

Funding Recommendation

DNRC recommends grant funding of $62,600 upon approval of a project scope of work, administration, and budget.

Project No. 6

Applicant Name	Montana Department of Agriculture	
Project Name	Expansion of Existing Monitoring Well Network for Assessment of Agricultural Chemicals in Montana Groundwater	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 27,712	Applicant
	$ 38,290	Montana Bureau of Mines and Geology (MBMG)
Total Project Cost	$ 166,002	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The Montana Department of Agriculture (MDA) is attempting to expand the number of wells in the statewide agricultural-chemical groundwater-monitoring network by installing 12 new wells at previously unmonitored agricultural sites.

MDA is Montana's lead agency responsible for protecting groundwater from impairment from agricultural pesticides. By providing for voluntary measures to prevent, minimize, and mitigate the presence of pesticides in groundwater, MDA aims to support Montana's agricultural industry while protecting the quality of Montana's groundwater resources. Regulatory problems can be avoided by the early detection of agricultural chemicals in groundwater and by implementing voluntary mitigation measures. Such measures will be developed using the data generated by the proposed project. Prevention of groundwater contamination promotes a sustainable and responsible agricultural industry in Montana.

Agriculture represents 36% of Montana's economy. According to the 1999 Montana Agricultural Statistics Report, from 1995 to 2000, an average of 557,218 tons of fertilizer was applied to Montana agricultural land each year (U.S. Department of Agriculture 2002). A total of 3,607,000 pounds of herbicides was applied just to wheat in 2000; additional pesticides were applied to other crops. Most agricultural chemicals are toxic to humans, wildlife, and fish at very low (parts per billion) concentrations. Since about 95% of all households in Montana use groundwater as their primary source of drinking water (Environmental Protection Agency [EPA] 2002), pesticides that leach into groundwater can pose a significant health risk to humans. Additionally, where groundwater discharges to surface water, wildlife and aquatic biota are at risk.

MDA currently has only 16 permanent wells located throughout the entire state to monitor pesticides in groundwater. In order to more accurately characterize the magnitude and extent of pesticides presence in groundwater, additional monitoring wells are of critical importance.

Technical Assessment

Project Background

MDA currently monitors for agricultural chemicals (pesticides) at 16 wells located throughout Montana. MDA wishes to expand the monitoring network by 75% by adding 12 wells to be located based on a set of 10 criteria that fall into the following categories: crop type, pesticide type, land use practices, and groundwater vulnerability to agricultural practices. The ideal sites for monitoring would be representative of typical agricultural practices and similar hydrogeologic settings for particular crops within an agricultural region.

MDA currently monitors for pesticides to characterize the impact of agriculture on groundwater resources. This information is used to help pesticide users develop management practices designed to protect groundwater from contamination. Expanding the monitoring network will allow MDA to collect information that will help farmers to save costs and reduce losses by maximizing the benefit of pesticides while reducing the negative impact on water resources and wildlife habitat.

Technical Approach

The goal of this project is to protect water resource quality by preventing the introduction of pesticides. The groundwater quality data collected from the expanded monitoring well network would be used to develop groundwater management plans directed toward modifying agricultural practices to prevent groundwater contamination. The objectives are to (1) determine locations and depths of 12 wells; (2) install the wells; (3) collect samples; (4) evaluate analytical and well data for hydrogeologic characterization and water quality vulnerability; and (5) prepare a report with recommendations for management practices.

MDA proposes to select 12 monitoring well sites and install wells at appropriate depths. Well locations would be based on a set of 10 criteria that fall into the following categories: crop type, pesticide type, land use practices, and groundwater vulnerability to agricultural practices. Upon well completion, MDA proposes to collect samples and analyze at a minimum for agricultural chemicals and inorganics that will be used to characterize the impacts of agriculture and the nature of the groundwater resource. Additional analyses would be budget-dependant. The project does not include a budget for more than one sampling event.

MDA evaluated two alternatives: (1) do not install new wells, but monitor and sample domestic wells in lieu of monitoring wells, and (2) no action.

The first alternative would not yield the information MDA seeks. Few available wells fit within the location criteria or are completed at the appropriate depth. In addition, if pesticides are detected in the domestic well, it is too late to prevent contamination to groundwater supplying that well. The purpose of using a monitoring well is to detect and address contamination in groundwater before it reaches a domestic well. Because the cost of pesticide laboratory analysis is high, it is most cost-effective to collect samples from a well constructed specifically for monitoring.

Under the no-action alternative, MDA would continue the monitoring program at the current level, potentially allowing contamination to affect extensive water resources. In the long run, this is likely to prove the most costly alternative for water users, pesticides applicators, and the state.

The scheduled period of performance is reasonable and extends for two years after notice-to-proceed. Site selection, well installation and sample collection would take place from the fall of 1993 through 2004. Data analysis and a report would be prepared in the winter and spring of 2005.

The proposed project is well thought out with a clear implementation plan and measurable results. The evaluation of analytical results should include comparison with EPA and Montana Department of Environmental Quality (DEQ) water quality standards. The proposal includes a long-term plan for continued monitoring of the well network after implementation of the project.

Project Management

The project will be managed by an MDA project manager who will work with MBMG to provide public involvement and complete the final report. DEQ recommends that MDA specify how it will ensure the well records will be made publicly available. Roles of MDA and MBMG are clearly defined in the grant application and are appropriate given the budget allocations and project approach.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$8,457	**$8,457**
Professional & Technical	$100,000	$0	$57,545	**$157,545**
Construction	$0	$0	$0	**$0**
Total	**$100,000**	**$0**	**$66,002**	**$166,002**

This budget appears to be sufficient to fund the proposed project. MDA provides a detailed breakdown of unit costs. Material, labor, and equipment costs used to develop the budget appear to be reasonable and adequate. No costs of the various alternatives are provided, but justification for the proposed action as the least-cost alternative in the long run is provided and is reasonable. The proposed funding package is limited to three entities: the requested grant monies and matching funds from MDA and MBMG. Written commitments from all listed sources of funding indicate that matching funds are secure.

Benefit Assessment

The proposed project would result in measurable benefits to groundwater quality through better stewardship of the land and improved chemical application and irrigation management practices. The proposed project would result in the protection and preservation of existing groundwater and surface water quality and would reduce pollution from agricultural chemicals. The proposed project would result in measurable future renewable resource benefits through the implementation of new or improved agricultural chemical management practices and could contribute to the enhancement of Montana's fisheries and wildlife habitat by helping to prevent pesticides from reaching surface water.

All the above benefits are relatively long-term and would be quantified through the use of analytical data. A short-term benefit would be experienced by individual landowner's who host a monitoring well. Analytical results from water samples would provide immediate information regarding groundwater underlying the landowner's property.

Environmental Evaluation

No long-term adverse environmental impacts are anticipated as the result of the proposed project.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 7

Applicant Name	Paradise Valley Irrigation District	
Project Name	Hillside Lateral Upgrade	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 47,822	Applicant
	$ 56,536	Environmental Quality Incentives Program (EQIP) and producer cash contributions
	$ 50,000	U.S. Bureau of Reclamation (USBR)
Total Project Cost	$ 254,358	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

Paradise Valley Irrigation District has implemented a water measurement program that has determined that the hillside laterals conveyance efficiency is between 17% and 50%. Total water loss in conveyance during normal operations is 1,000 acre-feet. In the 2001 irrigation season over a three-day period, 18 cfs was diverted into the Hillside with only 3 cfs in deliveries. This lateral is the least efficient in the conveyance system and has the highest priority for rehabilitation.

In cooperation with USBR and DNRC, the district has developed and implemented a water conservation plan. The three main goals are:

- Improve water supply through conservation efforts and facility improvements;
- Improve the equitable distribution of water through increased operational control; and
- Quantify system losses and efficiencies and on-farm efficiencies through a water measurement program.

The hillside lateral will be split into two phases. Phase 1, the lower portion, is the focus of this grant application. Three high priority tasks have been identified.

- Discard 9,000 feet of the lower portion of the current 3.5 miles of the hillside lateral.
- Construct a new route to include two other small laterals, and install a pump and pipeline.
- Install flow meters to measure project deliveries.

The district is committed to funding improvements and has created an improvement fund. The district has applied for a $50,000 grant from USBR to match with funds from other sources such as the RRGL and EQIP programs. The Natural Resources Conservation Service (NRCS) has also offered technical assistance to evaluate options, design improvements, oversee construction, and evaluate results. Through EQIP, NRCS will provide technical assistance. Other agencies such as U.S. Fish and Wildlife Service and the Montana State University's Extension Service have also offered assistance.

Technical Assessment

Project Background

The district serves 8,311 acres distributed among 57 farms. It is located in Blaine County and is part of the Milk River Project. The hillside lateral is the first lateral in the district diverting from the main canal. Data collected through district's water measurement program indicates that the existing hillside lateral is the least efficient lateral in the district, with conveyance efficiencies as low as 17%, and consumes an average of 1,000 acre-feet of water per year. Seepage from this lateral represents a significant loss of water and creates soil salinity problems. Lack of elevation head in this lateral is also a significant problem. Before water can be diverted into the hillside lateral, the main canal must be fully checked, which in turn backs up water to the headworks and slows water velocities, making deliveries to the lower end of the district difficult.

Technical Approach

The overall goal of the project is to improve efficiency and economical operation of the district. Specific goals include improving water conservation, improving water management, improving water quality, and protecting water rights. These goals will be accomplished by abandoning the lower 9,000 feet of the existing hillside lateral, replacing it with a pressurized pipeline over a new route, and installing totalizing flow meters at each turnout. Alternatives to this project that were investigated include lining the existing lateral with various materials and installing the pipeline over various routes. Each of the lining alternatives would reduce or eliminate seepage, but none would address the elevation issue. The preferred alternative also saves energy by using one pump to pressurize flow at the head end of the pipeline rather than using the numerous existing pumps (one at each turnout) currently used to pump water from the lateral to individual fields.

There appear to be no regulatory or environmental issues that would affect the technical feasibility of the proposed project. This project is well thought out, meets numerous goals and objectives, and has the support of both NRCS and USBR. In 2002, the district received a national conservation award from USBR for taking initiative in conserving water in the Milk River Project.

Project Management

This project will be managed and administered by the district, with the district coordinator acting as project manager under the direction of the district board. The district secretary will provide administrative support, bookkeeping, and accounting.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$3,600	**$3,600**
Professional & Technical	$0	$0	$0	**$0**
Construction	$100,000	$0	$150,758	**$250,758**
Total	**$100,000**	**$0**	**$154,358**	**$254,358**

The unit and total costs of the proposed pipeline appear to be reasonable and affordable. Current indications are that matching funding is available and will be forthcoming. The present worth (capital and O&M costs over 20 years at 6% interest) of the project is $293,740. Based on this estimate, the pipeline would cost $241 per acre-foot of water conserved (based on saving 1,000 acre-feet per year), or $35 per acre served (based on the 8,311 acres in the district that would benefit). The project is justified based on these costs and would also serve as a good demonstration project for other irrigation districts.

Benefit Assessment

The primary renewable resource benefits of the proposed project would be to conserve water by eliminating seepage over 9,000 feet of existing lateral. Additional benefits include eliminating saline seeps along the lateral, improving long-term water management and efficiency throughout the district, and improving groundwater quality by reducing recharge with contaminated water. The 1,000 acre-feet of water conserved by the project has been estimated to be worth $99,000 per year (based on using this water to irrigate 330 acres alfalfa at 4 tons per acre and $75 per ton).

Environmental Evaluation

The proposed pipeline installation should have minimal short-term and no long-term negative impacts to the local environment. Reducing or eliminating seepage in the district may be beneficial to the environment by reducing the associated problems created by soil salinity.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 8

Applicant Name	Ramsay County Water and Sewer District	
Project Name	Water System Improvements	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 164,000	Montana Rural Development (RD) Loan
	$ 255,000	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 519,000	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The Ramsay Water and Sewer District provides water service to 34 residences and the U.S. Postal Service (USPS) office. The water system was constructed before 1920 to serve the DuPont Dynamite Production Facility (DDPF) and the company town of Ramsay. DDPF closed in 1921 and ownership of the water system transferred to the Ramsay Association in 1948. The association operated the system until the district was formed in 2000. The last major improvements were completed in the 1950s. A portion of the transmission main was replaced when Interstate 90 was constructed. Since that time, work on the system has consisted of maintenance on the water tank and replacement of two fire hydrants. The water system is old and in poor condition. In 1999, the Montana Assistance Program surveyed the system, identifying numerous needs for upgrade or repair. A Montana Department of Environmental Quality (DEQ) sanitary survey in 2001 stated that the water wells are in proximity to a pollution source. The district had already denied water service to three new homes in the west side of the district because they did not feel they could serve any additional users. The preliminary engineering report (PER) identified system deficiencies, reviewed alternatives for improvements and recommended improvements, and provided a plan to implement them. The district's water system currently has the following deficiencies:

- The water supply wells are located within the abandoned DDPF industrial site. The wells have been categorized by DEQ as being in proximity to a potential source of pollution. High soil lead levels were found on the site as part of DDPF's in-house environmental assessment. Due to the extent of industrial chemical use, the era of use, and DDPF's refusal to release its study results, it is very likely that contamination at the site is more extensive;
- The district does not own the property around the wells and cannot implement a wellhead protection plan. This is a concern due to the surface uses on the adjoining property, including a motocross racetrack, a private unlicensed landfill, construction debris storage, an unlicensed RV parking facility, and storage and use of many portable outhouses. The water supply is susceptible to bacteriological and chemical contamination;
- The water storage and distribution system is not capable of providing fire protection;
- Low system pressures occur during peak demands and when fire hydrants are operated. This is an extremely dangerous situation because of the potential to contaminate the water system through backflow or siphoning;

- Continuous disinfection is not provided. When peak demands occur, the wells pump directly into the distribution system, effectively bypassing the disinfection equipment. Failure to provide adequate disinfection can result in illness, disease, and death;
- Distribution system biofilm management is not possible because the distribution system is in very poor shape and cannot be flushed due to inoperable valves and hydrants. Failure to manage biofilm through system operations increases the risk of bacterial contamination;
- Cleaning the pipes (pigging) to control tuberculation is not possible due to the condition of the distribution system. Tuberculation results in a buildup of corrosion byproducts that reduces the pipe flow area and increases the roughness of the pipe, further reducing flow capacity and system pressure; and
- The district is not able to manage the water system through water use auditing because the water system is not metered. The system is very old and has a history of leaks and substantial water loss.

The preferred alternatives are to:

1. Replace undersized mains with 6-inch mains, install new hydrants and valves, and install supply and service meters,
2. Construct two new groundwater wells at a location immediately east of Ramsay, and
3. Construct a new, elevated water storage tank at the proposed well location east of Ramsay.

The PER recommends completing the proposed improvements in two phases with items 1 and 2 being completed in the first phase. Item 3 would be completed in the second phase in 5-10 years. The phased approach is recommended because of the high cost of the overall project and the small user base from which to fund the project. Completion of the first phase will remedy all five of the human health concerns associated with the water supply and distribution system. Phase I will also improve the flow capability of the system, increasing the flow capacity from as low as 165 gallons per minute (gpm) to approximately 450 gpm throughout the system. Phase 2 will increase the storage and delivery capacity to meet the recommended residential fire flow rate of 1,000 gpm.

Technical Assessment

Project Background

The Town of Ramsay is located in south-central Montana in Silver Bow County, about eight miles west of Butte. The need for water system improvements in the district is substantial and the resultant projects were broken into phases to allow a staged approach toward addressing the water system priorities. The proposed project involves replacement of undersized water mains, installation of water meters, and the drilling of two new groundwater wells. Future work would include a new storage tank. The existing water supply wells are located on the old DDPF site. The property around the wells is not owned by the district, and activities that have occurred in the area may pose a risk of contamination to the water supply. The water distribution system is over 80 years old; several components are undersized or inoperable due to age. Adequate fire protection cannot be provided with the existing system.

Technical Approach

The project goal is to provide the district with a water system that will provide service for a 20-year period. Alternatives considered in the PER included the rehabilitation of existing wells, development of new groundwater supplies, construction of one new well plus use of an existing school well, and connection to the Butte-Silver Bow water system. A detailed cost analysis of viable options was provided. The alternative selected was to build two new wells in a location, which could be controlled by the district. While this option was not the least expensive, the ranking process indicated that it provided the best overall benefits to the district. A similar approach was taken to evaluate viable options for storage and distribution system improvements. The schedule for design and construction provided in the application is achievable. DEQ reviewed the project in the early draft stages and indicated general agreement with the approach outlined for new improvements.

Project Management

The project budget allows for adequate funding to use the engineering consultant to serve as the project manager to oversee the administrative requirements of the funding programs. In addition, the district's secretary/treasurer and the district president will help administer the financial and administrative aspects of the project. The management structure as defined appears to address all needs for project management.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$38,190	**$38,190**
Professional & Technical	$65,660	$0	$0	**$ 65,660**
Construction	$34,340	$0	$380,810	**$415,150**
Total	**$100,000**	**$0**	**$419,000**	**$519,000**

The budget strategy provided in the application is sound and relies on a combination of grants and loans. Current charges for water service are $26.00 per month, and the new costs will add $33.00 per month in user charges for debt and O&M. The project charges affect 34 households. The resultant costs per user are substantial and could affect the ability of the district to fund future needed facilities. While the PER indicated household incomes in the district are relatively high at $45,454, the costs for water will still be substantial.

Costs appeared to be appropriate and consistent with current bidding practices. The financial plan considered several different funding scenarios and arrived at the least cost option, relative to monthly user rates.

Benefit Assessment

Installing water meters and eliminating leaks in the distribution system will help conserve water resources. More efficient well pumps will be used, with better control of the pumps. The improvements will add to the beneficial management of the renewable resource. Securing a new site for the wells, and establishing a valid wellhead protection program will enhance the benefits of the new groundwater source that is being developed. The application included ample evidence of public support for the project because of the citizen benefits associated with a good supply of drinking water.

Environmental Evaluation

The PER addressed environmental impacts associated with the project. Several state and federal agencies were contacted for comments on the project. While a superfund remediation project is found nearby along Silver Bow Creek, the project will be located away from any activities associated with the Streamside Tailings Removal Project. The state historical officer indicated that a cultural resource survey should be completed on the project during the design phase. Most of the area where the distribution system is to be installed has been affected by previous human disturbance. It appears that no long-term adverse impacts will occur as a result of the project. Short-term construction-related impacts will be controlled through permitting and proper specifications.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 9

Applicant Name	Missoula County	
Project Name	Mullan Road Corridor Sewer Project	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 257,625	Missoula Water Quality Protection District (MWQPD)
	$ 1,248,195	Pollution Control State Revolving Fund (PCSRF) Loan
	$ 499,335	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 2,105,155	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The Missoula Valley Aquifer has been designated the only Sole-Source Aquifer (SSA) in the U.S. Housing and Urban Development's (HUD) Region VII. The Missoula SSA is the community's only source of drinking water and is extremely vulnerable to contamination.

The Mullan Road Corridor Sewer Project Area lies directly west of Reserve Street, generally following Mullan Road and lying just north of the Clark Fork and Bitterroot rivers. The eastern boundary is immediately adjacent to the Missoula city limits. Wells and septic systems serve most areas. One older subdivision ("subdistrict") within the area, El Mar Estates, is one of the few remaining areas in Missoula that consists of homes that can be considered affordable housing. El Mar, Golden West and Mullan Trail have their own regional wastewater collection and treatment systems. The other subdistrict, Country Crest, consists of septic systems only.

Evaluation of the wastewater system at El Mar found that the facility is in need of significant upgrade due to worn-out equipment, is undersized for aeration, liquid storage and land application area, and is unable to properly serve the population currently connected. Additionally the treated effluent storage basin is leaking. Missoula County has been directed by the Montana Department of Environmental Quality (DEQ) and the U.S. Environmental Protection Agency (EPA) to seek solutions to bring that facility up to state requirements. The Missoula City/County Health Department has identified other sewer and septic problems ranging from failed systems placed in clay soils to contaminated wells in soils thought to be excellent for placement of septic systems. Costs per household to install sewer lines within the subdistricts range from over $1,500 in El Mar to over $16,000 in Country Crest. These costs would be in addition to the cost of the main "backbone" of the sewer line that will be available to all properties in the area, as well as the cost of individual hookups in areas that do not already have their own system.

The county, with significant financial assistance from the city, will install the main sewer lines through the Mullan Road Corridor area starting in 2002. Gravity mains and collection lines for those subdistricts identified as top priorities by the county will be installed once the main lines are substantially complete in 2003. The Mullan Road area has been identified as the location for much of the future growth now taking place in the Missoula Valley. The area, with the exception of the failing community system at El Mar, is completely unsewered and lies on top of the Missoula Valley SSA and adjacent to the two major rivers in the valley. Significant impact of untreated or under-treated waste has already been observed in the Clark Fork and Bitterroot rivers. Missoula participates in the Voluntary Nutrient Reduction Program, and is committed to reducing the negative impact on the natural resources by bringing sewer to this area.

Technical Assessment

Project Background

The Mullan Road Corridor project area lies directly west of Reserve Street, generally following Mullan Road on both sides and bounded to the south by the Clark Fork River. In 1998, the EPA and DEQ identified and responded to a number of wastewater disposal problems in the El Mar Estates subdistrict. In response, Missoula County initiated facilities planning to identify possible solutions for the El Mar

problems as well as those for Golden West subdivision to the southeast of El Mar (both with community collection and treatment systems). The county decided to explore a regional alternative of bringing city sewer service to the project area. Additional development of the service alternatives included the Mullan Trail (with community collection and treatment) and Country Crest (with on-site disposal systems) subdistricts and to a limited degree, other surrounding areas. In May 2002, the county adopted a revised facilities plan that lays out a "backbone" collection system and identifies specific improvements for each of the four subdistricts to connect to the backbone. In April 2002, the county formed Revenue Special Improvement District (RSID) 8474, encompassing all four subdistricts as the entity for funding the backbone system. The proposed project will implement the capital improvements that each of the four subdistricts needs for connection to the backbone, as well as funding the necessary city capitalization fee for new hookups in these areas.

Technical Approach

The county is proposing to form individual SIDs for the El Mar/New Meadows, Golden West, Mullan Trail, and Country Crest subdistricts, and implement the necessary collection, pumping, and conveyance capital improvements to make connection to the backbone system. Wastewater collected from the subdistricts will be conveyed to the city system for treatment and discharge to the Clark Fork. The Missoula wastewater treatment plant (WWTP) is currently undergoing improvements to enhance nutrient removal in order to meet obligations set forth in the Voluntary Nutrient Reduction Program.

Project Management

The proposed project management plan appears to be well thought-out and sufficient to manage the project from planning to close-out.

Public involvement has been a priority for the applicant to this point. Eighteen public meetings have been held (as of the date of application) and all have been well attended by vocal members of the public. While the applicant does not specifically include a strategy for continuing public involvement, it will undoubtedly have to – given the current level of protest and litigation over formation of the backbone RSID 8474.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$200,520	**$200,520**
Professional & Technical	$30,000	$0	$126,675	**$156,675**
Construction	$0	$0	$1,023,175	**$1,023,175**
** City Capitalization Fee*	*$70,000*	*$0*	*$654,785*	***$724,785***
Total	**$100,000**	**$0**	**$2,005,155**	**$2,105,155**

**City of Missoula imposes a capitalization fee (approximately $1,055 per user) for hook-up fee, bond cost, and administration fee.*

The proposed project includes construction, engineering and associated costs for each of the four individual subdivisions to connect to the backbone Mullan Corridor sewage collection system proposed under RSID 8474 (created in April 2002).

The proposed budget is complete and accurately reflects the capital costs, engineering costs, connection fees, and administrative costs in the PER(s). Engineering costs are within acceptable limits, as are costs for administration of the funding sources. The county has elected to administer the funds as well as fulfill its normal functions of creating individual RSIDs in each of the four areas. The county has performed these duties for similar projects throughout Missoula County.

Each user hooked up to the new system will be assessed a $9.54 monthly O&M charge – the standard rate for the City of Missoula. This is within acceptable limits when compared to other similar-sized Montana communities. Potential O&M costs for the other alternatives (stand alone collection/treatment and stand alone collection/conveyance) were utilized in the alternative evaluation for El Mar/New Meadows and Golden West subdivisions.

Funding feasibility appears reasonable, although it will require considerable coordination and public education to pass the remaining four RIDs. Given the level of protests (48%) encountered during formation of the backbone RSID 8474, this could be relatively difficult – particularly for the Country Crest subdistrict. This area has a comparatively small population and high anticipated rates. Failure of the Country Crest RID would not necessarily derail the overall project.

Affordability for the El Mar/New Meadows, Golden West, and Mullan Trail projects is well within reasonable limits when compared to other communities currently implementing wastewater infrastructure projects, with monthly rates between $19.52 and $27.04. However, affordability for the Country Crest project ($65.91 per month) is relatively high. The applicant did not submit information on the median household income for this area, and it is difficult to determine where this area falls in terms of target sewer rates.

Benefit Assessment

The Mullan Corridor project will not result in measurable resource conservation. The limiting factor for development in the area is the ability to reliably treat and dispose of wastewater. A comprehensive wastewater collection system would allow additional infill development and increased use of the Missoula Valley SSA.

The applicant is enhancing its stewardship of the Missoula aquifer by reducing/controlling the discharge of pollutants from poorly operating individual and community wastewater systems.

In light of the Clark Fork's impaired uses and the need to reduce nutrient loads to the stream, this project could result in measurable improvements to the Clark Fork River and enhance the stream's fisheries and riparian habitat, as well as improve the Clark Fork's attractiveness for water-based recreation. Summaries of expected reductions in nutrient load by implementing the project are included in the PER.

Public involvement efforts have been relatively thorough, and there has been a great deal of public discussion about the project(s) thus far. There are letters of support in the application from the city mayor, the Missoula County director of environmental health, president of the Mullan Trail Landowners Association, president of the Golden West Homeowner's Association, president of the Country Crest Homeowner's Association, and the Clark Fork Coalition.

Environmental Evaluation

The applicant has completed a very thorough and candid uniform environmental checklist and there will be no long-term adverse environmental impacts. Collecting and conveying domestic wastewater to the Missoula WWTP (with nutrient removal capabilities) will reduce the risk of untreated wastewater entering the aquifer.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 10

Applicant Name	Park County	
Project Name	Northern Park County Water Resources Protection and Management Plan	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 4,762	Applicant
	$ 30,118	Montana Bureau of Mines and Geology (MBMG)
Total Project Cost	$ 134,880	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

This project will collect, analyze, and interpret the data needed to protect and manage water resources of northern Park County. The availability and quality of water resources in northern Park County are under increasing pressures from rapid subdivision developments in areas surrounding Livingston and the lower Shields River and from potential coal bed methane development in the Cokedale and upper Shields River areas. Hydrologic data on the aquifers and on its interaction with surface water in the northern portion of the county are very limited. Baseline data for water quality and flow data on streams and springs in potential coal bed methane areas are lacking. These data are essential to develop county growth and land-use plans and policies.

The project will consist of completing an inventory of wells, springs, and streams. Streams and springs will be measured for flow and stage. Wells will be measured for static and pumping water levels. Surface-water and groundwater samples will be collected for nutrients, common ions, and trace metals analyses. Some samples will be analyzed for tritium, deuterium, and oxygen-18 to provide data on aquifer sensitivity to impacts and recharge settings. All data collected during the project will be available through MBMG's Ground Water Information Database.

Data from the project will be used to evaluate yields and suitability of the aquifers underlying the area. These data will be very useful to homeowners, developers, ranchers, and county planners. Recharge sources and relationships between groundwater and surface water will be assessed. This will allow for an integrated view of the hydrogeologic system. The product of this project will be a water resource plan for northern Park County. This plan will contain a summary report of the project data and findings, and recommendations for future development and protection of the area's water resources.

Technical Assessment

Project Background

Water resources in northern Park County are under increasing pressure from subdivision development around Livingston, particularly Wineglass Mountain, the Livingston Valley, and the lower Shields River Valley. The number of wells in northern Park County increased by 50 to 70 percent between 1990 and 2000. Park County is currently updating its comprehensive county growth and development plan, and better information on the area's hydrologic systems is needed to ensure scientifically sound decisions on subdivision and zoning issues and to address potential impacts on aquifers that may result from increased numbers of septic systems and changes in land use.

Recently the potential for producing coal-bed methane (CBM) in northern Park County has attracted considerable interest. Coal seams in Eagle Sandstone can be encountered at depths of less than 1,000 feet in the Cokedale area and the upper Shields River area. In CBM development, the hydrostatic pressure of coal seams is lowered and large quantities of water must be disposed of, either at the surface by release into holding ponds or existing waterways, or by reinjection into deeper aquifers. To properly evaluate and manage future CBM development, it is critical that adequate hydrologic data are available.

Technical Approach

The ultimate goal of this project is to develop a water resources protection and management plan for northern Park County. This plan will be used by Park County and the Park Conservation District to manage subdivision developments north of Livingston and to evaluate and manage potential coal-bed methane development.

Achieving this goal will require identifying and evaluating groundwater and surface water systems in the areas of rapid subdivision development, and collecting baseline groundwater and surface water data in areas of potential coal-bed methane development. The proposed schedule for collecting these data is detailed and generally reasonable.

Project Management

Park County, Park Conservation District, and MBMG will cooperate in implementing this project. The project will be administered by the assistant county planner, who will be the lead contact with the principal investigator from MBMG. An ongoing similar project in the southern portion of the county utilizes the same management approach.

Data collection, compilation, and evaluation will be conducted by MBMG staff and university undergraduate students. Chemical analyses and physical property testing will be done at the MBMG laboratory in Butte. Isotope analyses will be performed by the environmental isotope laboratory in Waterloo, Ontario. Data collected in the course of the project will be available through MBMG's groundwater database on the internet.

Public involvement will include city and county planning board meetings as well as public hearings on the county growth policy, where the project will be presented.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$4,762	$0	$4,762	**$9,524**
Professional & Technical	$95,238	$0	$30,118	**$125,356**
Construction	$0	$0	$0	**$0**
Total	**$100,000**	**$0**	**$34,880**	**$134,880**

The proposed budget appears to be complete and accurate, and realistic in terms of the scope of the work. Using university students for data collection and analysis will result in project savings. The grant request of $100,000 is matched by $30,118 of salary and benefits and overhead charges from the MBMG, and $4,762 from Park County.

Benefit Assessment

The management plan resulting from this project will help guide future decisions on subdivisions and coal-bed methane development in northern Park County. Baseline data on surface- and groundwater quality and quantity is essential in monitoring, protecting, and conserving these resources.

While the project will not directly enhance fish or wildlife habitat or natural resource-based recreation, it does have long-term implications for water conservation and quality of life in northern Park County. The project has extensive and diverse public support, including from local government, conservation organizations, and private citizens.

Environmental Evaluation

There are no adverse environmental impacts associated with this project.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 11

Applicant Name	Sheaver's Creek Water District	
Project Name	Sheaver's Creek Water System Improvements	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 981,750	Montana Rural Development (RD) Grant
	$ 366,250	Montana Rural Development (RD) Loan
	$ 500,000	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 1,948,000	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

Sheaver's Creek Water District was formed in early 2000 with the intent of acquiring the existing, private Redgate System. In August 2000, the owner gave the Redgate System to the district. The system's well was drilled in 1975, and the spring was developed in 1905.

The system is below standard. The new district has been making repairs and providing water on a continuous basis. The district has been fixing numerous leaks, but for financial reasons has been forced to repair only major problems. Water pressure is still extremely low and barely allows residents to take showers or satisfy other minimum needs.

In May 2000, the Montana Department of Environmental Quality (DEQ) conducted a preliminary assessment of the spring water source to determine if it is under the influence of surface water. The spring supplies a majority of the district's water and was categorized as needing further study. Additional testing was scheduled to take place in spring of 2001, but was postponed in lieu of this project. The Sheaver's Creek water system has the following deficiencies:

- High fluoride in the well, greater than Environmental Protection Agency's (EPA) maximum contaminant level (MCL);
- A spring likely under the influence of surface water;
- A spring that varies from 10-35 gallons per minute (gpm);
- Uncontrolled area around the spring, national forest land with no fence;
- Unburied transmission line from the spring;
- Storage tank with no cover open to the mechanical room and outside through vents;
- Undersized distribution mains, ¾-inch to 3-inch;
- Leaking distribution lines;
- Dead-end distribution mains;
- No water meters;
- Few curb stops;
- Inadequate storage facility;
- No fire service;
- Lack of supply for current growth in area causing frequent water restrictions and outages;

- Low pressure; and
- No easements for repair.

Total replacement of the system is the only complete and long-term solution. The new system will include approximately 19,000 feet of mains, three new wells, 118 services and meters, fire hydrants, and a 140,000-gallon storage tank.

Technical Assessment

Project Background

The Sheaver's Creek Water District serves approximately 300 residents on the east shore of Flathead Lake near Woods Bay. The original water system was called the Redgate Water System and it was constructed in the early 1900s. The early system developed a nearby spring for a water source, and the remainder of the distribution and storage infrastructure evolved over time with minimal planning or design of system components. The water district formed in early 2000 and took over ownership of the water system in August 2000.

The entire water system is substandard. The water supply consists of the original spring and one well. DEQ has determined that the spring is under the influence of surface water. If the district were to continue use of the spring, it would require the installation of filtration and disinfection processes which are economically unfeasible given that the spring produces only 10-35 gpm. The district has had three coliform bacteria violations in recent history that may be related to the spring. The well has concentrations of fluoride in excess of the Safe Drinking Water Act MCL.

The distribution system is inadequately sized and is plagued with leakage problems. Some of the piping is exposed above ground as well. The district spends a great deal of its O&M resources fixing leaks. The system experiences low pressure problems related to the inadequate piping, which can also present a public health hazard.

The storage facility is inadequately sized for the system and does not meet DEQ sanitary requirements. The existing system is chlorinated at the tank, which is ineffective because of the inadequate contact time available for disinfection.

Technical Approach

The goal of the proposed project is to construct a public water system for the district that is reliable, meets the needs of residents, and meets all regulatory requirements. The proposed project is a comprehensive replacement of the existing system. It includes the development of a new water supply, distribution system, storage tank, and telemetry control.

The district completed a preliminary engineering report (PER) in May 2002. Several reasonable alternatives were analyzed for distribution, storage, and supply. The costs provided for each of the alternatives were reasonable. The alternatives selected for the distribution and storage components are appropriate and will meet DEQ requirements. The selected distribution system will consist of 6-, 8-, and 10-inch water mains with the appropriate valves, fittings, and fire hydrants. The project will also include a 140,000-gallon on-grade storage tank and transmission main. Each user will have a water meter installed at the property line.

The new water supply will consist of three new wells drilled east of the district. There was inconclusive information whether the site for the proposed well field is appropriate. However, if fluoride is encountered in the first drill hole, this hole can be abandoned and the next hole drilled further south without having major economic impacts on the overall project.

DEQ supports the project, as long as the fluoride issue is satisfactorily addressed. The project schedule is reasonable and attainable.

Project Management

The district will be responsible for overall oversight and project management. The district secretary will be responsible for the grant and loan administration. The district will also be responsible for coordination between the district, funding agencies, engineering consultant, and the contractor. Legal bond counsel has been obtained. The consulting engineer will provide planning, design, and construction oversight services and will assist the district with project management and grant administration services.

The project management plan provides for thorough and well-organized public involvement. The process will include newsletters and regularly scheduled district board meetings.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$57,500	**$57,500**
Professional & Technical	$12,000	$0	$271,750	**$283,750**
Construction	$88,000	$0	$1,520,750	**$1,608,750**
Total	**$100,000**	**$0**	**$1,850,000**	**$1,950,000**

The project budget is complete and feasible. Budget costs have been accurately estimated and are reasonable. The current assessment is $29.00 per month. The proposed final water rate of $32.40 is reasonable and affordable for residents. The district will serve approximately 118 households.

It may be necessary to complete the project in two phases. According to RD, the district intends to bid Phase 2 as additive alternates as part of the Phase 1 bid process. If construction bids are low enough, the project contingency may allow the district to complete the entire project and keep the currently proposed rate for the users. If not, RD has agreed to fund the second phase of the project in its next funding cycle. However, this second phase of the project would include both loan and grant money. This additional loan money will increase the debt service and subsequently the user rate. The second phase of the project could raise the user rate into the $35 to $40 range. This rate is fairly high, but still affordable.

Benefit Assessment

The installation of meters and replacement of leaking distribution piping will conserve water. Installation of the new water supply infrastructure and control system will provide resource management benefits by allowing the district to better manage its groundwater resource. Installation of new water wells will develop a renewable resource.

The project does not support multiple uses and will not provide new jobs. The project had many letters of support from the public served by the system.

Environmental Evaluation

No long-term adverse environmental impacts or potential adverse impacts were identified for the project.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 12

Applicant Name	Stanford, Town of	
Project Name	Water System Improvements	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 350,000	Montana Rural Development (RD) Grant
	$ 987,250	Montana Rural Development (RD) Loan
	$ 500,000	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 1,937,250	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The town's water distribution system was constructed in 1928 of 4-, 6-, and 8-inch cast iron lines. Approximately 1,900 feet of 4- and 6-inch PVC pipe has been installed in the 1980s and 1990s. Two wells (Old Tower East, Old Tower West) were drilled as part of the original system in 1928. These two wells are no longer in use. The Southwest Park well was added to the system in 1940 and is still in use today. The Railroad well was constructed in 1941 and is still in use today. The Artesian well was added to the system in 1951. This well experiences high levels of iron and manganese as well as dissolved gases. As some time after completion of this well, a water treatment plant was constructed to remove the iron, manganese, and dissolved gases from the artesian water. The original treatment plant consisted of tray aerators and sand filters. At some point, the tray aerators were replaced with chemical precipitation of the iron and manganese, followed by pressure sand filtration. An air relief valve was added to the third filter housing to vent the dissolved gases. The treatment plant deteriorated beyond use, was abandoned, and this well is used only in emergencies. The North Park well was constructed in 1973 but has been taken off line due to declining production. This well goes dry when the Southwest Park well is pumping, making it unusable. The Corley well was added to the system in 1975. The Montana Department of Environmental Quality (DEQ) required the Corley well to be abandoned around 1980 due to high nitrate levels. The New Tower well was constructed in 1979 and is still in use today. The Sundown well was added to the system in 1981 and is still in use today. Three of the four wells still in use today need to be throttled back due to a continued decline in production due to poor construction, incrustation, and bio-fouling of the wells. Without the throttling, the water levels in the wells drop below the pump intakes, potentially damaging the pumps. Storage for the community consists of a 75,000 gallon elevated steel water tank. This tank was dismantled in nearby Judith Gap and reinstalled in Stanford in 1960. It is believed that the tank was originally built in Judith Gap in the 1940s.

The town's water system currently has the following deficiencies:

- Three of the four wells currently in use have experienced a loss in capacity of approximately 50% due to bio-fouling and incrustation. The pumps in these three wells must be throttled to prevent water levels from dropping low enough to damage the pumps. The fourth well has experienced a loss in capacity of approximately 18%. These wells are all inefficiently designed and because of the significant bio-fouling and incrustation, the loss of capacity in these wells will worsen with time;
- Existing water supply is insufficient to meet average day demand and is greatly insufficient to meet peak day demands;
- Although the town is metered, a lack of adequate supply leads to strict water rationing during the summer months;
- The town's largest producing well is used only in emergency situations, because it is in very poor condition, requires extensive maintenance, has high amounts of dissolved gases, and has levels of iron and manganese which greatly exceed the secondary water quality standards and make the water nearly undrinkable;
- Storage is inadequate for average daily demand and grossly inadequate for fire protection;

- Inadequate supply, storage and old, undersized water mains allow system pressures to drop below 20 psi during high demand periods, increasing the potential for backflow and contamination of the public water supply from outside sources;
- 74-year old undersized water mains result in large pressure drops when fire hydrants are opened. Again, this increases the potential for backflow and contamination of the public water supply from outside sources. In addition, this shows that the distribution system is grossly inadequate for fire protection;
- Because low pressures are experienced when fire hydrants are opened, the town cannot adequately flush and clean the system, leading to the possibility of contamination from biofilms;
- During periods of high demand, pressures drop to the point where there is not sufficient pressure to be able to use bathrooms in two story buildings;
- A computer model of the system indicates extreme negative pressures could be experienced in the system during large fire flows, which increases the likelihood of contaminants being introduced into the system;
- 29 of the 38 fire hydrants on the system are 74 years old and are equipped with only 2 ½ -inch nozzles, which makes them incapable of providing adequate fire flows and is a violation of DEQ standards. In addition, many of these hydrants are inoperable or leak excessively;
- Fire hydrants are installed on mains smaller than 6-inches in diameter, in violation of DEQ standards;

The proposed project would increase supply to the community by constructing two new wells near the community, to be used with the existing wells in service. The existing wells will be rehabilitated to improve and maintain capacity. Field investigations indicate the depths of the proposed wells will yield adequate amounts of good quality water. This will provide the town with a reliable, long-term solution to the current supply problem. Existing wells no longer in use will be properly abandoned. A new 316,000-gallon elevated steel water tank would be constructed to supplement flows and pressures during high demand periods and to provide adequate storage for fire flows or emergencies such as a power or mechanical failure. Approximately 3,200 lineal feet of 8-inch water distribution line would be constructed to provide adequate fire flows to the school, commercial and downtown areas. All of the 1928 vintage fire hydrants will be replaced to increase fire protection to the rest of the community.

Technical Assessment

Project Background

The town water system was originally constructed in 1928 and consisted of 4-, 6-, and 8-inch cast iron water mains and two wells. Since 1928, additional 4- and 6-inch water distribution mains and wells have been added to the system. The existing water system provides water for domestic consumption, irrigation, and fire protection. The town has recently documented deficiencies in the water system in a preliminary engineering report (PER). The existing water supply wells are documented to be losing capacity. One well contains high concentrations of iron and manganese and is only used during emergencies. The existing 75,000-gallon elevated steel water storage reservoir is inadequate for average day demands and is grossly inadequate for fire protection. Hydrant testing and a hydraulic model have shown that the undersized and deteriorated mains result in inadequate pressures during normal domestic use and cannot provide adequate fire protection.

Technical Approach

The goals of the proposed project include:

1. Provide additional water supply wells to replace existing failing wells and address water shortages.
2. Provide additional storage to supplement water supply wells during times of peak domestic use and to provide adequate fire protection storage.
3. Improve water distribution system pressured during peak water demands and fire flow conditions.

The goals will be met by construction of two new water supply wells, construction of a new 316,000-gallon water storage reservoir, and replacement of approximately 3,200 lineal feet of existing water main. The two new water supply wells will replace existing wells that have been documented to be losing capacity, eliminate the need to rely on a well high in iron and manganese, and provide adequate water to meet future water demands. The new 316,000-gallon elevated water storage reservoir will supplement the new water supply wells during times of high demand and provide adequate storage volume for fire protection. Replacement of the deteriorated water mains will increase pressures and fire flow capabilities to the school, commercial and downtown areas. The replacement of 3,200 lineal feet of water main proposed in this project represents the first of three phases of distribution system improvements. Water rights related to the change of point of use on a groundwater source will need to be filed.

The proposed improvements represent the most cost-effective and environmentally acceptable solutions to the documented deficiencies. The recommended improvements will achieve compliance with state and federal standards. The proposed schedule is to begin design of the facilities in mid-2003 and initiate construction in May 2004, with completion and start-up later that fall.

Project Management

Staff includes the mayor, the town clerk/treasurer, a professional administrative consultant, and an engineering design consultant. The proposed staff appears adequate to successfully manage the project from planning through completion and closeout. The project management plan addresses public involvement and proposes to continue the public awareness program developed during the planning stages of the project through completion and project closeout. The project management plan appears to provide for thorough and well-organized contract management with regulatory and funding agencies, consultants, contractors, and any other involved parties

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$58,500	**$58,500**
Professional & Technical	$100,000	$0	$201,600	**$301,600**
Construction	$0	$0	$1,577,150	**$1,577,150**
Total	**$100,000**	**$0**	**$1,837,250**	**$1,937,250**

The budget appears to be sufficient to fund the proposed project. Unit costs used to develop the budget appear to be reasonable and adequate. The costs of the various alternatives evaluated in the PER appear to have been developed in a consistent manner, and the proposed project was determined to be the most cost-effective alternative.

The proposed funding package is reasonable and consists of a combination of a grant from the TSEP program and a grant and loan package from the U.S. Department of Agriculture (USDA) RD program. The TSEP grant application has been submitted. USDA has confirmed that the proposed project is eligible for RD grant and loan funding, but at the time, the funds had not been committed. Commitment of RD funds is anticipated.

The town currently provides service to 264 residential, commercial, and institutional hookups and an estimated population of 454. The current monthly water and combined water and sewer rates are $12.37 and $35.87, respectively. If the town receives the grants requested, the anticipated monthly water rate will be $27.67, and the combined water and sewer rate will be $51.17. Although the combined water and sewer rate is 153% greater than the target rate established by the Montana Department of Commerce, the proposed rates are deemed affordable.

Benefit Assessment

The project will provide direct, quantifiable benefits. The project will result in resource conservation through the reduction of water system leakage and subsequent reduction in energy use from pumping. The installation of meters at the wells and a new telemetry system will allow the town to manage the new water supply. Groundwater, a renewable resource, will be developed for beneficial use. Finally, proper capping and abandonment of existing wells will protect the existing aquifer from potential future contamination.

Environmental Evaluation

There do not appear to be any long-term adverse impacts attributable to the construction of the new wells, storage tank, or distribution main. The uniform environmental checklist has been completed, and the selected alternative will either result in no impact on the environment or will have a beneficial impact on the environment.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 13

Applicant Name	Hamilton, City of	
Project Name	Water System Improvements	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 17,500	Applicant
	$ 500,000	Community Development Block Grant (CDBG)
	$ 846,787	Drinking Water State Revolving Fund (DWSRF) Loan
	$ 500,000	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 1,964,287	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The City of Hamilton's water system, served from Skalkaho Creek, dates back to about 1896, when the first water mains were installed. In 1936, three wells were drilled within the city to provide a new source of water. A 0.5-million-gallon (mg) reservoir was also constructed around that time. Wells 4 through 6 were put into service between 1949 and 1984. The city purchased the water system from the Valley Water Company. The city has conducted many programs of repairs and upgrades to improve the facilities.

The water distribution system consists of mains ranging from 2 to 12 inches in diameter and made of galvanized iron, case iron, steel, PVC, and even wood. Because of age (some of the mains are over 100 years old) and small pipe sizes, the resulting corrosion, leaks, and inability to deliver flows at current fire flow standards forces the city to place a high priority on fixing the problems.

An inspection conducted last year of the 0.5-mg welded steel reservoir tank showed that the tank is severely corroding and pitting. The tank needs to be taken out of service for general maintenance to repair the corroded walls and to replace the lost protective lining. However, because this is the only storage tank in the system, this cannot be done until the new tank is constructed.

The city is using five wells that are outdated and that of have little to no wellhead protection. All the wells are in areas of possible contamination. The proposed project consists of:

- Construction of a new 1.0-mg reservoir to provide additional water storage capacity to meet the current needs for fire and other emergency uses. This new reservoir will also allow the existing 0.5-mg reservoir to be taken off-line for needed maintenance and repair work;
- Construction of a new well farm to provide additional water to meet the needs of the growing community and to ensure wellhead protection; and
- Installation of new water mains and replacement of existing old mains. The proposed work would include replacing old fire hydrants, installing additional new fire hydrants, metering all service connections to the mains, and re-routing mains into the roadway rights-of-way.

Technical Assessment

Project Background

The city is located on the Bitterroot River about 45 miles south of Missoula. The community's public water system was originally constructed in the 1890s, and was under private ownership until it was acquired by the city in 1982. During the 1930s, three wells were drilled to augment the surface water source from Skalkaho Creek, and the existing 500,000-gallon storage tank was constructed. Three more wells were drilled between 1949 and 1984. With the exception of routine upgrades and distribution system expansions, little has been done to the system since the early 1980s. The three original wells have reached the end of their service lives; the storage tank, constructed of steel, is in need of repairs and eventual abandonment; and the distribution system is undersized and leaks. Unaccountable water losses typically approach 60% of the water being pumped from the wells. The city has taken a proactive approach to water conservation, and about 98% of the service connections are now metered. This project consists of the installation of the remaining meters, the construction of a new 1,000,000-gallon steel storage reservoir, the drilling and/or development of three new wells, and the replacement of the distribution system in the downtown area.

Technical Approach

The public drinking water system for the city is in generally operable condition. However, very few major improvements have been made to the system since it was originally constructed over 100 years ago. This project proposes to make improvements in supply, storage, and distribution.

The supply source was originally a surface water supply, Skalkaho Creek. In the 1930s, this source was augmented with three wells drilled to approximate depths of 80 feet. Skalkaho Creek has been abandoned as a source of water, but the three wells are still in use. Since the 1930s, three new wells have been drilled; two of these have been developed and are in current use. The third will be developed, along with two new wells, as part of this project.

Storage currently consists of a 500,000-gallon steel storage tank constructed in 1936. There is not enough storage capacity to meet peak or fire flow demands, and the tank is in poor condition. This project proposes to construct a new 1,000,000-gallon reservoir to allow for the rehabilitation of the existing tank and to increase capacity to 1,500,000 gallons.

The distribution system is generally undersized and deteriorated to the point that there is in excess of 50% unaccountable water loss each day due to leakage. This project proposes to replace the existing distribution system in downtown Hamilton, an area scheduled for street replacement in 2003.

The project also includes the installation of about 50 water meters; this will complete a program that has been ongoing since 1998 to meter the entire system. This will provide an incentive for water conservation, and will better enable the city to manage its public water system.

Construction is scheduled to begin during the summer of 2003 and to be complete by early 2004.

Project Management

The project management plan for this project is typical for a project of this scope. The city public works director will represent the city as project manager. His duties will be to coordinate all construction activities, working with both the contractor and the engineer. A professional engineer will be retained for the design, bid, and construction management of the project. It will be the responsibility of the engineer to design the project and produce a set of bid documents, to assist the city in advertising the project for bid and selecting a contractor, and to ensure the timely completion of the project in compliance with the plans and specifications. Financial coordination and grant administration will be the responsibility of the city's financial officer.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$125,387	**$125,387**
Professional & Technical	$0	$0	$229,908	**$229.908**
Construction	$100,000	$0	$1,508,992	**$1,608,992**
Total	**$100,000**	**$0**	**$1,864,287**	**$1,964,287**

Match funding, identified in the table above, consists of a $500,000 CDBG grant (to be applied for in January 2003), a $500,000 TSEP grant (applied for in May 2002) a $846,787 DWSRF loan, and $17,500 from city cash reserves.

The current average monthly rate being charged homeowners in the city is $21.08. As the result of this project, the rate is expected to increase to $24.24. Maintenance costs should actually decrease as the result of the improvements made by this project. In addition to this charge for water, the average residence also pays $17.34 per month for sewer service, bringing the proposed total for sewer and water to $41.58 per month.

The budget is complete. Engineering costs represent about 12% of the total project costs and administration represents about 6%. A 10% contingency is included in the construction cost estimate. Adequate funding is included for legal and bond fees. The estimated interest rate for the loan is 4% for a term of 20 years.

Benefit Assessment

The primary resource benefits associated with this project are conservation and development. The project has public support as evidenced by the numerous letters of public support submitted with the application. Two major medical research facilities that will provide several hundred good-paying jobs to the community are being proposed by large corporations pending the availability of adequate sewer and water service to meet their requirements.

As explained earlier in this report, the existing storage tank and the existing distribution system both leak. Unaccountable water losses are typically greater than 50% of the water being pumped, resulting in energy losses and introduction to the aquifer of chemically treated water.

The project proposes to develop a well that was drilled in 1999, but has not been developed or brought on line. Additionally, the project proposes to drill and develop two new wells, thus developing the groundwater resource available to Hamilton in abundant supply. This project will provide a water system adequate to meet the peak demands, fire flow requirements, and typical daily drinking water requirements for a community of 3,705 that is growing at the rate of about 4% each year.

Environmental Evaluation

The adverse environmental impacts associated with the project are short-term impacts associated with construction activities in populated areas. Included will be traffic delays, dust, noise, possibly some point source discharges necessitated by groundwater dewatering during construction, and temporary congestion impacts. Permits will require that these impacts be minimized and mitigated to the greatest extent practicable.

Long-term environmental benefits will include fire protection and the development of a groundwater resource to provide water service to Hamilton for the next 20 years.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 14

Applicant Name	Park County-Cooke City Water District	
Project Name	Water System Improvements	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 782,000	Montana Rural Development (RD) Loan
	$ 500,000	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$1,382,000	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

Cooke City's water distribution system was constructed in the 1950s using asbestos/cement (AC) pipe buried three to four feet deep. Extensions were added in the 1960s, 1970s, and 1980s, with the later additions using PVC pipe. The system now consists of 13,350 feet of 3-, 4- and 6-inch pipe, of which approximately 65% is AC pipe. There are 9 fire hydrants and 23 gate valves.

The system originally relied on a spring, 10,000-gallon on-grade storage tank, and gravity-fed distribution system. Due to a seasonal drop in water production, the spring was never able to supply enough water to meet demand during the winter months. In 1987, the district borrowed $153,708 to develop Soda Butte spring, 1.25 miles east of town, to supplement the existing supply. The project also constructed a 30,000-gallon buried storage tank and a new 6-inch PVC transmission main. The Yellowstone Park wildfires of 1988 damaged the old spring collection system. After the fire, water production in the old springs decreased significantly; and the district abandoned the old springs. The new Soda Butte spring also experiences a drop in water flow during the winter, and the community has suffered severe water shortages every winter since 1988.

Two steel tanks provide a total of 40,000 gallons of storage. A 6-inch transmission line delivers water from the tanks to the distribution system. Lack of storage combined with a lack of supply severely limits the ability of the community to fight fires. During low-flow periods, water levels in the tanks drop so low that homes at higher elevations run out of water.

In 1993, the U.S. Department of Interior and the State of Montana signed a water compact that effectively closed the Soda Butte Creek basin to all future groundwater water allocations or new surface water withdrawals. The compact reserves 95% of Soda Butte Creek flows for Yellowstone National Park in order to protect hydrothermal resources in the park. The compact gives the National Park Service the right to object to any future groundwater withdrawals.

The major problem is a critical shortage of safe drinking water. The existing spring cannot supply adequate water to meet the community's existing need and has no excess capacity for growth. Flows from the spring decrease significantly during the winter, leaving the community critically short of water during the busy winter recreation season. On numerous occasions, the district has been forced to supplement its limited water supply with a surface water diversion from Miller Creek or Soda Butte Creek. The district is required by the Montana Department of Environmental Quality (DEQ) to issue a boil order whenever untreated surface water enters the public water system. After disconnecting the creek intake, the distribution system must be totally disinfected before DEQ will rescind the boil order. A boil order has been in effect this February 2002. During the busy New Year's tourist season this past winter, motels in town did not allow customers to take showers due to lack of water. During much of the winter, boil orders were prominent in local restaurants and motels. This has a severe economic impact on local businesses.

Distribution system problems aggravate the water shortage. The older water mains are buried only three to four feet deep, and tend to freeze during cold weather. Bleeder valves help prevent freezing but waste already scarce water. A leak survey identified widespread leaks in the old AC water mains and services. Several of the smaller water mains are not looped, which allows stagnant water to gather in these dead-end lines.

Lack of adequate storage exacerbates the problem. The 40,000 gallons of available storage doesn't meet DEQ's requirements for average day demands (77,000 gallons). Lack of adequate water for fire flows is a major safety problem. Many of the structures in the community are rustic, wood-frame buildings with no fire sprinklers systems installed. The district is not able to provide adequate fire flows with the undersized mains and the limited storage.

Water quality at Soda Butte Spring is also a problem. DEQ classified Soda Butte Spring as groundwater under the direct influence of surface water (GWUDISW). Water classified as GWUDISW will increase annual O&M costs significantly.

The National Park Service (NPS) has objected to a Cooke City plan to supplement the existing spring with a new well. NPS has stated that Cooke City must document actual water usage, encourage conservation through the installation of water meters, reduce wasted water, and prove that water is being used wisely and efficiently, before NPS will support the town's effort to acquire an additional source of water as needed. This includes the installation of water meters to measure actual residential and commercial usage and improvements to the distribution system that would reduce leakage and eliminate water wasted by the bleeder valves.

Inadequate supply, numerous system problems, and the existence of the water compact force the community to address all of its water system deficiencies concurrently. The district must convince NPS that the proposed improvements will allow the community to use the minimum amount of water necessary to supply users' needs. That means reducing leakage, eliminating waste, reducing per capita consumption, and increasing storage. This will ensure that existing and additional water allocations for Cooke City have the minimal impact on surface water flows in Soda Butte Creek and, therefore, do not threaten hydrothermal resources in Yellowstone National Park.

The district hired engineering consultant to conduct a water system study and prepare a preliminary engineering report (PER). The PER identified water system deficiencies, evaluated alternatives, and recommend improvements. The PER was completed in March 2001.

Technical Assessment

Project Background

The community of Cooke City is an unincorporated town five miles from the northeast entrance to Yellowstone National Park. The current population during the summer is approximately 112. The water system provides service to 73 residences in addition to a one-room school and numerous commercial operations, including 126 motel rooms or cabins.

The Cooke City-Park County Water District draws its water from Soda Butte Spring via a gravity flow system and has continually experienced problems with winter water shortages due to low spring flows. The springs were developed in the late 1980s to augment the supply from other springs north of the community. The fires of 1988 destroyed those springs and associated transmission main to town, however, and the town was left with a single inadequate water supply. In addition, recent tests have confirmed that the spring water should be classified as GWUDISW in accordance with state and federal standards. This classification will result in the requirement for filter treatment.
Storage consists of a 30,000-gallon buried steel tank and a 10,000-gallon above-grade tank. The 10,000-gallon tank is over 50 years old and should be abandoned. The 30,000-gallon tank is about 20 years old and is in fair condition. However, total storage is inadequate to provide emergency service or adequate fire protection. The existing distribution system consists of a series of mains and laterals constructed in the 1950s. The lines vary in size from 3- to 6-inch; the predominant pipe material is asbestos cement. The lines are undersized and, in many locations, buried at insufficient depths to prevent freezing.

Water use is excessive due to the flat-rate structure currently employed. To encourage water conservation, the district proposes to install water meters at all services as part of this project and to restructure rates to reflect actual water consumption.

Technical Approach

The main problem with the district's water system is a critical shortage of safe drinking water. The existing spring cannot supply adequate water to meet the community's existing need and provides no excess for growth. The goal of this project is to provide the community with a reliable water system that meets current standards and public demand. The approach consists of the following prioritized steps:

1. The highest priority is to provide a new or additional water supply. The construction of three new wells and the abandonment of Soda Butte Spring will provide the community with a cost-effective, long-term, reliable water source that will also satisfy federal and state requirements. Water rights issues will need to be addressed.

2. The second priority is to conserve and manage water resources by installing water meters at each well and at each service connection. The installation of meters will allow the district to detect leaks will provide a financial incentive for users to conserve water.

3. The third priority is to improve and increase storage. The installation of a new 223,000-gallon buried steel storage tank will satisfy fire flow requirements and supplement the water supply during peak periods.

4. The fourth priority is to replace the undersized and leaking distribution system with a core that will provide fire flow and adequate operating pressure to the community during both the summer and winter seasons. Burying the new lines to adequate depth will eliminate the need for bleeder valves currently being used to provide continuous flow to prevent freezing.

The proposed project is scheduled for construction during the summer of 2004. Final design and the preparation of plans and specifications will take place late in 2003.

Project Management

A consulting engineer will oversee construction management. The engineer will also be responsible for verifying progress and making recommendations to the district regarding payments to the contractor. An administrative consultant will be retained to manage funds and maintain compliance with the funding agencies. File maintenance and routine clerical duties will be performed by the district clerk. The district board will provide public information, monitor progress, and accept work based on the recommendations of the engineer.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$52,500	**$52,500**
Professional & Technical	$100,000	$0	$116,000	**$216,000**
Construction	$0	$0	$1,113,500	**$1,113,500**
Total	**$100,000**	**$0**	**$1,282,000**	**$1,382,000**

The proposed budget for this project includes match funding in the form of a TSEP grant (applied for in May 2002) and a RD loan. The district currently charges water users a flat fee of $11.60 per month. This project will increase the monthly rate to an average of $40.59 for a residential connection.

The budget includes adequate funding for bond costs and an administrative consultant. Administrative costs represent 4% of the total project cost, and engineering fees represent 16%. Both are within acceptable percentage ranges for projects of this scope. Actual construction cost estimates are based on historical figures for similar previous projects and include a contingency of $90,600, or slightly less than 10% of the estimated construction cost.

Benefit Assessment

This project will provide conservation, development, and management benefits. Replacement of the distribution system will alleviate losses of about 17,000 gallons per day. Additionally, the installation of water meters is expected to reduce water usage by 60% or more.

The project also proposes to abandon Soda Butte Spring and develop the groundwater resource with three new wells. Abandonment of Soda Butte Spring will enhance late-season streamflows in Soda Butte Creek, thus providing some fishery enhancement benefits.

Public support for the project is evidenced by the submission of seven letters from concerned and supportive citizens.

Environmental Evaluation

There will be the usual short-term impacts and inconveniences normally associated with construction, including dust, noise, interruptions to water service, and traffic detours and delays. Potential long-term impacts that will be identified in an environmental assessment prior to construction include impacts to minor wetlands and riparian areas, since the proposed work includes two stream crossings.

Environmental benefits include fire protection, enhancement of a groundwater resource through water conservation, enhancement of a surface water resource through the abandonment of Soda Butte Spring, and numerous socio-economic benefits important to the economy of this tourist community.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 15

Applicant Name	Milk River Joint Board of Control	
Project Name	Saint Mary River Siphon Expansion Joint Replacement	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 4,700	In-kind Contribution
Total Project Cost	$ 104,700	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

For 87 years, the Saint Mary Division of the Milk River Project has served to augment the Milk River water supply. The Saint Mary Division was built by the U.S. Bureau of Reclamation (USBR) to provide supplemental irrigation water along the Milk River, but over time, has evolved into a multi-use project. The Saint Mary supplies water for nine municipalities and benefits fish, wildlife, and recreation along the Milk River.

Using these grant funds, the Milk River Project Irrigation Districts, in cooperation with DNRC and USBR, plan to replace six failed expansion joints on the Saint Mary Siphon. The Saint Mary Siphon is the weakest link in the Saint Mary Canal, which conveys water across the Saint Mary River Valley. This is a construction project aimed at preserving the Saint Mary water supply for beneficial use along the Milk River. Taking advantage of quantity purchase and delivery of new expansion joints would significantly reduce replacement costs. Replacement of the expansion joints will:

- Preserve the Saint Mary water supply available for use in the Milk River;
- Conserve between 1,500 – 4,500 acre-feet annually by sealing leaks;
- Reduce saturation, sloughing, and erosion of hillsides; and
- Protect siphon structures from damage associated with sloughing and freeze/thaw.

The Saint Mary Division provides an important renewable resource to residents along the Milk River. The Saint Mary Division supplies water for 110,306 acres in the Milk River Irrigation Project, nine municipalities, and Bowdoin National Wildlife Refuge. Augmentation of the Milk River water supply is vital to preserve the agricultural-based economy of Montana's highline region.

Technical Assessment

Project Background

The Saint Mary Siphon was built by the U.S. Reclamation Service in 1919 to supplement the irrigation water in the Milk River. The siphon consists of two riveted-steel, 90-inch diameter barrels that transverse down a valley slope from a concrete inlet, cross the Saint Mary River, and then ascend the valley slope to a concrete outlet transition. One siphon barrel was constructed above ground and the other was buried. The total length of the barrels is 3,205 feet.

The Saint Mary Siphon diverts 150,000 acre-feet of water per year from the Saint Mary River in the Hudson Bay Drainage to the Milk River in the Missouri River Drainage. Last year, this diversion provided 97% of the Milk River's water.

Since the completion of the siphon's construction, major repairs to the pipes have taken place in 1924, 1935, 1940, 1954, and 1986. In 1999, DNRC, USBR, and the Milk River Joint Board of Control (board) began a repair project after detecting major leaks in the pipe and the seals around the outlet collars. There was so much leaking water that the hillside holding the pipes became saturated, causing the two 90-inch pipes to slide downhill and buckle. This repair project was completed in December 2001. Replacing the expansion joints will augment the previous repair projects goals to stop the leakage and dry up the hillside.

Technical Approach

The goals of this project are to replace six failed expansion joints – three on the left barrel and three on the right barrel. Preservation of the siphon will ensure that water is delivered to not only farms and ranches along the Milk River, but to cities, towns, national wildlife refuges, and several reservoirs. The whole economy of this area relies on the Saint Mary Siphon for its very existence.

The six new expansion joints will allow for any movement that may occur between the anchoring system due to temperature change and/or dynamic loading from the movement of water through the pipe. The new expansion joints would also provide a watertight seal, reducing saturation of the foundation under the siphon. Keeping the foundation area free of saturation would reduce downslope migration of the siphon barrels. The tasks required for the joint replacement are:

- Excavating around the old expansion joints before winter for a safe access to the circumferential area of each joint.
- Alignment of the siphon by jacking the steel barrel until axial alignment (horizontal and vertical plains) is achieved; existing support saddles will be straightened, replaced, or shimmed and filled in with concrete mortar to ensure an axial alignment before the new expansion joints are installed.
- Installation of spider jacks at each end of the steel barrel before cutting the old expansion joint out; this will maintain pipe roundness after the old joint has been removed. Sections of angle iron will be welded to the bottom circumference of each end of the steel barrel, which will extend out approximately 8 inches to provide a cradle for the new expansion joint.
- Cutting existing steel barrels upstream and downstream from each expansion joint to be replaced.
- Elongating the expansion joint, so each end of the expansion joint butts up to the existing siphon barrel; dogs and wedges will be used to ensure a flush fit and then both ends of the siphon barrel will be tack welded to the new expansion joints. The six expansion joints and butt plates will be installed and tack welded by USBR force account labor.
- Final welding (contracted out and performed by a certified pipe welder) after all the joints are in place.
- Painting welded joints and butt plates with two coats of Wasser MC-Tar.
- Backfilling the excavated areas on 6- to 12-inch compacted lifts.

Alternatives evaluated for this project include the "no-action" alternative or the replacement of Hall's Coulee Siphon expansion joints. The no-action alternative would mean taking the risk that the Saint Mary siphons would fail, devastating the economy and ecosystems all along the Milk River.

Replacing the expansion joints in Hall's Coulee siphon would not accomplish the stated goals of water conservation. The expansion joints in Hall's Coulee are deteriorated, but they are still functional, whereas the joints in the Saint Mary Siphon have failed and are leaking.

Project Management

Project management will be a coordinated effort between USBR and the board. The chairman of the board will act as project manager, and the board will approve all project related expenditures. The Glasgow Irrigation District manager will provide all reporting and accounting responsibilities for the project. The board is publicly organized and all meetings are open to the public.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$1,000	$0	$4,700	**$5,700**
Professional & Technical	$0	$0	$0	**$0**
Construction	$99,000	$0	$0	**$99,000**
Total	**$100,000**	**$0**	**$4,700**	**$104,700**

The Milk River Project O&M budget is approximately $550,000 annually, paid to USBR with water user O&M assessment funds. USBR does not subsidize the project's O&M funds. A 1987 USBR economic analysis of the Milk River Project indicated that the Milk River Project irrigators' ability to repay is zero, making it necessary to seek non-reimbursable funding assistance.

The proposed budget for this project is adequate. Construction costs were estimated by USBR based on a market analysis. Fabrication and delivery of new expansion joints would cost $11,000 each. Fabrication and delivery of new butt plates would be $400 each. A contracted pipe welder would cost $10,000. Grant administration would total $5,700, with all but $1,000 being an in-kind contribution. USBR estimates that $37,000 of water user O&M assessment funds will be used to complete this project. The O&M assessment funds have not been documented as a match for this grant because requiring USBR to track its time significantly adds to the water user costs and delays in reporting requirements associated with the grant.

Benefit Assessment

This project will provide renewable resource benefits in preservation and conservation.

The project will preserve the Saint Mary Siphon, which will ensure a water supply to the Milk River. Presently this water is used by municipalities, agriculture, recreation, fish and wildlife, and industrial users along the Milk River. Economic stability of the region is directly linked to Saint Mary water. Estimated crop values of the Milk River Project are $22,845,000 annually. Bowdoin Wildlife Refuge is also contained in this area. Nelson, Fresno, and Vandalia reservoirs are dependent on Saint Mary water not only for irrigators, but for recreational activities too. In drought years such 2001, instream flows are critical to the survival of existing fish and wildlife populations.

This project also provides conservation benefits. It will conserve an estimated 1,500 to 4,500 acre-feet of water annually. The threatened piping plover has habitat in this area and is also dependant on water from the Saint Mary.

The board's primary function is the coordinated management and conservation of Milk River water. The project's broad level of public support is indicated by 17 letters of support, and petitions with 55 additional signatures attached to the application.

Environmental Evaluation

The proposed project is located within the USBR right-of-way established for the Saint Mary Canal. The site survey for National Historic Preservation Act compliance was previously completed. National Environmental Policy Act compliance was accomplished through a Categorical Exclusion Checklist. The checklist included with the application pertains to an area within 100 feet of the siphons, which is ample for the repair work and equipment access. No additional permits will be required. The only long-term

environmental impacts associated with this project are positive. Completion of this project will contribute to drying up the hillside and stabilizing the slope.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 16

Applicant Name	Buffalo Rapids Project	
Project Name	Refit of Glendive I Pumping Plant	
Amount Requested	$ 100,000	Grant
	$ 1,215,000	Loan
Other Funding Sources	$ 80,109	Applicant
Total Project Cost	$ 1,395,109	
Amount Recommended	$ 100,000	Grant
	$ 1,215,000	Loan

Project Abstract (Prepared and submitted by applicant)

The proposal area covers approximately 45,000 acres of land adjacent to the Yellowstone River, of which 25,380 acres are irrigated. Buffalo Rapids Project (BRP) extends from a point 17 miles east of Miles City to Glendive, Montana, a distance of about 64 miles as the river flows.

The goals of this pumping plant project are threefold: 1) replace the Glendive I pumping plant motors; 2) replace the Glendive I pumps one and two; and 3) replace the Glendive I discharge lines. The numbers one and two pump/motor assemblies date to the early 20th century. The number three pump and motor assembly was installed new in 1939. The number two motor failed in the summer of 2001 and cannot be repaired. Both pumps one and two have seen many emergency repairs and are in danger of failing. The steel discharge manifold was slip-lined with steel about 12 years ago. This new portion has failed and required repair. The preferred alternative for the manifold is to replace it with HDPE.

Replacement began in April 2002, with installation of the motor starter and replacement motor for the failed number two motor. In the fall of 2002, the number one motor will be replaced. The two new pumps will be ordered in August 2002, making them available for installation in the fall and winter of 2003/2004. Interim financing has been obtained through the Stockman Bank-Terry until funds become available.

BRP is asking for a $100,000 grant for replacement of the manifold between the pumps, installation of 84-inch common discharge line, and telemetry for canal automation. The loan funds for $1,215,000 will replace the motors, pumps, and starters and allow a rebuild of the existing gate valves.

Technical Assessment

Project Background

The BRP was constructed by the Bureau of Reclamation (USBR) between 1937 and 1950. USBR owns the project and the irrigators operate and maintain the project. The BPR is comprised of two districts. The Glendive I District pumping plant is the focus of this application. The Glendive I District includes 14,787 irrigated acres and uses the Yellowstone River as a water source.

Technical Approach

The goals of this project are to improve irrigation efficiency, reduce the sedimentation in return flows to the Yellowstone River, and maintain the viability of the irrigation project.

The objectives of the grant project are:

- Replacement of the three Glendive I pump motors, including refitting work.
- Replacement of two of the Glendive I pumps, including rebuilding valves.
- Replacement of the Glendive I pump discharge pipes.
- Upgrade of the existing telemetry system.

The application considered numerous alternatives. The alternatives selected are the most economically and technically feasible. The project's construction work will be completed primarily by the Buffalo Rapids Project staff. Contractors will be used for electrical work and the large machining. USBR engineering staff will review the engineering done by the motor and pump companies. The project schedule is documented with project completion expected by 2004.

Project Management

The BRP manager will manage the construction as well as carry out administration of the project. The manager will coordinate with USBR for engineering review and with Western Area Power Administration for disconnecting electrical power.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$92,850	$9,452	**$102,302**
Professional & Technical	$0	$ 2,400	$2,000	**$4,400**
Construction	$100,000	$1,119,750	$68,657	**$1,288,407**
Total	**$100,000**	**$1,215,000**	**$80,109**	**$1,395,109**

The budget appears to be sufficient to fund the project. Material, labor, and equipment costs used to develop the budget appear reasonable and adequate. The costs of the alternatives presented were developed in a consistent manner. The selected alternatives appear to be the most cost effective.

The proposed funding package is a reasonable mix of state and local funds. Local funds will be in the form of in-kind work/services.

The application indicates a total of 14,787 acres will be affected by the project. To pay back the DNRC loan, these acres will be assessed an amortized yearly payment over a 20-year period, resulting in an increase of $6.32 /acre. The total per acre assessment will be increased to $31.32/acre. The application indicates that high-dollar and specialty crops raised by producers are expected to help pay the increase in assessment.

Benefit Assessment

Long-term renewable resource benefits include management of water resources through improved pump operation, elimination of discharge pipe leakage, and better monitoring of wastewater for more efficient water use. This will result in a reduction in water diverted from the river. Resource conservation, protection, and development benefits will also be realized as a result of the improved operation. Quantification of water use will be assisted by use of the telemetry system upgrade.

Environmental Evaluation

No known long-term environmental impacts should occur from this project. Detailed information regarding wetlands, threatened and endangered species, soils, and water quality must be addressed in the final design report. The project sponsor must obtain all necessary permits.

Funding Recommendation

DNRC recommends funding of a $100,000 grant upon the approval of the project scope of work, administration, and budget. Also recommended is a loan authorization in the requested amount of $1,215,000. Recommended terms of the loan are 4.5% for up to 20 years.

Project No. 17

Applicant Name	Mill Creek Irrigation District	
Project Name	Mill Lake Dam Rehabilitation Project	
Amount Requested	$ 100,000	Grant
	$ 472,000	Loan
Other Funding Sources	$ 290,487	3-Year Special Assessment
	$ 48,315	In-Kind Contributions
	$ 50,000	Natural Resource Damage Program (NRDP) Grant
	$ 25,498	O&M Reserve Fund
Total Project Cost	$ 986,300	
Amount Recommended	$ 100,000	Grant
	$ 472,000	Loan

Project Abstract (Prepared and submitted by applicant)

The aim of this project is to preserve and improve a significant water storage and release system in Mill Lake Dam near Hamilton. Incidental to its storage of late season irrigation water and stockwater, Mill Lake Dam also enhances many other renewable resources important to the State of Montana.

The primary project goal is to rehabilitate the 95-year-old dam for compliance with current dam safety requirements, retaining full storage water rights, and ensuring efficient releases of stored water. This design and construction project proposes to:

- Improve spillway capacity to safely route the probable maximum flood without overtopping the dam, and construct erosion control structures to prevent the spillway crest from eroding;
- Improve the deteriorating low-level outlet conduit and make it reliable for base flow, irrigation, and emergency reservoir releases; and
- Improve the dam embankment to safely control seepage, prevent erosion of embankment soil, and ensure its stability during extraordinary natural events such as earthquakes or floods.

Additional benefits that improvements to the dam will have on other renewable resources include:

- Recharge critical groundwater aquifers in the vicinity of Hamilton and Corvallis;
- Contribute to flood control in the Mill Creek drainage and Bitterroot Basin;
- Augment low flows in Mill Creek, protecting water quality, controlling stream bank erosion, and improving riparian areas for wildlife habitat and forage;
- Maintain sustainable fisheries in Mill Creek;
- Maintain a productive agricultural base of commercial and hobby orchards, irrigated pasture and hay land;

- Preserve the open space and green areas in the Bitterroot Valley represented by the productive orchards, grazing land and agricultural fields of hay;
- Provide sources of water for fire fighting in the forests; and
- Secure a water source of the future needs of the Hamilton area.

Technical Assessment

Project Background

Mill Lake Dam is located in Ravalli County, 15 miles west of Corvallis. Recent problems with stability of the downstream rock face of the dam and leakage around the outlet pipe have raised concerns about the general condition of the dam. To address these concerns, the Mill Creek Irrigation District authorized a study of the dam in 2001. The study identified improvements to the dam embankment, outlet works, and spillway to bring the dam into compliance with current dam safety criteria. In the spring of 2002, an early warning system was installed to provide a warning to the district in the event the dam begins to fail as indicated by excess seepage.

Impounding 780 acre-feet of water at the outlet of a glacial cirque in the Bitterroot-Selway Wilderness Area, the 28-foot high by 350-foot long dam is classified by the U.S. Forest Service (USFS) as moderate hazard. Development downstream from the dam is expected to result in a reclassification to high-hazard in the near future. Access by foot or horseback is via a 12-mile pack trail. Subject to USFS approval, the only other access is via helicopter. Location makes this project environmentally sensitive and subject to National Environmental Policy Act (NEPA) review by USFS.

Technical Approach

The goals of the proposed project include:

- Rehabilitate Mill Lake Dam to meet state and federal standards for high-hazard dams;
- Preserve an existing water right and storage facility for an additional 75 years; and
- Complete the project in a manner consistent with the surrounding wilderness while maintaining quality construction standards.

The goals will be met by completing the second phase of a site investigation to verify assumptions made in the preparation of the feasibility report prepared following the 2001 investigation. Things to verify include foundation conditions, soils classification of the embankment material contained in the dam, the extent of seepage within the dam, and the location of suitable embankment materials to be used during construction of the improvements.

Specific improvements being proposed include: 1) increasing spillway capacity, 2) installing riprap, 3) rehabilitating the outlet works, 4) lining or sealing the upstream face of the dam, and 5) reducing the slope on the downstream face of the dam.

The proposed project is scheduled for construction during the summer and fall of 2005. Obtaining USFS permits for wilderness access and construction, the NEPA process, and the requirement to obtain additional field data prior to the actual design of the project will take place prior to 2005.

Project Management

The district has retained the services of an attorney and a registered professional engineer to collect data and take responsibility for the design, bid, and construction of the project. The district is also working closely with USFS in defining the scope of the project and feasible access and construction alternatives. Because of its location, every aspect of the project will be closely coordinated with USFS. Dam safety issues will require coordination with both USFS and DNRC. Because of its status as a wilderness dam, there may be considerable public interest and involvement during the NEPA process and the process of determining the environmental effects of the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$32,160	$22,100	**$54,260**
Professional & Technical	$0	$0	$134,200	**$134,200**
Construction	$100,000	$439,840	$258,000	**$797,840**
Total	**$100,000**	**$472,000**	**$414,300**	**$986,300**

The proposed budget for this project includes a substantial contribution by the district. This contribution is to be provided through a special 3-year district assessment for a total of $290,487, with $25,498 from existing reserves, $48,315 in in-kind services, and $50,000 in other grants. The district plans to apply for grant funding through NRDP, which may not be successful. If not, the in-kind match will be increased by another $50,000.

The district currently assesses its members $20 per acre per year on 2,220.5 acres for O&M. During the three years of special assessment, an additional $38 per acre and $75 per year will be charged the members of the district. Following completion of the project and based upon a $472,000 20-year loan at 4.5%, the annual charges will be $36.23 per acre and an additional $75 per user per year.

The budget is complete, and includes funding for both bond counsel and a bond reserve. Engineering costs are estimated at 20% of construction. Line-by-line budget items include costs for administration, professional/technical (engineering), and construction. The administrative costs represent less than 6% of the total budget. Professional/technical costs include the services of an attorney and an engineer to organize the administration of the project. Actual construction costs of $797,840 are based on the feasibility report prepared in 2002 by a professional engineer.

The proposed budget includes a $50,000 grant through NRDP. In the likely event that this is not obtained, the district is prepared to contribute another $50,000 in in-kind services, including labor. Due to the location of the project, only small equipment will be used, and much of the work could be accomplished through hand labor provided by the district.

Benefit Assessment

The primary resource benefit associated with this project is the preservation of an existing facility that provides many benefits. Mill Lake Dam and the water it stores provide multiple use benefits not only for irrigators but also for recreationists. The groundwater aquifer in the Mill Creek Drainage is enhanced by the reservoir. Fishery and wildlife habitat is enhanced by late season streamflows in Mill Creek. Wetlands in the Bitterroot Valley are preserved.

Directly, the project will also have some conservation benefits in that water losses due to seepage through the dam (estimated to be as much as 100 acre-feet each month the reservoir is at full pool), will be substantially reduced. Because of its remote location, the rehabilitation project will also provide some management benefits by reducing monitoring needs. Support for the project is evidenced by the submission of a letter of support from the acting forest supervisor for Bitterroot National Forest.

The project provides late season irrigation to 166 owners on 2,220.5 acres. Besides the economic benefits, late season irrigation will provide fire and prevention and will maintain usable aquifer levels and a source of drinking water for rural water users.

Environmental Evaluation

The pool elevation of Mill Lake will not change as the result of this project. Construction methods will be sensitive to the wilderness location of the dam. Access will be via foot, horseback, or, to a limited extent, air.

The adverse environmental impacts associated with the project are those normally associated with construction. Because of location, extreme efforts will be necessary to mitigate or prevent those short-term impacts. All borrow pits will be located below the high-water mark, thus preventing long-term excavation scars. Seepage barriers and silt fences will be used to reduce siltation in Mill Creek during construction.

Environmental benefits include safety to downstream persons and property and the enhancement of a water resource.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget. Also recommended, is a loan authorization in the requested amount of $472,000. Recommended terms of the loan are 4.5% for up to 20 years.

Project No. 18

Applicant Name	Montana Department of Natural Resources and Conservation (DNRC)	
Project Name	Seepage Monitoring Program - DNRC Dams	
Amount Requested	$ 97,646	Grant
Other Funding Sources	$ 48,318	In-kind contribution
Total Project Cost	$ 145,964	
Amount Recommended	$ 97,646	Grant

Project Abstract (Prepared and submitted by applicant)

DNRC owns several reservoirs, which have aging, high-hazard dams. The term "high-hazard" refers to the potential for loss of life below the dam, should the dam fail. One of the responsibilities of dam ownership is to have in place an adequate program to monitor seepage water at the dam.

The importance of controlling seepage through a dam was not fully appreciated 50 years ago when many of DNRC's dams were originally built. Several of DNRC's dams do not have adequate seepage control systems. As a result, problems associated with seepage are starting to show up at several of DNRC's dams. There is no means in place to determine the severity of the seepage and whether the integrity of the dams is at stake.

The purpose of this project is to establish a seepage-monitoring program for the high-hazard dams on four of the department's reservoirs. These dams were chosen due to surficial evidence that problems may be developing and/or the potential threat to public safety. The primary focus will be the installation of monitoring wells and piezometers in each dam. The funding in this request will be used primarily to contract with a private drilling firm to install monitoring wells and a private soil-testing firm to conduct tests of samples from the drill holes. The four dams identified are:

- Painted Rocks Dam (Ravalli County)
- Willow Creek Dam (Madison County)
- Cataract Dam (Madison County)
- Yellow Water Dam (Petroleum County)

The department is requesting a grant of $97,646 to implement these seepage-monitoring programs. The total cost of the project is $145,964. DNRC will provide $48,318 in in-kind services.

Technical Asse ssment

Project Background

DNRC's Water Resources Division owns several reservoirs that have aging high-hazard dams. The term "high-hazard" refers to the potential for loss of life below the dam, should the dam fail. Most of these dams are more than 50 years old and are beginning to show seepage problems typically associated with older dams. There is no means in place to determine the severity of the seepage and whether the integrity of the dams is at stake. It is a liability for the state to have high-hazard dams where the seepage is not being monitored.

The requested funding would establish seepage monitoring for Painted Rocks Dam (Ravalli County), Willow Cr. Dam (Madison County), Cataract Dam (Madison County), and Yellowater Dam (Petroleum County)

Painted Rocks Dam, 30 miles upstream of Darby, is an earthfill dam constructed in 1939. The dam is 143 feet high, 800 feet long, and stores 32,360 acre-feet of water. There have been no recorded observations of seepage, but there are weep pipes through the concrete lining of the spillway that do have flowing seepage water, and some of the cracks in the concrete also flow.

Willow Creek Dam is an earthfill dam constructed in 1945. It is 105 feet high, 435 feet long, and stores 18,000 acre-feet of water. The dam is 10 miles upstream of Willow Creek, 4 miles east of Harrison, and 17 miles upstream of Three Forks. Flowing water has been observed exiting from the dam toe, and through rocks in the left abutment.

Cataract Dam is an earthfill dam constructed in 1959. The dam is 80 feet high, 775 feet long, and stores 1,478 acre-feet of water. The dam is 2 miles upstream of Pony and 8 miles upstream of Harrison. Seepage has been observed at the toe of the dam for many years. Past attempts to grout the dam have had questionable effectiveness. The effectiveness of a drain is also questionable because grout was observed flowing from the drain during grouting.

Yellow Water Dam is an earthfill dam constructed in 1938. It is 37 feet high, 1,695 feet long, and stores 4,242 acre-feet of water. The dam is 8 miles southwest of Winnett and 22 river-miles upstream of Petrolia Dam. Seepage water flows from a number of locations along the dam toe and through rocks in the right abutment.

Technical Approach

The overall goal of the project is to prevent loss of life due to dam failure. To achieve this goal, seepage-monitoring programs need to be implemented at these four dams. The tasks to achieve the objective include:

- installing wells and monitoring devises at each dam;
- evaluating the percent of each dam that is saturated;
- evaluating the stability of each dam for present and changing conditions;
- mapping seepage gradients in each dam and determining if high foundation pore pressures exist; and
- determining when piping of material through each dam may be occurring.

The two other alternatives include using visual observation, which is ineffective, and installing an early warning system for each of the dams, which is prohibitively expensive. The preferred alternative will provide information to recognize a developing problem so repairs can be made before a dam fails.

Contracts will be offered for monitor well drilling and soil testing. DNRC will oversee all work.

Project Management

DNRC will provide project management for this grant. They will coordinate the two RFP packages and contracts for the drilling and soil testing phases. DNRC staff will be on-site to monitor all construction. The schedule provided appears to be reasonable. The project will take place over the course of a year. Water user associations will provide personnel to assist with monitoring after the project is completed.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$20,818	**$20,818**
Professional & Technical	$13,340	$0	$27,500	**$40,840**
Construction	$84,306	$0	$0	**$84,306**
Total	**$97,646**	**$0**	**$48,318**	**$145,964**

The proposed costs associated with this project appear reasonable. Project unit costs for each dam were well documented. DNRC will provide matching funds, and has indicated that it will absorb any extra costs in the operating budget.

Benefit Assessment

The primary resource benefit of this project is resource protection. Installing monitoring devices at these dams will provide a means to detect a problem at an early stage and significantly reduce the risk of a dam failure. Each of the dams currently provide irrigation, recreation, and fishery resources. These would all be preserved.

This project also has resource management benefits. Monitoring water level data within each dam embankment will allow DNRC to evaluate the percent of each dam embankment that is saturated, evaluate the stability of each dam, map gradients in each dam and the presence of high foundation pore pressures, and determine when piping of material through each dam may be occurring. The monitoring data will improve the ability of the DNRC to rank and schedule maintenance and rehabilitation at the dams, and to reduce the overall cost of repairs.

Environmental Evaluation

Only short-term environmental impacts related to the drilling will occur. The project as proposed will not have any significant impacts.

Funding Recommendation

DNRC recommends grant funding of $97,646 upon approval of a project scope of work, administration, and budget.

Project No. 19

Applicant Name	Sidney Water Users Irrigation District	
Project Name	Improving Irrigation Efficiency	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 28,616	Applicant
	$ 17,000	Natural Resources Conservation Service (NRCS)
Total Project Cost	$ 145,616	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The Sidney Water Users Irrigation District irrigation project has been ongoing for almost 30 years. Irrigation water delivery has been inadequate for many years due to problems associated with operation, design, and location of pumping units as well as sediment and floodwater damage to the distribution system. Thirty Parshall flumes were installed in 1965, and through monitoring, problem areas have been identified and are proposed for corrective action. The proposal area covers 4,771 acres of irrigated land to the south of the City of Sidney. The district diverts its irrigation water through three river pumping plants.

The district has three primary concerns:

- Water quantity
- Erosion and sedimentation
- Reduction of noxious weeds

Currently, irrigation water-use efficiency is at 22.5%. Estimated losses from furrow erosion are 10 tons of soil per acre, and 300 acres are infested with noxious weeds.

The goals of this project are to:

- Increase overall system efficiency by 30% over a six-year period
- Reduce soil erosion to sustainable levels
- Reduce noxious weed infestations by 75%

Two additional socio-economic goals are to improve the economic viability of the agriculture sector within the district and to reduce power consumption by 18% or add acres irrigated within the district. Either option or a combination of the two will result in the district becoming more productive.

This project will replace the current irrigation water distribution system with two pipelines and three pivots off the #1 pump.

This project will increase the efficiency of the existing laterals from the current 22.5% to 73.5%. Water delivery will be measured, which will ensure better overall management for the district. The estimated water savings is 5,706 acre-feet. This proposal preserves the existing infrastructure, but makes much more efficient use of available water.

The most efficient and cost-effective method of addressing the problem has been developed through NRCS RMS planning for groups involved with laterals and on-farm planning. The district will do construction with assistance from Buffalo Rapids, which has the means and experience.

A RRGL grant of $100,000 is requested; in-kind contribution by the district will be $57,536.

Technical Assessment

Project Background

The district is located just south of Sidney along the east side of the Yellowstone River. The source of water is the Yellowstone River. The district facilities were completed in 1939. This project is part of an overall effort by the district to increase water use efficiency, reduce field and conveyance soil erosion, and reduce noxious weeds within the district.

Technical Approach

The proposed project entails replacement of lateral ditches with two pipelines to allow conversion of approximately 500 acres of flood irrigation to center pivot sprinkler irrigation. The application states that accomplishing these objectives will meet the goals of increasing water use efficiency (for these acres from

22.5% to 73.5% resulting in a savings of 1,238 acre-feet of water), reducing field and conveyance system erosion, and reducing noxious weed infestations in conveyance and drain ditches.

Discussion of three alternatives was presented. They included no action, water use management changes only, and replacement of the ditches with the two pipelines. Documentation of pipe diameters, lengths, and locations is provided. NRCS will design the project and oversee construction. Construction work will be performed by district staff and Buffalo Rapids Project staff. Buffalo Rapids Project equipment will be used as needed. The district will own and maintain the pipelines. Landowners have committed to easements for the pipelines to allow access for installation and maintenance. Work is expected to begin in the fall of 2003.

Project Management

The district manager will carryout administration and manage the project with input and guidance from NRCS & Buffalo Rapids Project staff. District secretarial staff will assist in administration. Coordination with NRCS, Buffalo Rapids Project staff, and landowners will be carried out through written agreements and/or contracts.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$2,250	**$2,250**
Professional & Technical	$0	$0	$17,000	**$17,000**
Construction	$100,000	$0	$26,366	**$126,366**
Total	**$100,000**	**$0**	**$45,616**	**$145,616**

The budget appears to be sufficient to fund the project. Material, labor, and equipment costs used to develop the budget appear reasonable and adequate. NRCS cost guidelines were used for construction costs. A cost comparison using conveyance pipe and gated pipe to replace the current ditches, indicate it is more costly than the selected center pivot sprinkler alternative.

The proposed funding package is a reasonable mix of local, federal, and state funds. A portion of the local and all of the federal funding will be in the form of in-kind work / services.

Approximately 500 acres will be affected by this project. The current assessment is $28 per acre. A one-time assessment of $607 per district water user will be assessed for this project, which should be affordable.

Benefit Assessment

Long-term renewable resource benefits should be realized through improved resource conservation and management as a result of conversion of ditches to pipelines and flood to sprinkler irrigation. This should result in improved water use efficiency (and increased Yellowstone River flows), reduced nutrient and sediment load to the Yellowstone River through reduced field and conveyance soil erosion, and reduced leaching of farm chemicals to groundwater. Some noxious weed reduction could also occur. The applicant estimates that 1,238 acre-feet of water will be conserved annually. Personal communication with district personnel indicated that water conserved from this project would not be used to add irrigated acres to the district. Resource protection of the soil and water resource should occur through improved management as well as allowing continued development of the resources. Water use will be measured to quantify savings.

Environmental Evaluation

No long-term adverse impacts are likely, although existing wetlands could possibly be affected. An environmental assessment must be completed before conducting any activities that will affect wetland

resources, and appropriate mitigation measures must be taken. The assessment should also evaluate the possible presence of threatened or endangered species and cultural resources.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 20

Applicant Name	Stillwater County	
Project Name	Yellowstone River Floodplain Management Project	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 18,200	Applicant
	$ 10,485	Montana Department of Natural Resources and Conservation (DNRC), Water Resources Division
	$ 124,00	U.S. Army Corps of Engineers (COE)
	$ 7,200	Yellowstone River Conservation District Council
Total Project Cost	$ 259,885	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant.)

To protect the integrity of the Yellowstone River floodplain as a natural resource, and to reduce flood damage potential, Stillwater County will implement a Floodplain Management Project. The project will delineate and assess the Yellowstone River floodplain in and around the towns of Reed Point, Columbus, and Park City, a distance of about 20 river miles. Floodplain lands are of critical significance in Montana due to the state's arid climate. Continued unplanned development of the Yellowstone River floodplain within the county poses a significant threat to stormwater management, water quality, wildlife habitat, public safety, and natural stream dynamics. The proposed work plan includes provisions for public involvement and education necessary for floodplain adoption by the State of Montana and the county.

Stillwater County is one of the fastest growing areas in the state. Extensive flooding along the Yellowstone River in the past few years has resulted in substantial damage to both public and private property. The county has approved a floodplain ordinance intended to mitigate damages incurred from flooding, but lacks the flood hazard maps necessary for effective implementation of the ordinance. The proposed project will provide comprehensive, scientific data to generate flood hazard maps so that the county can make informed decisions regarding growth and development within the Yellowstone River floodplain.

Technical Assessment

Project Background

The project area includes approximately 17 river miles in three areas of the county. Two miles are being mapped in and around Reed Point, seven miles in and around Columbus, and eight miles in and around Park City. In early 2002 Stillwater was ranked as the third fastest growing county in Montana. Between 1990 and 2000 the greater Park City area increased in population by 29.4% and the greater Columbus area increased by 20.7%. Overall the county grew by 25.4% from 1990 to 2000. There are no figures for Reed Point since that area was not individually counted during the 1990 census. The county wishes to take a proactive approach toward the anticipated development demand.

Current maps for these areas were published in 1984, and show an approximate outline of the 100-year floodplain derived from topographic maps. The project area cannot be adequately regulated with the lack of base flood elevations and designation of a floodway. The floodway is the highest hazard area of the floodplain where floodwater velocities, depths, debris flows, and ice jams are the greatest.
The county has shown a commitment to floodplain management by adopting an ordinance in 1988 (updated in 1991) that complies with the Montana Floodplain and Floodway Management Act and the National Flood Insurance Program.

Technical Approach

The project goals are to preserve and maintain the resource value of the Yellowstone River floodplain within the county, and to reduce private property damage associated with flooding by mapping flood hazard areas and quantifying base flood elevations within the project reach.

A two-year comprehensive floodplain delineation and assessment is planned. This will be accomplished by selecting a qualified engineer contractor; completing an initial coordination and information search; conducting initial field reconnaissance; completing a detailed hydrologic analysis; completing a flood flow frequency analysis to determine the flood discharges for the 10-, 50-, 100-, and 500-year flood; conducting a hydraulic analysis; and obtaining survey data on stream profile and cross sections. To keep the public informed about the floodplain study and mapping, public meetings will be held, brochures circulated, newspaper articles published, landowners contacted via mail, public notices published, and a contact phone number made available. The public will have a chance to review and comment on draft maps. Project objectives also include developing appropriate floodplain zoning and guidelines conforming to the comprehensive master plan for the county. A countywide educational and public awareness program emphasizing wise floodplain management and best management practices will be implemented. The county will develop a monitoring and evaluation procedure to set long-term goals for floodplain management.

Project Management

The county planning director will coordinate public involvement, agency participation, and contracted services management. A part-time administrator, employed by the county, will carry out grant administration and coordination. Through required procurement procedures, an aerial photographer and pilot will be contracted to complete photogrammetric and topographic survey work, and a qualified engineer contractor will be selected to carry out the hydrologic and hydraulic analyses and produce the flood hazard maps. The DNRC floodplain administrator will conduct the floodplain adoption process and assist Stillwater County with development and adoption of flood hazard maps.

The partnerships involved in this project are appropriate and experienced enough to see this project to completion. DNRC has helped many Montana communities to prepare and adopt flood hazard maps.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$7,300	$0	$27,385	**$34,685**
Professional & Technical	$92,700	$0	$132,500	**$225,200**
Construction	$0	$0	$0	**$0**
Total	**$100,000**	**$0**	**$159,885**	**$259,885**

The majority of grant funds ($92,700) will be spent on contracted services for initial coordination, information search, initial field reconnaissance, ground control survey, aerial photography, and digital orthophoto and topographic map production. These costs were based on estimates from a similar project on the upper Yellowstone River in Park County. The remainder of the grant funds ($4,800) will be used for operating expenses and to pay a part-time administrative assistant for grant administration assistance, acquiring landowner permission for survey fieldwork, and assisting with public participation notification.

COE and Stillwater County will contribute the remainder of the contracted services cost ($132,500) for the hydrologic analysis, cross-section survey, hydraulic analyses, and flood hazard map production.

Costs appear reasonable and adequate. It is anticipated that COE will commit funding contingent on this grant money coming through. A reduction in grant funds would cause a reduction in the match funds received from the COE.

Benefit Assessment

This project primarily improves and promotes the beneficial management of the county floodplain. The project will provide sound new information on 17 miles of the river to guide future development. Any new structures or obstructions going into the 100-year floodplain must be outside the high-hazard area of the floodplain and elevated for protection from a 100-year flood. When properly managed, conserved, and protected, the floodplain is an important resource for allowing floodwater to pass during a flood event.

Environmental Evaluation

No significant adverse environmental impacts will occur as a result of activities associated with the project.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 21

Applicant Name	Yellowstone County	
Project Name	Yellowstone River Floodplain Management Project	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 36,600	Applicant
	$ 39,285	Montana Department of Natural Resources and Conservation (DNRC), Water Resources Division
	$ 265,000	U.S. Army Corps of Engineers (COE)
	$ 36,000	Yellowstone River Conservation District
Total Project Cost	$ 476,885	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

To protect the integrity of the Yellowstone River floodplain as a natural resource and reduce flood damage potential, Yellowstone County will implement a Floodplain Management Project, which includes delineation and assessment of the Yellowstone River floodplain from the western county line to the Pompeys Pillar townsite - a distance of about 44 river miles. Floodplain lands are of critical significance in Montana due to the state's arid climate. Continued unplanned development of the Yellowstone River floodplain within Yellowstone County poses a significant threat to stormwater management, water quality, wildlife habitat, public safety, and natural stream dynamics. The proposed work plan includes provisions for public involvement and education necessary for floodplain adoption by the State of Montana and the county.

Yellowstone County is one of the fastest growing areas in Montana. Extensive flooding in the past few years has resulted in approximately $5 million worth of damages to public and private property. Most of the existing and proposed development is along the Yellowstone River. The county has approved a

floodplain ordinance in order to mitigate damages incurred from flooding. Lack of accurate scientific data regarding the boundaries of the floodplain poses an obstacle to effective implementation of the ordinance. The proposed project will provide comprehensive, scientific data to generate flood hazard maps so that the county can make informed decisions regarding growth and development within the Yellowstone River floodplain.

Technical Assessment

Project Background

The 44 miles of river to be mapped and studied includes Laurel, Billings, Huntley, Shepard, Worden, Pompeys Pillar, and the areas in between. Overall, Yellowstone County is the fifth fastest growing county in Montana. The growth rate was 11% from 1990 to 2000.

In 1981, the Federal Emergency Management Agency (FEMA) published flood elevation levels and floodplain boundary maps for 24 miles of the Yellowstone River from the west county line to Huntley through the city of Billings. Since that time, individual small-scale engineering studies have proven many inaccuracies in the 1981 flood elevation levels and maps. Often times these inaccuracies are found because the river shifts over time and in areas between the surveyed cross sections of the river where cross sections are not close together due to limitations in funding. In addition, the reach of the river from Huntley downstream to Pompeys Pillar – approximately 20 miles – needs to be mapped for the first time.

The county has shown a commitment to floodplain management by adopting an ordinance in 1975 that complies with the Montana Floodplain and Floodway Management Act and the National Flood Insurance Program. The county has continued to update its ordinance.

Technical Approach

The project goals are to preserve and maintain the resource value of the Yellowstone River floodplain within the county, and to reduce private property damage associated with flooding by mapping flood hazard areas and quantifying base flood elevations within the project reach. Funds from this grant would be used to conduct a hydrologic analysis, make detailed floodplain delineations, and publish flood hazard maps.

A two-year comprehensive floodplain delineation and assessment is planned. This will be accomplished by selecting a qualified engineer contractor, completing initial coordination and information search, conducting initial field reconnaissance, completing a detailed hydrologic analysis, determining the recurrence interval of flood events for the 10-, 50-, 100-, and 500-year flood discharges, conducting a hydraulic analysis, and obtaining survey data on stream profile and cross sections. To keep the public informed about the floodplain study and mapping, public meetings will be held, brochures circulated, newspaper articles published, landowners contacted via mail, public notices published, and a contact phone number made available. Once draft maps are printed the public will have a chance to review and comment on these maps. Project objectives also include developing appropriate floodplain zoning and guidelines conforming to the comprehensive master plan for the county. A countywide educational and public awareness program emphasizing wise floodplain management and best management practices will be implemented. The county will develop a monitoring and evaluation procedure to set long-term goals for floodplain management.

Project Management

The county floodplain administrator will coordinate public involvement, agency participation, and contracted services management. A part-time administrator, employed by the county, will carry out grant administration and coordination. Through required procurement procedures, an aerial photographer and pilot will be contracted to complete photogrammetric and topographic survey work and a qualified engineer contractor will be selected to carry out the hydrologic and hydraulic analyses and produce the flood hazard maps. The DNRC floodplain administrator will conduct the floodplain adoption process and assist the county with development and adoption of flood hazard maps.

The partnerships involved in this project are appropriate and experienced enough to see this project to completion. DNRC has helped many Montana communities to prepare and adopt flood hazard maps.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$101,885	$101,885
Professional & Technical	$100,000	$0	$275,000	$375,000
Construction	$0	$0	$0	$0
Total	**$100,000**	**$0**	**$376,885**	**$476,885**

The grant funds will be spent on contracted services for the ground control survey report, aerial photography, and digital orthophoto and topographic map production. These costs were based on estimates from a similar project on the upper Yellowstone River in Park County. COE will contribute the bulk of the contracted services cost ($265,000) for the hydrologic analysis, cross-section survey, hydraulic analyses, and flood hazard map production.

Costs appear reasonable and adequate and there does not appear to be any overspending. Montana only receives about $40,000 to $50,000 a year for floodplain studies from FEMA. It is anticipated that COE will commit funding contingent on the Renewable Resource grant money coming through. A reduction in grant funds would cause a reduction in the match funds received from COE.

Benefit Assessment

This project primarily improves and promotes the beneficial management of the county floodplain. This project will help county officials make informed floodplain management decisions about growth and development in the floodplain. The new information will allow the county to enforce floodplain development regulations along 22 miles of the river that were previously unregulated. The project also improves the accuracy of existing data along another 22 miles of the river that are currently regulated. Any new structures or obstructions going into the 100-year floodplain must be outside the high-hazard area of the floodplain and elevated for protection from a 100-year flood. When properly managed, conserved, and protected, the floodplain is an important resource for allowing floodwater to pass during a flood event.

The applicant estimates that there are currently 6,000 people that will be served by this project. Damages in the county totaled $2,182,427 from the 1997 flood.

Environmental Evaluation

No significant adverse environmental impacts will occur as a result of activities associated with the project.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 22

Applicant Name	Worden-Ballantine Yellowstone County Water and Sewer District	
Project Name	Water System Improvements	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 24,222	Applicant
	$ 850,300	Pollution Control State Revolving Fund (PCSRF) Loan
	$ 500,000	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 1,474,522	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The Worden-Ballantine Yellowstone County Water and Sewer District was formed in 1984, combining two rural special improvement districts organized in the 1950s and 1970s. The district's sole source of water is an agricultural drain, which will be considered as "groundwater not under the direct influence of surface water" once protected against backflow from a creek at the outfall.

The district's water supply requires protection from backflow as a matter of safety and to be legally used as groundwater. The district is also required to have a back-up water source. Of the 27 fire hydrants, only 5 are connected to 6-inch mains, with all the remaining hydrants connected to 4-inch mains. With only 40,000 gallons of storage (less than half an average day's demand), the district is woefully lacking in resources for fire protection. There are miscellaneous improvements necessary for the booster station, which had the original pumps installed in 1954.

The district proposes to create an air break to prevent any potential for backflow from the nearby creek, and to TV the existing source drain line to see if any improvements could be made to improve flow. The district also proposes to construct one new well with chlorination facility; place a new pump at the booster station; and install a generator (small), a new 200,000-gallon ground storage tank, and new pipelines, valves, and hydrants. The improvements are limited and do not provide 100% of improvements necessary for sufficient fire protection, but the district will raise rates to address secondary priorities as finances allow.

Technical Assessment

Project Background

The Worden-Ballantine Yellowstone County Water & Sewer District was formed in 1984 by combining two rural improvement districts – Worden and Ballantine. It is located approximately 15 miles northeast of Billings. The district's sole source of water is an agricultural drain that was originally constructed in the 1920s to lower groundwater levels for agricultural activities. The drain was developed as a source of water for Worden in 1953 when a collection box and booster station was constructed. Recently, the Montana Department of Environmental Quality (DEQ) has required that the district determine whether the drain is Groundwater not Under the Influence of Surface Water. In order to receive that classification, the district must make improvements to the collection box to prevent backflow from the stream to which it discharges. In addition, the preliminary engineering report (PER) documents other deficiencies within the water system.

Technical Approach

The goals of the proposed project are to replace two aging booster pumps; provide a backup water supply; provide additional storage for fire flow conditions; improve water distribution system pressures during peak water demands; and improve system looping.

The goals will be met by constructing improvements to the collection box to prevent backflow conditions and installing a new groundwater well to serve as a backup supply. The district will also explore ways to maximize production from the existing drain. Booster pump station performance will be enhanced by replacing two aging pumps. Construction of a new 200,000-gallon water tank will satisfy peak hour demands and provide adequate storage for needed fire flows. Installation of new 8-inch water main in Worden and Ballantine will enable the system to maintain adequate pressures during peak demand and fire flow conditions. Looping the systems will also improve system pressures.

The selected alternatives would achieve compliance with all state and federal standards. The proposed schedule is to begin design of the facilities in the spring of 2003, initiate construction in April 2004, and move to completion and start-up by the end of the year. Water rights for the new well will have to be obtained before the new well can be constructed.

Project Management

The applicant has identified the staff required for successful project management including a professional administrative consultant, a design consultant, legal counsel, district clerk, bond counsel, and district board members. The applicant has prepared a comprehensive PER in which the public had the opportunity to participate.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$123,500	**$123,500.00**
Professional & Technical	$0	$0	$213,622	**$213,622.00**
Construction	$100,000	$0	$1,037,400	**$1,137,400.00**
Total	**$100,000**	**$0**	**$1,374,522.00**	**$1,474,522.00**

The proposed project budget is complete, and all administrative costs appear to have been accurately estimated. The project is affordable for the community, whose water rates are currently only $14.50. The community is currently at approximately 66% of its target rate of $42.42. The proposed funding is realistic, feasible, and complete. O&M costs appear to be realistic and user rates are affordable.

The cost for project consultants appears reasonable and adequate for a project of this size. The project costs presented in the PER related to capital and O&M costs appear to be reasonable and adequate.

The district currently provides service to 292 residences, commercial hookups, and an estimated population of 708. The applicant proposes to fund water improvements using approximately $600,000 in grants from the TSEP and the RRGL programs. The applicant will also pursue an $850,300 loan from PCSRF. The monthly residential rate charge assessed as a result of this loan will increase from $14.50/user/month to $38.23/user/month.

Not all the funding for this project has been secured. Should one or both grant applications be unsuccessful, the applicant will have to increase the loan amount from the PCSRF program. While there is a high likelihood that the applicant will be able to secure project financing, any increase in the PCSRF loan will result in increased monthly rates. There is well-documented public support for the proposed project and projected rates.

Benefit Assessment

The project will provide direct, quantifiable resource management benefits. The project will rehabilitate an existing groundwater source to protect the water quality and maximize the quantity of production. The existing groundwater source, which would otherwise flow unused, is being retained, and a new well will be developed for the beneficial use by the residents of Worden and Ballantine for domestic consumption and fire protection. Installation of a new water meter and new telemetry on the existing pumps will allow

the system to be operated more efficiently by requiring the pumps to operate in response to water tank level, rather than by system pressure. This will result in less frequent pump cycling, which in turn will mean lower energy costs.

Environmental Evaluation

The applicant has identified and accurately stated the extent of the environmental impacts associated with the proposed project. The selected alternative either will result in no impact on the environment, aside from temporary construction-related impacts, or will have a beneficial impact on the environment. The proposed project will not result in long-term adverse environmental impacts.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 23

Applicant Name	Ryegate, Town of	
Project Name	Water System Improvements	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 150,749	Montana Rural Development (RD) Grant
	$ 128,000	Montana Rural Development (RD) Loan
	$ 478,700	Treasure State Endowment Program (TSEP) Grant
	$ 100,000	U.S. Bureau of Reclamation (USBR) Grant
Total Project Cost	$ 957,449	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The source of the potable supply for the town of Ryegate is suspected to have always come from the Musselshell River either directly from a surface water takeoff, or by a collection gallery near the river. The date of the construction of the original water system is unknown, but it predates 1920. The current infiltration gallery, built in the mid-1960s, consists of the collection pipe and new turbine pumps installed above an existing wet well. This wet well is still in service and was constructed around 1920 as part of a project that also included the installation of new vertical turbine pumps and the construction of the storage tank. The vertical turbine pumps replaced a pulley-driven pump and motor system. The mid-1960s project included the construction of a new pump house located adjacent to the original masonry pump house built in 1920. New submersible pumps were installed in 1996. Some of the 4-inch cast iron distribution system piping still in place around the original townsite area probably predates the 1920 project. The remaining piping is newer 6-inch and larger PVC pipe installed as part of a 1993 water replacement project.

The Montana Department of Environmental Quality (DEQ) has designated the town's infiltration gallery system as being a "Groundwater under the Direct Influence of Surface Water" source, with the influencing surface water being the Musselshell River. This designation places the system in violation of the treatment technique requirements of the Safe Drinking Water Act, and is an indication that the water users are susceptible to serious adverse health consequences caused by exposure to surface water pathogens. The Musselshell River also influences the production capacity of the infiltration gallery. Recent low flow and river stage conditions have reduced production, and the town places restrictions on water use to ensure adequate storage for fire protection.

It was concluded from the alternative analysis that drilling new wells would be the preferred alternative to address both the quality and quantity source water problems. The new wells will be constructed on property already owned by the town, and will be sized with adequate capacity to meet design maximum day demand of 134 gallons per minute (gpm) and design average day demand (44 gpm) with the largest producing well out of service. The wells will be drilled approximately 785 feet from the Eagle Formation, and are anticipated to produce water with quality similar to the current source.

Technical Assessment

Project Background

The Town of Ryegate is located in south-central Montana's Golden Valley County. The water source for the town is an infiltration gallery that has been determined to be under the direct influence of the nearby Musselshell River. As such, the town must make provisions to protect the water users from pathogens that could be introduced through this surface water influence. Furthermore, there is evidence that the distribution system and/or storage tank experiences leakage and that water-use efficiency is not particularly high in this un-metered community.

Technical Approach

The town is proposing to develop a new water source by drilling two new wells into the Eagle formation aquifer, a safe and under-utilized water source. In addition to this, the town anticipates replacing 4,950 lineal feet of undersized water mains, adding water meters, and installing hydrants for fire protection.

Project Management

The proposed project management plan appears to be well thought out and sufficient to manage the project from planning to close-out.

Project design services, budgeted at $35,365 for this project, represent only 5% of the estimated construction cost without contingency. It is important to note that the grant administration services budget is 4% of construction. The design services budget appears to be somewhat low. However, the engineering firm likely to actually perform the design is the one that developed the design cost estimate.

Public involvement has been a priority for the applicant to this point. Two public meetings have been held and a needs survey has been conducted. The project management plan does not focus on the need for continued or enhanced public education and involvement. Public involvement will be necessary, particularly when water service will be interrupted and water meters will be installed.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$2,150	$0	$33,650	**$35,800**
Professional & Technical	$18,219	$0	$109,095	**$127,314**
Construction	$79,631	$0	$714,704	**$794,335**
Total	**$100,000**	**$0**	**$857,449**	**$957,449**

All components of the budget appear to be adequately funded. The applicant has correctly presumed that loan fees and reserves will not be necessary with RD and that interim interest and bond costs should be in the 2% - 3% range.

O&M costs as stated in the preliminary engineering report appear to be reasonable for a water system of this size. There are no specific items in the O&M budget for depreciation and replacement. The applicant should re-visit these numbers to determine if the annual budget of $8,854 (with $500 for "misc.") has enough flexibility to fund an R&D account. With the proposed project funding strategy, monthly water

user rates are expected to increase by $9.04 to a total of $27.71. This is within acceptable limits when compared to other similar-sized communities implementing utility improvements, particularly since residents are paying only $6.00 per month for sewer.

Benefit Assessment

The project proposes the installation of water meters to promote the efficient use of water as well as to further the town's efforts to determine the extent of system losses. This constitutes improved stewardship of a renewable resource as well as an increase in use efficiency. By changing the town's water source from the infiltration gallery (influenced by the nearby Musselshell River) to the Eagle Formation, the town will be developing a renewable groundwater resource as well as improving the flow characteristics of the river by eliminating out-takes. With the recent drought, this issue has gained increased importance to preserving fisheries in the river.

Efforts at public involvement have been relatively thorough. Two meetings have been held as well as a needs survey. The results indicate strong public support for the project as well as support for the pursuit of public funds for the project.

Environmental Evaluation

Based on the applicant's completed environmental checklist, there will be no long-term adverse environmental impacts. Moving the water source from the current infiltration gallery to the deeper Eagle Formation will actually result in a beneficial impact.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 24

Applicant Name	Malta Irrigation District	
Project Name	Replacement and Modification of Check Structures	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 74,402	In-kind contribution
Total Project Cost	$ 174,402	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The Malta Irrigation District is part of the Milk River Project and contains 42,492 irrigable acres. The irrigation system was constructed between 1909 and 1923; it has been in continuous service since 1911. It supplies water to district irrigators and Bowdoin National Wildlife Refuge, and stores water in Nelson Reservoir for Malta and Glasgow Irrigation Districts.

As the diversion check structures age, they do not function as intended, and they must be replaced and modified in order to conserve water and preserve the integrity of the infrastructure.

The majority of these check structures are made of steel and are rusting. The district plans to replace and modify the existing check structures with concrete and a metal gate with a lift that can be automated in the future. Handrails will be added for safety. The district also has the option of adding a check structure where there is quite a distance between checks, which will increase delivery efficiency and improve water conservation.

Technical Assessment

Project Background

The proposed project is situated in the Milk River Valley extending from Dodson to Hinsdale. The district has been in continuous service since 1911. The U.S. Bureau of Reclamation (USBR) operated the irrigation works until 1941, when the district assumed the care, operation, and maintenance responsibility for the 42,492-acre division.

In 1989, USBR completed a repair and betterment study on the proposed rehabilitation and betterment of the Malta Division. Cost estimates to implement the study's recommendations were prohibitive to water users at the time. With DNRC grant funds, the district replaced eight of the main delivery checks in 1997.

This project consists of construction and replacement of 31 check structures and construction of 3 new check structures, which are used to regulate, distribute, and manage the district's irrigation waters. The existing checks are all in very poor condition, resulting in leakage, improper operation, and high maintenance. Past efforts to modify the checks have been limited to simple repairs often lasting only one or two irrigation seasons. The replacement checks will reduce bank erosion and provide a consistency among checks, which will simplify operation, maintenance, and future repairs. These check structures will reduce the distance between checks in canals and will increase water use efficiency.

Technical Approach

The project entails inventorying and prioritizing the replacement order of the check structures, completing an engineering design for the check structures, fabricating and constructing 34 new check structures, and demolishing the old check structures.

The district is proposing to pre-cast concrete components of the check structures at the district's maintenance yard in Malta and stockpile them throughout the irrigation season. Following the irrigation season, the existing checks will be excavated and taken to a waste site. Preparatory foundation work will be completed and then the check components delivered to the site and assembled in place. The disturbed ground will be reseeded and riprap installed to prevent erosion in the spring. The district plans on replacing about 10 check structures a year for three years.

Alternatives provided include continuing to repair existing checks or to cast the checks in place. Repairing the existing checks is not cost effective and is very inefficient. Because each of the old check structures was constructed differently, the cost of repair varies from structure to structure. Repairs have not proven durable. The second alternative of casting the structures in place would increase the cost per check structure 20 to 30%. This alternative also poses problems with placement of concrete in freezing conditions, given that work would be completed after the irrigation season. Environmental damage could possibly be greater due to the increase in work force and equipment at each site.

Project Management

The district manager will supervise this project. The district has hired a consultant engineer to design the check structures. All other work will be completed by district staff using district equipment.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$4,500	**$4,500**
Professional & Technical	$5,500	$0	$0	**$5,500**
Construction	$94,500	$0	$69,902	**$74,402**
Total	**$100,000**	**$0**	**$74,402**	**$174,402**

The projected costs appear adequate. The selected alternative is the most cost-effective and reasonable.

The cost of labor, materials, equipment, and contingency will be $174,402. The total cost per check structure will be $4,278. The budget appears to be sufficient to fund the proposed project, with the district providing $74,402 to match this requested $100,000 grant.

The district has 337 water users on 42,492 assessed acres. The district presently has an unpaid balance of $40,139.26 to USBR and expects to have this debt paid off by 2003. The district has no other outstanding debts. The district's annual revenue is $877,912. The current rate levied per acre is $13.46. Cost for each additional acre-foot is $3.25.

Benefit Assessment

The primary resource benefit of this project is preservation. The new check structures will preserve the existing use for irrigation, as well as fish, wildlife, and recreational resources, including the habitat of the threatened piping plover.

The district has a proactive history in water conservation efforts. The district completed a Water Conservation Plan in 1998. Replacement of the 34 check structures is a portion of this plan. The district has installed several permanent water measurement devices, and has recently purchased four portable water measurement devices. The new check structures are also being designed to accommodate measuring devices. The district has installed hydromet stations at crucial points on the Milk River and they are involved in the Agrimet program. These programs, combined with the replacement of the check structures, will contribute significantly toward the ultimate goal of water conservation.

The project's broad level of public support is indicated by the 84 letters of support attached to the application. The economy in this region of the state is dependent on the preservation of the Milk River Irrigation System and the conservation of water.

Environmental Evaluation

The chosen alternative of pre-casting components in the maintenance shop and installing them following the irrigation season is the most environmentally sound alternative. The replacement will take place in the time period between when the water is shut off and the ground freezes. This coincides with a low-stress season for wildlife. There will be riprap placed on the banks surrounding the check, and the disturbed ground will be reseeded to prevent erosion.

There will be some short-term adverse environmental impacts that cannot be entirely avoided in any construction project. Construction impacts must be identified and mitigated to the extend possible. No long-term adverse environmental impacts are anticipated.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 25

Applicant Name	Judith Basin County	
Project Name	Geyser Water System Improvements	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 308,000	Community Development Block Grant (CDBG)
	$ 332,000	Montana Rural Development (RD) Grant
	$ 173,000	Montana Rural Development (RD) Loan
	$ 330,000	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 1,243,000	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The unincorporated community of Geyser and the newly formed Geyser Judith Basin County Water and Sewer District have requested that Judith Basin County assist in addressing deficiencies in the community's water supply, storage, and distribution facilities. The community's water distribution system was constructed in the 1950s of 4-inch asbestos cement (transite) lines. Approximately 500 feet of transite pipe along Hill Avenue and 700 feet of transite pipe along Cook Avenue have been replaced with PVC. The community currently owns two wells. Only one well is connected to the distribution system; the other well supplies irrigation to the school. The well on the distribution system is equipped with a booster pump and four hydropneumatic tanks, but is not equipped with a backup generator or backup well. The well is 1,000 feet deep, was constructed in 1971, and was deepened in 1992. This well has experienced a substantial decrease in capacity since its original construction. The distribution system is equipped with eight fire hydrants, but the Montana Department of Environmental Quality (DEQ) has taken action against the district to minimize the potential of cross contamination of the public supply during hydrant use.

The community's water system currently has the following deficiencies:

- Lack of storage and undersized distribution mains lead to pressures dropping below 20 psi during flushing and cleaning operations, creating a possible backflow situation, which presents a serious risk to public health and safety. DEQ has taken action against the district;
- The existing wells have experienced a loss in capacity of over 50% due to biofouling and incrustation. This problem will worsen with time, resulting in further loss of source capacity;
- Lack of adequate supply leads to strict water rationing during the summer months;
- Poor water quality from dissolved iron and manganese make the water nearly undrinkable;
- Sulfate levels in the existing municipal well will likely exceed future sulfate maximum contaminant levels (MCL's) proposed by the Environmental Protection Agency (EPA);
- No storage for emergency or fire flow conditions;
- One supply well and lack of auxiliary power could shut off flows to the community in the event of a power or mechanical failure;
- Dead-end distribution lines with no way for district personnel to adequately flush and clean the system creates the possibility of contamination from biofilms; and
- No water meters result in increased usages during irrigation periods; this raises pumping and chemical costs to the district and wastes a natural resource.

The proposed project would increase supply by constructing two new wells northwest of the community. Field investigations indicate the locations and depths of the proposed wells will yield good quality water, with low levels of dissolved iron, manganese, and sulfate, eliminating the need for treatment. A new 67,000-gallon elevated steel water tank would be constructed to supplement flows and pressures during high demand periods and to provide adequate storage for fire flows or emergencies such as a power or mechanical failure. Approximately 5,700 feet of 6-inch water distribution line would be constructed to provide adequate fire flows to the community. Water meters would be installed on all services, allowing the district to set water rates on an equitable basis and encouraging water conservation. The proposed project will have no significant, long-term, adverse environmental impacts.

Technical Assessment

Project Background

The unincorporated community of Geyser is located in central Judith Basin County, approximately 30 miles southeast of Great Falls.

Only one of the district's two wells is connected to the distribution system. The other well supplies irrigation to the school. The water system serving the community provides no fire protection for residences, businesses, and the school. The system is not equipped with a backup generator or backup well. The existing well has experienced a loss in capacity apparently due to bio-fouling and incrustation. The system has no storage capabilities, and the 4-inch distribution piping is undersized for fire protection. Water quality is extremely poor, with taste and odor problems rendering the water nearly undrinkable. The system also experiences extremely low system pressure (20-30 psi) during peak day and peak hour demand periods that cause backflow problems and the potential for contamination of public water. The current system is not equipped with water meters.

Technical Approach

The goal of the proposed project is to provide adequate water supply to the community of Geyser. The objectives of the project are as follows:

- increase supply to the community,
- provide storage capacity to supplement flows and pressures during high demand periods and to provide adequate storage for fire flows or emergency situations such as a power or mechanical failure,
- upgrade the distribution system to provide adequate fire flows to the community, and
- install water meters at each service connection.

The preliminary engineering report (PER) proposed a project that includes constructing two new wells northwest of the community. Field investigations indicate that the proposed location and depth of wells may produce better quality water with low levels of dissolved iron, manganese and sulfate, eliminating the need for treatment. A 3,000-foot transmission main to a new 67,000-gallon elevated storage tank will be constructed, approximately 5,700 feet of the 4-inch diameter distribution system will be replaced with 6-inch mains, and water meters will be installed at all service connections.

Alternatives presented in the PER included rehabilitating and then connecting the two existing artesian wells located in Geyser. The water would need to be treated to remove iron, manganese, and sulfate. Another alternative included drilling a new 600-foot artesian well, connecting it to one of the existing artesian wells, and installing an iron, manganese, and sulfate treatment plant. A comparative analysis of the alternatives determined that drilling two new wells, potentially without the need for treatment, would cost the least when looking at the 20-year present worth costs, and would meet the state and federal regulatory requirements for quantity, dependability, and quality. There are no significant, long-term, adverse environmental impacts anticipated with any of the proposed alternatives.

The project schedule indicates an anticipated beginning date of the preliminary design in September 2003, with construction completed in October 2004. Water rights issues will need to be addressed.

Project Management

An implementation schedule and project management plan was submitted as part of the application. Judith Basin County and the district have contracted with the project engineer for the management and administration of this project. The administrative consultant acts as the project contact and funding agency liaison. In addition, the Judith Basin County clerk and recorder will be designated as the fiscal contact for the project.

The county/district will retain ultimate responsibility for the management of project activities and the expenditure of all grant and loan funds.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$50,700	**$50,700**
Professional & Technical	$100,000	$0	$90,000	**$190,000**
Construction	$0	$0	$1,002,300	**$1,002,300**
Total	**$100,000**	**$0**	**$1,143,000**	**$1,243,000**

The budget appears to be sufficient to fund the proposed project. Construction cost estimates were developed using bid tabulations from similar projects within Montana or quotes were obtained from contractors performing similar work in Montana.

Geyser currently has a population of 89 people served by one 1,060-foot deep artesian well. The flow produced at the well is insufficient to meet the demands of the community. The demand rate was estimated based on comparisons to other communities in Montana at 465 gpcd. It was estimated that installation of individual meters would reduce the demand rate by one-third to one-half. Currently the users pay a flat fee of $10 for water. If funding is received as requested, water user rates will increase to $35. This increase is the maximum that the community felt it could afford. The unit costs presented in the PER seem reasonable and adequate.

Water Supply. Although the present worth costs are greater, the comparative analysis showed that because of O&M costs and regulatory issues, drilling two new wells was the best alternative compared to connecting the two existing wells and treating or drilling a new artesian well and treating.

Water Storage. Four alternatives were evaluated for water storage. To provide fire flow capacity, it was calculated that a 67,000-gallon tank would be needed.

Distribution System. Replacement of all the existing 4-inch water mains was deemed cost prohibitive by the district. The selected alternative includes the recommended minimum improvements to the distribution system necessary to provide adequate fire flows to the community.

Water meters. The cost to install water meters at individual services was estimated to be $61,830, with annual O&M costs of $2,138.

Project funding appears realistic. The applicant sufficiently researched the funding sources and compared the different alternatives to find a funding program that would meet the community's needs for an improved water system without assessing an excessive increase in user fees. In addition to the $100,000 from DNRC, the community hopes to qualify for a TSEP grant of $330,000, a CDBG grant of $308,000, an RD grant of $332,000, and an RD loan of $173,000. The project has been discussed in detail with representatives of each of the proposed funding agencies.

Benefit Assessment

The anticipated estimated decrease in water consumption represents a conservation benefit. New water meters will also be installed on the wells for an accurate comparison of production vs. usage. A substantial portion of the distribution system will also be replaced which will reduce the total amount of water lost due to leakage. The installation of meters and telemetry system will improve the district's ability to control and administer the groundwater source. This project will advance or expand the use of a renewable resource by providing sufficient water flow for safe domestic use and fire protection. The construction of two new wells will provide a quantifiable benefit to Geyser by providing sufficient supply to irrigate lawns, trees, parks, and other landscaped areas that would otherwise not be planted or developed as "green" areas.

Environmental Evaluation

There are no anticipated long-term, adverse environmental impacts or potential adverse impacts associated with the proposed project.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 26

Applicant Name	Blackfeet Tribe	
Project Name	Oki Mamii (Hello Fish)	
Amount Requested	$ 23,581	Grant
Other Funding Sources	$ 3,360	In-kind Contribution
Total Project Cost	$ 26,941	
Amount Recommended	$ 23,581	Grant

Project Abstract (Prepared and submitted by applicant)

The Blackfeet Tribe proposes to develop lesson plans to educate all fourth grade students about conservation of aquatic ecosystems and fisheries on the Blackfeet Reservation. The lessons will emphasize conservation of native aquatic life and natural processes operating within aquatic ecosystems. However, the lessons will also cover non-native fisheries, water pollution, and wise development of Reservation water resources. Lessons will include student involvement with local resource management agencies in addition to having students participate in resource management projects.

All lessons will be infused with Blackfeet language, heritage, and culture in order to strengthen existing community ties to natural resource conservation. Once lessons are developed, fourth grade teachers will receive training and supplies to facilitate implementation. Participating teachers will also receive a stipend after they have satisfactorily taught several lessons.

This project will benefit the goals of the Renewable Resources Grant and Loan (RRGL) program by immediate involvement of upcoming citizens with issues in the conservation of natural resources. It will continue to benefit the goals of the RRGL program, as more students are involved in years to come.

Technical Assessment

Oki Mamii, or "Hello Fish," is a proposed educational program that will provide fourth and fifth graders an opportunity to learn about native species conservation and the processes that operate to maintain healthy aquatic ecosystems. This project will be located at Napi Elementary School in the Town of Browning. Most of the work will be in the classroom, but some will involve use of a pre-existing rock aquarium in the entranceway of the school in addition to several sites within the town. The sites in town include Cemetery Lake and Willow Creek near Government Square.

The goal of this project is to improve community appreciation, knowledge, and support for conservation of native fisheries, aquatic ecosystems, and other water resource issues on the Blackfeet Reservation. The objectives of the project are to:

- Develop lesson plans that increase knowledge and awareness of aquatic ecosystems, fisheries, and water resources on the Blackfeet Reservation
- Incorporate Blackfeet culture and language into the developed lesson plans

- Train all fourth/fifth grade teachers at Napi Elementary in implementation of the lessons
- Present lessons to all fourth/fifth graders
- Improve lessons and continue to present lessons for at least five more years

Two alternatives were evaluated. The first was to import existing aquatic ecosystem lessons. Some of these were reviewed, but it was determined that they would not have sufficient public support or be adequately pertinent to the reservation. The second alternative considered was to develop this as a school district project. If it were done within the school district, it would not be possible to purchase required equipment, nor pay teachers stipends and consultant salaries, which are great incentives to ensure the project is completed.

Project Management

The Blackfeet Tribe Wetlands Program coordinator will manage the grant. This will include budget oversight, ordering equipment and supplies, preparing contracts and hiring contractors, and preparing grant reports. There will be coordination between the Blackfeet Tribe's Fish and Wildlife Program and the U.S. Fish and Wildlife Service before teacher training.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$3,217	$0	$0	**$3,217**
Professional & Technical	$20,364	$0	$3,360	**$23,724**
Construction	$0	$0	$0	**$0**
Total	**$23,581**	**$0**	**$3,360**	**$26,941**

Administrative costs equal about 12% of the grant total and seem reasonable. Stipends will be paid to teachers who participate in a one-day training session and then implement the curriculum into their classrooms.

The project will target fourth and fifth grade students at Napi Elementary School. It is projected that the curriculum will be used for five years. The Browning Public School system will assume maintenance of the curriculum and replacement of the equipment involved. There are no ongoing operational costs with this program.

Benefit Assessment

This project has resource benefits in three of the resource benefit categories. It is an educational project for children who will carry what they learn forward to their adult lives. Education is the key to attaining conservation, management, development, and preservation of water on the reservation.

The primary resource benefit of this project is resource preservation. Students will learn about native and introduced fish species and why it is important to preserve native species. Lessons will also emphasize the importance of preserving water quality and quantity on the reservation.

This project also has resource benefits in conservation and management. Students will learn about the benefits of water conservation for aquatic life and themselves. Lessons will cover wise water use and management on the reservation.

Environmental Evaluation

There are no adverse environmental impacts associated with this project. Potentially, the project will have beneficial environmental impacts for years to come, as these students become adults, incorporating what they have learned into their lives.

Funding Recommendation

DNRC recommends grant funding of $23,581 upon approval of a project scope of work, administration, and budget.

Project No. 27

Applicant Name	Sheridan, Town of	
Project Name	Water System Improvements	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 116,500	Montana Department of Commerce (DOC) Intercap Loan
Total Project Cost	$ 216,500	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The Town of Sheridan's water system was originally constructed in 1915. A major project was completed in 1990 that provided the town with four new wells. The project was necessary to comply with a state mandate to discontinue use of its surface water supply from Indian Creek. Because of inadequate supply from the four wells, a new well was constructed by the town in 2001 to provide sufficient water for the community.

A preliminary engineering report (PER) completed in 1998 identified the following deficiencies:

- Insufficient water supply
- Undersized, old wooden transmission main
- Undersized, old, leaking distribution mains
- Need for valving to maximize storage
- Additional water storage
- Deadend distribution mains

The town partially addressed the water supply problem by completing a supply well in 2001. In the last few years, the old wooden transmission main between the water tanks and town began leaking significantly. The public works director indicated that the town was forced to repair approximately eight leaks last year, with the number of leaks increasing each year. These repairs are a temporary "band-aid" approach, as the only way to fix the leaks is to drive wooden plugs in the holes. During a field visit by the engineer in April, town personnel were in the process of repairing one leak, while leakage was visible in three other separate areas of the transmission main. The town fears that this leakage will continue to escalate, quickly reaching an emergency situation.

The proposed project would replace the old, leaking, undersized 12-inch wooden transmission main with approximately 5,200 lineal feet of new 14-inch PVC transmission main. Replacement of this leaking line will result in conservation of a renewable resource. In addition, the replacement of the line will develop increased benefits and preserve existing benefits of a renewable resource. A new flow meter will be installed in the pumphouse to allow the town to better manage the groundwater source. The remaining deficiencies identified in the PER will be addressed during a major project in the future.

Technical Assessment

Project Background

The Town of Sheridan is located in Madison County. The town's water system was constructed in 1915 and consisted of a surface water source, water storage, and distribution lines. In 1990, a major project added four new wells to the system so that the town could discontinue use of its surface water source. In 2001, a new well was added to provide sufficient capacity for the community. A 1998 water system master plan identified numerous water system improvements including replacement of an 87-year old wooden water line, which connects the system storage tanks to the distribution system. Since that study, the 12-inch wooden main has had numerous leaks, and the town anticipates increased leakage until the main is replaced.

Technical Approach

The goals of the proposed project are to replace the 12-inch wooden main with a new 14-inch PVC main. The project will allow for improved fire flows to the distribution system and decreased pumping costs associated with the decrease in system leakage.

The proposed schedule is to begin design of the new main in mid-2003 and initiate construction in the fall of 2003, with completion before the end of the year.

Project Management

The project will be managed by the mayor and town council, the town clerk, and a design consultant. The applicant has prepared a PER in which the public had the opportunity to participate. The public awareness program consists of advertisements and accepting public comment during regularly scheduled town council meetings. The project management plan proposes to continue the public awareness program through project completion and closeout.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$0	**$0**
Professional & Technical	$0	$0	$40,000	**$40,000**
Construction	$100,000	$0	$76,500	**$176,500**
Total	**$100,000**	**$0**	**$116,500.00**	**$216,500**

According to the application, administrative and financial costs will be absorbed into the normal operating expenses of the town. A DNRC grant awarded in 1999 was similarly administered by the same town clerk who will administer this grant. O&M costs are realistic, and the applicant has some reserve built into the rates to assist with planned future improvements.

The town currently provides service to 380 residential and 9 commercial hookups (an estimated population of 659). The applicant proposes to fund water improvements using $100,000 from this DNRC grant and an Intercap loan of $116,500 from DOC.

The monthly residential rate charge assessed as a result of this loan will increase from $16.25/user/month to $21.50/user/month. This puts the town at approximately 115% of its target water rate. The affordability of the project is reasonable and leaves opportunity for anticipated water rate increases for planned improvements.

Cost estimates for only one alternative were presented. The unit costs appear reasonable and adequate for the project.

Not all the funding for this project has been secured. In addition to this application, the applicant also proposes to borrow funds from the Intercap program. Should the grant application be unsuccessful, the applicant will opt to postpone the proposed project because extensive water system improvements are anticipated in the next several years.

Benefit Assessment

The project will provide direct, quantifiable benefits. While no direct measurement of leakage in the 12-inch, 87-year old wooden main was made, documentation of leak repairs on this main provide evidence that leakage will be eliminated by this project. The estimate of 5 gpm per leak with 8 leaks documented last year could mean up to 40 gpm of leakage from the main. This equates to 21% of current average day water demand. The town will realize an energy savings and will reduce power consumption by elimination of the leakage in this main.

Installation of a new flow meter in the existing pump house will improve the town's ability to monitor water use and provide some data for sizing water system improvements planned in the next few years. Currently water use is only estimated based on documented water use in other non-metered Montana communities.

The leakage that has occurred recently has surfaced and caused surface erosion and sediment deposition in nearby Mill Creek. Heavy equipment used to make repairs has contributed to this problem. Surface disturbance and non-point source pollution will be eliminated by installation of the new 14-inch water main.

Environmental Evaluation

The applicant has identified and accurately stated the extent of the environmental impacts associated with the proposed project. The selected alternative either will result in no impact on the environment, aside from temporary construction-related impacts, or will have a beneficial impact on the environment. The proposed project will not result in long-term adverse environmental impacts.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 28

Applicant Name	Pablo-Lake County Water and Sewer District	
Project Name	Wastewater Treatment System Improvements	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 500,000	Community Development Block Grant (CDBG)
	$ 1,040,282	Montana Rural Development (RD) Grant
	$ 1,040,282	Montana Rural Development (RD) Loan
	$ 500,000	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 3,180,564	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The existing wastewater treatment system was expanded in 2000. The project was financed with RD grant/loan monies, and was originally planned to entail several additional phases, with the next expansion phase occurring in 2005. Wastewater is now treated in a two-celled aerated lagoon system, operating in

series, followed by partial discharge to either of the two existing infiltration/percolation cells or to spray irrigation. The district and outlying area have experienced extensive growth and development, and 2000 census data indicated an annual population growth rate of 3.98%. Several populated areas within the district are not presently connected to the sewer utility. Several of these areas have completed designs to re-develop and connect to water and sewer utilities.

The single issue facing the wastewater treatment system is capacity. The present capacity of the existing treatment and disposal works is 112,450 gallons per day (gpd). A single, planned development area owned by Confederated Salish-Kootenai Tribal Housing and slated for construction in the summer of 2002 will connect 106 single-family housing units onto the wastewater collection system. The area where the development will occur lies within the existing district boundary, with an existing population. The development plan is to remove the modular housing, install new infrastructure, replace the housing, and re-house the population base. The combined wastewater flows once this single development occurs will be 113,555 gpd. There are multiple impending developments in addition to the one named. Another issue facing the district that affects the proposed project costs is that the tribes have mandated that any future expansion to the existing wastewater treatment works must eliminate further disposal to the existing rapid infiltration beds. Therefore, the existing wastewater system capacity will automatically be decreased by 60,000 gpd (flow presently allowed to be discharged to the infiltration beds) once wastewater system expansion plans proceed.

The proposed solution is to expand the existing wastewater treatment, storage, and spray irrigation facility to accommodate impending growth and the 20-year anticipated population growth. The district has agreed to purchase adjacent acreage that will fully allow the wastewater system expansion improvements. The treatment and storage expansions can occur on present district-owned acreage, and the spray irrigation facility will be sited on the acquired property. The proposed wastewater facility expansion will accommodate both impending growth and the 4% per year population growth projection.

Technical Assessment

Project Background

The project is located in Pablo, an unincorporated community in Lake County. Pablo is on U.S. Highway 93, seven miles south of Polson and Flathead Lake, and within the Flathead Indian Reservation. The original sewer system was constructed in 1973, and consists of 25,000 lineal feet of 8-, 10-, and 12-inch PVC pipe, and a three-cell infiltration/percolation treatment system. Approximately 4,500 lineal feet of sewer main and a new lift station were added in 1994, and in 1999 another 14,000 lineal feet of sewer main and two lift stations were added. Starting in 1995, the capacity of the treatment system was evaluated by numerous studies by two different engineering firms. The original three-cell infiltration pond treatment system was revised in 2000 by conversing one of the infiltration cells into two mechanically aerated treatment ponds and the addition of one new storage cell with effluent disposal by irrigation. Two of the original infiltration ponds remain in service and serve as the disposal method for half of the effluent discharged. Pablo is a rapidly growing area. Census data for the Pablo area shows a 4% per year growth from 1990 to 2000. It was originally envisioned that the 2000 treatment facility upgrade would last until 2005 before its capacity would be reached. However, with the addition of a 106 home development this summer (2002) and other growth over the last year or two, the treatment system's capacity of 112,000 gpd will be reached. The Tribal Housing Authority has specific development plans for another 32 homes in the near future and another 91 homes thereafter, creating demand on the treatment system of 128% of its capacity. Additional plans for development would push the system to 145% of its treatment capacity. The district has declared a self-imposed moratorium on additional growth until the capacity problem with the treatment system can be corrected.

Technical Approach

The goals of the proposed project are to:

- Expand the treatment facilities to service a growing population through the year 2024 with a design flow capacity of 329,650 gpd;

- Provide sufficient capacity to support existing planned development and a growth rate of 4% per year;
- Eliminate the use of the two infiltration/percolation ponds for disposal to eliminate groundwater discharge; and
- Satisfy current and future regulatory requirements for wastewater treatment and disposal.

The goals will be met by changing the operation of the existing aerated wastewater lagoons from series operation to parallel operation. This will provide sufficient detention time to satisfy the state design standard of 15 days prior to storage and effluent disposal by irrigation. Two new wastewater storage ponds would be constructed and additional land would be purchased for effluent disposal by irrigation on cropland. The existing infiltration/percolation ponds would be removed from service and associated groundwater discharge eliminated. Additional aeration would be provided for the storage ponds. Several treatment alternatives were evaluated and the proposed alternative is the most cost-effective, environmentally sound, and technically viable treatment alternative. The preliminary engineering report (PER) developed both collection system and treatment alternatives, but collection system improvements were not included as part of the project. It is not clear how collection system costs will be financed or when they will be constructed, and so it is not clear how the goal of supporting the development of existing planned units and a growth rate of 4% a year is going to be realized.

Project Management

The district has developed a project management plan that outlines the responsibilities of each of the participants and sets out a plan of implementation. An experienced and qualified management team is in place and the district has the knowledge to organize and direct this team. Legal counsel has been retained to help with such issues as land acquisition, right of way, debt elections, rate structures, etc. A bond counsel has also been retained to assist with issuance of bonds and other financial legal matters. The project will be closely coordinated with the tribes, regulatory agencies, and funding agencies. The project budget appears to include adequate funds to administer the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$60,554	**$60,554**
Professional & Technical	$100,000	$0	$324,540	**$424,540**
Construction	$0	$0	$2,695,470	**$2,695,470**
Total	**$100,000**	**$0**	**$3,080,564**	**$3,180,564**

The funding package identified, includes a combination of grants and loan funds. The proposed funding will result in a sewer user cost of $37.02/user/month based on the 2024 buildout of 788 equivalent dwelling units (EDU). The current number of EDUs is only 485, which results in current user rate of $44.96/user/month. To amortize the proposed debt, it appears that the district will have to assess a user rate considerably higher than presented in the application.

The target rate for Pablo is $11.77/user/month, so the final user rate will exceed the target rate by at least a factor of 3. The existing water rate is $17.15/user/month or 83% of the water target rate ($20.59).

Costs presented in the PER appear to be accurate and sufficiently documented. The proposed project considers upgrading only the treatment facilities, and is not clear how collection system improvements would be financed in the future. Possibly the improvements will be funded as each subdivision is developed.

The project proposes to increase the treatment capacity threefold, from 112,000 gpd to 329,000 gpd to address a projected growth rate of 4% per year for 20 years. As mentioned earlier, the number of EDUs would increase from 485 to 788. Existing users will need to subsidize the growth through increased rates, for an undetermined period, until the estimated population growth is realized.

Benefit Assessment

The proposed project will eliminate the discharge of 60,000 gpd of wastewater to the aquifer by eliminating the use of infiltration ponds. Additional wastewater storage facilities will be constructed to allow expansion of irrigation. Additional wastewater flows of 217,000 gpd over the next 20 years will be disposed of by irrigation. This project will expand the capacity of the existing treatment plant and allow the community to grow.

Environmental Evaluation

Temporary adverse impacts will occur during construction of the new storage ponds. The majority of these impacts will occur within the existing treatment site. An environmental checklist has been prepared delineating environmental impacts. Natural resource agencies have been contacted and comments received on potential environmental impacts. The project will have an overall positive impact on the environment by reducing concentrated disposal of wastewater to the groundwater.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 29

Applicant Name	Fort Belknap Irrigation District	
Project Name	Sugar Factory Lateral Project Phase I	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 15,000	In-kind contribution
Total Project Cost	$ 115,000	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by the applicant)

Fort Belknap Irrigation District is one of five irrigation districts that operate and maintain distribution systems in the Chinook Division of the Milk River Project. Irrigation water is diverted from the Milk River into the Fort Belknap Ditch, then from the ditch into the Sugar Factory Lateral about one mile northwest of Chinook. The lateral is 4.19 miles long and provides irrigation for 621 acres (16 water users). It borders Chinook for 2,700 feet. Project goals are to:

- Conserve water through improved infrastructure;
- Prevent seepage damage to Chinook residences adjacent to the lateral;
- Improve public safety; and
- Preserve the canal bank as a flood control dike for Chinook.

Estimated seepage losses along the Sugar Factory Lateral are as high as 33%, creating irrigation water shortages, flooding yards of adjacent Chinook home owners, making roads unstable, and potentially infiltrating the city's sanitary sewer system.

Alternatives developed to address project goals included enclosing irrigation water in a pipeline and lining the canal with an impermeable barrier. Three types of pipes and four types of liners were analyzed for financial feasibility assuming preservation of the north ditch bank for use as a flood control dike. Corrugated HDPE pipeline is the least expensive alternative that meets all project goals. Lining the lateral with geomembrane is less costly but does not address public safety concerns.

The district, in consultation with local officials, selected pipeline enclosure as the best alternative. Seepage studies to identify other district ditch segments with severe seepage problems will also be conducted. This solution conserves water, eliminates seepage issues, and addresses safety concerns. The project will be constructed in phases, as funding becomes available. Phase 1 of the project will install the western 1,350 feet of the pipeline. Remaining pipe will be installed in Phase 2.

Technical Assessment

Project Background

The district is located in Blaine County and is part of the Milk River Project. The district serves 6,714 acres distributed among 75 water users. The Sugar Factory Lateral carries approximately 40 cfs over a distance of about 4 miles to 621 acres (16 water users). About 20 cfs flows through the 2,700-foot stretch of the lateral that runs along the north side of the City of Chinook, population 1,386. The district estimates that up to 33% of the water diverted into this lateral is lost to seepage. Canal seepage in the Chinook stretch has caused flooding of agricultural lands and homeowner lawns, and softening of city roadways. In addition, the presence of an open canal adjacent to an urban area represents a public safety hazard and thus a liability to the district.

Technical Approach

The primary goal of this project is to improve water conservation in the district by reducing canal seepage losses. The proposed project would enclose half of the Chinook stretch of the lateral in a large diameter corrugated HDPE pipe, and conduct a study to assess seepage losses in canals throughout the district. Alternatives to the proposed project include lining the stretch with various materials and re-routing the canal. Lining the canal would be less expensive, but would not eliminate the public safety concern. Re-routing the canal would still require lining and would be infeasible due to insufficient head.

Both the district and the U.S. Bureau of Reclamation have determined that canal seepage is a significant problem in the district that should be addressed. The district has determined that the Chinook stretch is a priority and warrants extra expense because of the on-going liability issues. Alternative approaches to conserving water, such as installing measuring devices or improving on-farm efficiencies, were not evaluated. There appear to be no regulatory or environmental issues that would affect the technical feasibility of the proposed project.

Project Management

This project will be managed and administered by the district with the president acting as project manager. The district's ditch rider will provide general construction oversight, assist in project administration, and gather canal flow data for the seepage study under the direction of the hired consultant. Proposed project management appears adequate.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$8,000	**$8,000**
Professional & Technical	$19,500	$0	$7,000	**$26,500**
Construction	$80,500	$0	$0	**$80,500**
Total	**$100,000**	**$0**	**$15,000**	**$115,000**

The unit and total costs of the proposed pipeline and seepage study appear to be reasonable and affordable. The present worth (capital and O&M costs over 20 years at 6% interest) of the 2,700-foot stretch of pipeline is $241,399 (however, only 1,350 feet of pipeline would be installed with this grant funding). Based on this estimate the pipeline would cost $422 per acre-foot of water conserved, or $778 per acre served (based on approximately 310 acres downstream of the stretch). Though these costs are

high for water conservation alone, they may be justified based on the reduction in liability to the district. No information is provided describing the potential dollar value of the liability reduction.

Benefit Assessment

The primary renewable resource benefits of proposed project would be to conserve water by eliminating canal seepage losses in one stretch of the lateral, and providing information that will help the district identify and prioritize other problem seepage areas. Secondary benefits would be restoration of previously flooded lands, increase in public safety, and elimination of erosion in the piped stretch.

Environmental Evaluation

The proposed pipeline installation should have minimal short-term and no long-term negative impacts to the local environment. Reducing or eliminating seepage in the district may be beneficial to the environment by reducing environmental problems associated with seepage and soil salinity.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 30

Applicant Name	Montana Department of Natural Resources and Conservation (DNRC)	
Project Name	North Fork of the Smith River Dam Rehabilitation	
Amount Requested	$ 100,000	Grant
	$ 457,000	Loan
Other Funding Sources	$ 82,523	DNRC In-kind contribution
	$ 300,000	Water Storage Account
Total Project Cost	$ 939,523	
Amount Recommended	$ 100,000	Grant
	$ 457,000	Loan

Project Abstract (Prepared and submitted by applicant)

The North Fork of the Smith River Dam is located about 10 miles east of White Sulphur Springs in Meagher County. Constructed in 1936, the earthen embankment dam is 84 feet high and 1,300 feet long. The reservoir stores 11,500 acre-feet at the spillway crest (with flashboards). The dam is classified "high-hazard" under the Montana Dam Safety Act (MDSA) because of the potential for loss of life below the dam, should failure occur.

The dam was inspected by the U.S. Corps of Engineers (COE) in 1980 under the National Dam Inspection Program. The COE declared the dam unsafe due to inadequate spillway capacity to meet dam safety standards. Annual dam safety inspections conducted by MDSA have documented the need for concrete repairs to the top of the spillway sidewalls and the spillway floor over time.

In 1995, a draft feasibility study was completed to upgrade the dam to meet then-current dam safety standards. Project work is now proposed to meet Montana's newly adopted spillway standards. Project rehabilitation will consist of replacing the old spillway with a two-cycle labyrinth weir, raising and leveling the dam crest, adding a rock-lined auxiliary spillway channel, and installing drains for seepage control. The repair work and improvements will enhance dam longevity and promote effective water conservation for irrigation, recreation, and fisheries and wildlife habitat enhancement.

The funding in this request would be used to help pay for rehabilitation construction costs. The applicant is requesting a $100,000 grant and a $457,000 loan to contribute to the overall project. Additional funding sources include $300,000 from the Water Storage Account and approximately $83,000 from DNRC in-kind contributions. The estimated cost of the project at the feasibility stage is approximately $940,000.

Technical Assessment

Project Background

The North Fork of the Smith River Dam is located in Meagher County about 10 miles east of White Sulphur Springs. The dam was constructed in the 1930s, and is owned by DNRC. The North Fork of the Smith Water Users' Association (NFSWUA) is responsible for the operation of the dam and for supplying irrigation water to 29 water users, irrigating approximately 11,000 acres. Lake Sutherlin, the reservoir created by the dam, has a storage capacity of 11,500 acre-feet and provides fishing, boating, and other recreational opportunities to the public. The dam has been classified as a high-hazard dam under the MDSA. The spillway is undersized and is in poor condition. Revised spillway design standards were applied to the dam in 2002, and the dam was found to be unable to route the required design storm under new and revised rules. To reinforce this finding, an 1981 inspection by COE under the Dam Inspection Act identified the dam as being unsafe due to inadequate spillway capacity. The report also identified geotechnical and maintenance concerns associated with the dam and its operation.

Technical Approach

The goals of the proposed project are to:

- Meet MDSA revised spillway standards
- Avoid spillway failure in the event of the design flood
- Conserve water resources for irrigation and recreation
- Prevent loss of life and undue economic hardship due to dam failure
- Extend the dam's useful life and its benefits another 50 to 75 years

The goals will be met by optimizing the design of the rehabilitation project to be cost effective, without compromising safety. More specifically, the project consists of raising and leveling the dam crest to increase freeboard; installing filters and drains to control, collect, and monitor seepage; replacing the existing and deteriorated spillway with a labyrinth weir; and excavating an auxiliary spillway to meet spillway standards and preserve dam integrity.

The proposal is based in part on data compiled in a 1995 feasibility study. In the feasibility report, a comprehensive analysis of spillway alternatives is performed. The proposed project is the least-cost alternative, and also the alternative with the fewest adverse environmental impacts.

The proposed project is scheduled for construction during the summer and fall of 2004. Permitting requirements are typical for this type of project, and minimal easement acquisition will be necessary.

Project Management

It is proposed that this project be designed by a registered professional engineer, advertised and competitively bid, and constructed by the successful bidder. All aspects of the project will be overseen by a registered professional engineer employed by the applicant. DNRC's Water Rights Division (WRD) will be responsible for obtaining permits and easements. WRD will be responsible for seeking public comment to the environmental assessment prepared for the project.

The engineer of record for the project, selected in accordance with Montana statutes, will be responsible for design, bid, and construction oversight. WRD will assign a staff engineer to coordinate all phases of the project, including the management of engineering services, landowner and other public relations, and acceptance of the work.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$31,210	$ 82,523	**$113,733**
Professional & Technical	$0	$0	$120,000	**$120,000**
Construction	$100,000	$425,790	$180,000	**$705,790**
Total	**$100,000**	**$457,000**	**$382,523**	**$939,523**

The proposed budget for this project is adequate. Construction costs are based on historic data for similar work, and include a 4% per year adjustment for inflation between now and 2004, the proposed year of actual construction. The construction budget includes a $92,525 contingency, representing about 15% of the actual estimated cost of construction.

The recipient of both the grant and the loan portions of the funding package will be DNRC. Under the terms of a repayment agreement, loan payments will actually be generated each year by NFSWUA and made to DNRC. Members of NFSWUA are currently charged $0.50 per share each year. There are 11,000 shares outstanding, representing 11,000 irrigable acres. As a result of this project, and based on a 20-year loan at 4.5%, the cost per share will increase to $3.67, plus an additional $0.80 to be used at the operator's discretion to fund an operating reserve or for annual operation, maintenance, or other project-related expenses.

Line-by-line budget items include costs for administration, professional/technical (engineering), and construction. The administrative costs represent 12% of the total project cost. The engineering fee represents 13% of the total project cost. Both of these items are within parameters typically seen for a construction project of this type.

An alternative analysis for spillway replacement is included in the application and in the 1995 feasibility report. The preferred alternative is the least-cost alternative, and is the most environmentally sound.

Project funding consists of internal departmental funding in addition to the grant and loan being requested in this application. Projections are that the internal funding will be available for the maintenance of state-owned water projects as required for this project.

Benefit Assessment

This project will provide direct renewable resource benefits in that an existing facility will be preserved. Because this dam is high-hazard, a significant benefit of the project is the protection of human life and property that will result from the project. Other benefits include the enhancement of resource-based recreation and the enhancement of Montana's fisheries and wildlife habitat. Public support for the project has been documented through the submission of letters of public support from the Meagher County Board of Commissioners and the NFSWUA.

Because of its recreational value, preservation of Lake Sutherlin will play a role in providing long-term economic benefits to Montana's outdoor recreation-based economy.

Environmental Evaluation

The proposed project does not raise or lower the existing full-pool level of Lake Sutherlin. As a result, long-term adverse environmental impacts will be minimal. Long-term beneficial environmental impacts of the project include the continued existence of a reservoir that provides water storage for irrigation, fishery

and habitat enhancement, and recreation. Unavoidable short-term construction impacts including traffic, dust, noise, sedimentation, and storm water runoff will be controlled to the greatest extent possible.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget. Also recommended is a loan authorization of $457,000. Recommended terms of the loan are 4.5% for up to 20 years.

Project No. 31

Applicant Name	Conrad, City of	
Project Name	Raw Water Intake and Pump Station Improvements	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 2,189,000	Environmental Protection Agency (EPA) Grant
	$ 1,191,300	Pollution Control State Revolving Fund (PCSRF) Loan
	$ 500,000	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 3,980,300	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The City of Conrad's pump station, located southeast of Valier, was constructed in 1995. The intake for the existing pump station is located downstream from the East Dam in the canal operated by the Pondera County Canal and Reservoir Company (PCCRC). The intake consists of two intake screens in the canal with two 16-inch intake pipes connected to the pump station wet well. Water from Lake Frances is released through an outlet pipe in the East Dam into the canal downstream. In general, the maximum operating level of the lake is 3,815 feet. PCCRC imposes a minimum water level of 3,794 feet.

The existing intake has presented a myriad of problems since its installation, making operation and maintenance expensive and often difficult. The existing intake was installed with an air backwash system, which does not adequately clean the screens. The existing screens routinely clog with silt, especially when lake levels are low and prevailing winds increase the raw water turbidity.

In 2001, the intake screen became clogged, completely blocking the intake. This prompted the city public works staff to drain the canal and clean the screens. They also retrofitted an improved air backwash on the intake in 2000, but it has not been in service long enough to know if the system will adequately clean the screens.

During periods of drought, the water level in Lake Frances can drop as much as 26 vertical feet. The result is a shallow channel, 3,500 feet long, separating the deep pool of the Lake and the East Dam where the water is released. This channel is the result of natural topographic features and silt deposition upstream of the East Dam. The lake bottom between the deep pool and the East Dam is approximately 3,792 feet.

During the summer of 2000, the water depth in the shallow channel decreased to six inches in one reach, placing the city's only water supply in serious jeopardy. If the lake level dropped any lower, the city would have been completely without a source of drinking water since no backup supply exists. As a result, the city dredged silt from the channel in the lakebed over 3,000 feet long, to enable water to flow from the deep pool to the East Dam diversion. The total cost of this operation was $43,000, for which DNRC awarded an emergency grant for 60% of the cost. Continued siltation of the channel makes it likely that the city will have to bear the expense of dredging the channel again.

The most compelling problem is high potential for this channel to silt in again. When the channel was dredged in 2000, vertical walls in excess of eight feet were created along the channel length in several sections of the channel. These walls were cut into the existing sediment that had accumulated over the years. There is a high potential that these walls of silt could collapse into the channel, causing a very sudden and unpredictable loss of the city's water supply. Because the channel is very shallow, there is also the potential for the water in the channel to completely freeze during the winter months, further jeopardizing the city's water supply. Ice thickness in the channel is continuously monitored in the winter by city staff. It appears that 2002 will be the third consecutive year of drought, which will again require severe restrictions on water use.

This alternative would involve construction of a new intake and pump station on the south side of Lake Frances so that water from the deep pool could be accessed. The two existing 100 horsepower pumps located in the existing pump station will be installed in the new pump station. Various locations were considered for the new intake and pump station site. The major components considered when evaluating pump station sites were access to the deep pool in Lake Frances, proximity to the existing pump station and transmission main, and accessibility. Components of this alternative include:

- Intake screens located five feet above the lake bottom in the deep pool in Lake Frances;
- Intake backwash using high pressure air and water;
- 2,500 feet of new 18-inch intake line in Lake Frances;
- New pump station and wet well;
- Overhead power line extension; and
- 11,000 feet of new 16-inch PVC transmission main.

Technical Assessment

Project Background

The City of Conrad is located along Interstate 15 in Pondera County. The water supply for the city is Lake Francis, located about 14 miles northwest of the city. Lake Francis is controlled by the PCCRC. Rights to the use of water in Lake Francis are controlled by ownership of water shares. The city has its intake located in a canal below the East Dam of Lake Francis. With only a trickle of water coming over the East Dam after a long route through a shallow, silt-filled channel, the city has come dangerously close to losing its only water source during these last couple of dry years. PCCRC has had to maintain a minimum water level in Lake Francis to ensure the release of water from the East Dam for the city public water supply system. Because of this, PCCRC has been unable to provide downstream irrigators with about 10,000 acre-feet of water for their crops. Losses to area irrigators totaled an estimated $5.3 million in 2000.

Technical Approach

The main goal of this project is to provide the city with a dependable water supply. Objectives include (1) locating the raw water intake so that irrigators with interest in the PCCRC can access their full water shares, (2) providing enough water to the city so that businesses have enough water for their operations and will be encouraged to locate there, and (3) designing the intake so that low-turbidity water is supplied to the water treatment plant.

Five near-term alternatives were discussed in detail in the engineering report: 1) no action, 2) new intake and pump station, with total abandonment of the existing facility, 3) new intake and pump station, with reuse of the existing pumps, 4) new intake and low head pump station, with pumping to the existing pump station, and 5) new gravity line from the deep pool to the existing pump station.

These alternatives were evaluated and the lowest cost alternative (#3) was selected for comparison to the far-term alternative of connection to the North Central Montana Regional Water System (NCMRWS). The NCMRWS is a good alternative; however, it is currently in the planning stages and will not be available for 10 to 12 years.

Five other alternatives were considered in the engineering report and dismissed as either infeasible or too expensive. The preferred and recommended alternative is to construct a new intake and pump station and reuse the existing pumps, on the south side of Lake Frances. The proposed project will be located on property owned by PCCRC, if feasible. PCCRC has already committed to leasing land to the city. Steps for project implementation are clearly stated and given reasonable time frames for their completion.

Project Management

The project engineer will also serve as the project manager, with assistance from the grant administrator, mayor, and public works director. The project manager/engineer will be the primary person responsible for contractor compliance and ensuring compliance with applicable federal and state requirements. The project management plan clearly lays out the responsibilities for each member of the team. To keep the public informed, the city will use public meetings, press releases, and pamphlets or newsletters.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$82,300	**$82,300**
Professional & Technical	$0	$0	$734,000	**$734,000**
Construction	$100,000	$0	$3,064,000	**$3,164,000**
Total	**$100,000**	**$0**	**$3,880,300**	**$3,980,300**

The proposed project is to be funded with a combination of grants and loans. The proposed funding package is realistic. The EPA State and Tribal Assistance Grant (STAG) is anticipated in October of 2002. According to Senator Conrad Burns' staff, this project is one of the top two projects that he is recommending for STAG funding. If the STAG grant is not awarded, the project engineer says that a larger PCSRF loan will be taken out, possibly with help from the other water users of Lake Francis, and the project will still proceed. After notice of award from TSEP, DNRC, and STAG, the city can begin final design of the intake and pump station, and construction would begin once TSEP and DNRC funds are available and the PCSRF loan is closed.

With the city financing approximately $1,191,300 of the total project cost, the resulting combined water and sewer rate will be $53.06, or approximately 128% higher than the target rate of $41.31. The current water rate for the 1,063 homes in the city is $29.18, and will increase to $35.81. The PER shows that the community is behind the project and is willing to accept a water rate increase. The O&M costs were considered for the categories of labor, electrical energy, materials and chemicals, and equipment replacement. The increase in O&M costs for the chosen alternative is due to an additional $400 per year in labor costs, for the additional time to get to the new pump station, and an additional $4,000 in electrical energy costs due to the use of larger pumps.

Benefit Assessment

As a result of this project, PCCRC will have better control of outflow from Lake Francis. This will help ensure that all shareholders in the company are able to utilize the water. In addition to benefits in quantity, the city will be able to withdraw less turbid water for its public water supply. This may decrease treatment costs.

There is a great deal of public support for the project, as evidenced by letters from local departments and businesses, and a petition signed by over 217 Conrad residents in support of House Bill 347. This bill was created to appropriate funds for the relocation of the City of Conrad's pump station to the deep pool at Lake Francis. Without a reliable water supply, new businesses cannot come to Conrad, and commercial and industrial growth, along with the creation of new jobs, is stifled.

Environmental Evaluation

The proposed project will result in minimal increases in energy use and will result in short-term impacts to the environment during construction. The new pump station and transmission main will require up to 24 acres of previously undeveloped dry land range belonging to PCCRC for construction activities. The new pump station will be located above the historic high-water mark and above the top elevation of the dam. It will be painted to blend in better with the natural surroundings. For the new intake, a 404 permit will be required from the U.S. Army Corps of Engineers, to ensure minimal disturbance to the lake. The intake screens are designed with low velocities to protect fish and other aquatic life.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 32

Applicant Name	Lewis and Clark County Water Quality Protection District	
Project Name	Groundwater Sustainability in the North Hills Area, Helena	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 41,163	Applicant
	$ 7,760	In-kind contributions (citizen volunteers)
	$ 39,743	Montana Bureau of Mines and Geology (MBMG)
Total Project Cost	$ 188,666	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

Between 1990 and 2000, the population of Lewis and Clark County increased by 17.3%, the state average was 12.9%, and the North Hills increased by 50%, from 2,800 to 4,200. The February 25, 2002, DNRC "North Hills Controlled Ground-Water Area Petition, Final Environmental Assessment," reported areas of the North Hills experienced a 71.4% growth rate in the past decade.

Residents of the North Hills are six miles from the nearest municipal hook-ups for water or wastewater. Groundwater is the only available source of water for residents, and with the population increase, there is an increased demand on groundwater aquifers to supply potable water. Increased volumes of household wastewater disposed of through individual or small community wastewater treatment systems with subsurface discharge of septic effluent increases the risk of contaminating groundwater.

Water levels in some North Hills wells have declined during the past several years and some wells have gone dry or experienced declining productivity or quality. Area residents requested a comprehensive investigation by petitioning DNRC for a controlled groundwater area (CGWA) designation. They believe the increased demands on the aquifer system will have negative economic and health consequences on existing and future users, and a comprehensive study to evaluate the consequences of increased demands provides a scientific basis for management of groundwater.

Study objectives are to characterize the availability, quality, and sustainability of groundwater in the North Hills. Objectives will be met by establishing a monitoring network using existing wells, mapping locations and orientation of faults and fractures, identifying sources of groundwater recharge and discharge, and collecting water quality samples to evaluate septic systems influence on groundwater quality.

MBMG will be the lead agency on the project, with participation by the Lewis and Clark County Water Quality Protection District and the DNRC Water Resources Division.

Technical Assessment

Project Background

The North Hills project area covers about 54 square miles along the north hills of the Helena Valley. In 2000, the North Hills contained 1,517 households and 1,220 wells. Ten of these are public water supply wells regulated by Montana Department of Environmental Quality (DEQ). Recently, about 20 wells have gone dry and some wells have shown a water level decline. Residents are also concerned about the degradation of water quality because of the increase in septic system density over the aquifer. Lewis and Clark Water Quality Protection District well sampling has shown increases in groundwater nitrate concentration, often associated with septic systems, and DEQ has documented increases in nitrate concentrations in the North Hills public water supplies.

A 1995 Renewable Resource grant was awarded to the district to complete a reconnaissance study of the Helena area bedrock aquifer. This study included information from 24 bedrock wells in the North Hills area. Water level trends were analyzed for 12 of the wells. Decreasing trends were observed in two wells, increasing trends in two wells, and no trend in the other eight. Monitoring has continued in six of the wells, five show declining water levels over the past three years. A water budget and detailed geologic mapping of fractures were not undertaken in this study.

DNRC is considering a proposal to designate the North Hills a temporary CGWA. This project information will assist DNRC with deciding whether to designate the North Hills a permanent CGWA, and if so designated, what restrictions will apply.

Technical Approach

The project involves the preservation and management of a sole drinking-water source. Project goals are to collect geologic, hydrogeologic, and water quality data and to present information needed for appropriators, regulators, and homeowners to evaluate the management of the North Hills aquifer. Data will be used to separate effects of climate versus groundwater withdrawals. The project will construct a water budget for the North Hills aquifer to help understand what portion is currently appropriated to water users.

These goals will be achieved by providing detailed geologic mapping of faults, joints, and fractures. Potentiometric maps will depict groundwater gradients and flow direction. The study will attempt to show an understanding of where the most productive parts of the fractured bedrock aquifer are located by correlating fracture density and orientation with well yield. A network of 40 to 50 monitoring wells will be established and sampled for water level and quality. To the extent possible, groundwater recharge and discharge will be quantified. Water quality will be sampled for nitrates, chloride, bromide, major ions, and trace element constituents to assess groundwater degradation.

The final report will include a geologic framework of the aquifer, aquifer hydrology, influence of septic systems on water quality, and a groundwater budget. Maps will be generated showing generalized bedrock and surficial geology, cross sections that depict the subsurface configuration of bedrock strata, monitoring point locations, water quality, and distribution of precipitation across the study area. Also orthophoto maps showing static water level, pumping water level, and productivity will be produced. Hydrographs showing representative water-level trends will be included

The district will be working with 40 to 50 well owners to obtain voluntary access to their wells for monitoring and sampling. Volunteers will be recruited to provide well measurements and monitor and record precipitation data using rain gauges over the two-year project. MBMG will seek public input throughout the project from the North Hills voluntary advisory group to include representatives from DNRC, DEQ, the district, and concerned citizens.

All project data will be managed by MBMG and incorporated into its Groundwater Information Center public database that's operated and maintained at MBMG. The final report will be available to the general

public on the county web site and at the local and state libraries. Presentations of project findings and results will be given to interested groups as requested.

This project will not require support in the future; the end product for this project will be the final report. However, the district will continue to monitor water levels and water quality on a subset of the study's monitoring wells at a cost of approximately $3,500 annually. Volunteers will be encouraged to continue monitoring water levels and reporting them to MBMG after project completion.

Three project alternatives were considered: 1) no-action, 2) implement groundwater management changes with limited data on the bedrock aquifer water budget and geologic/hydrologic framework, and 3) the preferred alternative. The limited data and no action alternatives are less costly than the preferred alternative, but they provided limited or no benefits to the public and the groundwater resource. The preferred alternative was selected because it will allow the resource to be managed in a manner that will permit sustainable development with the greatest appropriation of additional water rights. Water managers, DNRC's Water Resources Division, and Lewis and Clark County need a hydrogeologic study to make decisions regarding issues described in the environmental assessment for a North Hills CGWA designation. The DNRC Water Resources Division would prefer a more comprehensive investigation, but recognizes that this would not be feasible, so DNRC has recommended this proposed hydrologic study as a reasonable alternative.

Project Management

The administrator of the district will manage the project. The district will also be lead fiscal agency, provide administrative and technical support, act as project liaison with homeowners, and disseminate project results. The district will contract with MBMG to provide the hydrogeologic and technical expertise necessary to complete the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$5,000	$0	$11,598	**$16,598**
Professional & Technical	$95,000	$0	$77,068	**$172,068**
Construction	$0	$0	$0	**$0**
Total	**$100,000**	**$0**	**$88,666**	**$188,666**

The majority of grant funds are to pay $61,890 for professional salaries and benefits (two hydrogeologists and one geologist). Analytical sampling charges are $13,500 for seven quarterly sampling events, where a monitoring network of 40-50 wells will be sampled. This will result in 350 samples being collected for nitrate and chloride analysis, 10 samples for analyzing major ion and trace elements, and 20 samples for bromide analysis. The costs appear reasonable and adequate.

Regardless of what action DNRC takes based on the temporary CGWA, this issue will likely resurface until some factual data can be collected to evaluate and interpret. Indeed, if the study is not funded by this grant, the DNRC Water Resources Division may be mandated to conduct a similar investigation.

Benefit Assessment

This project will primarily improve government and citizen ability to manage, conserve, and protect the groundwater resources for the North Hills area. In addition, geologic mapping will locate the most prolific areas of the currently used aquifer for future development, and the geologic cross sections may help locate the depth of the Madison Limestone Aquifer to determine if it is a reasonable depth for potable water. The Madison Limestone Aquifer is prolific in other parts of Montana. The project will assist a wide range of interested parties with evaluating impacts of growth, drought, land-use changes, septic systems, and other changes in the North Hills area, and will help them make better informed long-term planning, permitting, and management decisions.

Environmental Evaluation

No significant adverse environmental impacts will occur as a result of activities associated with the project.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 33

Applicant Name	Power-Teton County Water and Sewer District	
Project Name	Water System Improvements	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 339,900	Drinking Water State Revolving Fund (DWSRF) Loan
	$ 500,000	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 939,900	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The community's water treatment facility is outdated and will not provide treated water to meet the 2003 EPA regulatory requirements. A new treatment facility (Phase I) is currently being designed as part of the phased approach for water system improvements recommended in the April 2000 preliminary engineering report. Phase I of the project also included a pilot study to finalize the selection of the type of treatment. The pilot study concluded the existing 6 million gallon (MG) presedimentation basin is contributing to poor water quality experienced by the community and recommended constructing a new, smaller presedimentation basin to reduce turbidity from water drawn directly from Muddy Creek. The existing distribution system was constructed in 1969, is undersized, and does not provide sufficient flows and pressures during high demand periods. The existing 50,000-gallon on-grade storage reservoir and booster station were constructed in 1970. Storage volumes are marginal for domestic flows and grossly inadequate for providing fire flows.

The district's water system currently has the following deficiencies:

- Sediment deposited in the existing 6 MG presedimentation basin is septic and releases large amounts of organic materials, making the water difficult to effectively treat;
- Lengthy detention times in the existing 6 MG presedimentation basin lead to algae problems during the summer. Algae contributes to taste and odor problems and makes the water difficult to treat;
- The high organic concentrations in the existing presedimentation basin are likely to result in disinfection by-products violations;
- There is no storage for emergency or fire flow conditions;
- Lack of elevated storage and undersized distribution mains lead to pressures dropping below 20 psi during periods of peak demand;
- Lack of auxiliary power capabilities at the booster pump station allow cessation of flows to the community in the event of a power failure; and
- Deadend distribution lines with no way for district personnel to adequately flush and clean the system, leading to the possibility of contamination from biofilms.

The proposed project is the second phase of a larger project and includes construction of a new, smaller presedimentation basin adjacent to the existing basin. This basin would allow removal of settleable solids

prior to treatment without the excessive detention times experienced by the existing basin. The new basin would be cleaned periodically to ensure sediment does not turn septic. A new 250,000-gallon steel water tank would be constructed at sufficient elevation to supplement flows during high demand periods and to provide adequate storage for fire flows or emergency situations such as a power or mechanical failure. Water distribution line would be constructed to provide adequate fire flows to the majority of the community and the school area. The proposed project will have no significant, long-term, adverse environmental impacts.

Technical Assessment

Project Background

The Town of Power is located in Teton County. Its water treatment, storage, and distribution system is 33 years old; constructed in 1969. The district has taken a phased approach to its water system improvements and applied for a DNRC Renewable Resource Grant in 2000. That grant was not awarded, but the district did receive a TSEP grant and a DWSRF loan and is now in the design phase of a treatment plant improvement project. This application is for Phase II of the project, which includes improvements to the storage and distribution system.

Technical Approach

The goals of the proposed project are to:

1. Eliminate long detention times and septic conditions in the system's presedimentation basin.
2. Reduce the potential of the formation of disinfection by-products that could violate Safe Drinking Water Act regulations and pose a health threat to water users.
3. Provide storage for emergency and fire flow conditions.
4. Improve water distribution system pressures during peak water demands.
5. Improve system looping.

The goals will be met by construction of a new presedimentation basin adjacent to the existing basin for removal of settlable solids prior to treatment and construction of a new 250,000-gallon steel water tank to provide gravity flow to the system. The tank storage capacity would satisfy peak hour demands and provide adequate storage for emergency situations and needed fire flows. Replacement of existing undersized water mains with new larger diameter mains will enable the system to maintain adequate pressures throughout the system during peak demand and fire flow conditions. Looping the system will also ameliorate system pressures and provide a means for the district to flush and maintain water mains.

The selected alternatives would achieve compliance with all state and federal standards. The proposed schedule is to begin design of the facilities in mid-2003 and initiate construction in May 2004, with completion and start-up later that fall.

Project Management

The district has prepared a detailed project management and implementation plan. The district has identified the staff required for successful project management, including the district president, the district manager, a professional administrative consultant, a design consultant, the county deputy clerk and recorder, the county treasurer, and the county attorney. There appears to be adequate funding in the project budget to effectively manage the project. $1,500 has been budgeted for personnel costs and $10,000 for professional services related to project management. The district has prepared a comprehensive preliminary engineering report in which the public had the opportunity to participate.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$52,200	**$52,200**
Professional & Technical	$0	$0	$138,000	**$138,000**
Construction	$100,000	$0	$649,700	**$649,700**
Total	**$100,000**	**$0**	**$839,900.00**	**$939,900**

The district currently provides service to 75 residential and several commercial hookups with an estimated population of 170. The application proposes to fund water improvements using approximately $600,000 in grants from the TSEP and the DNRC RRGL Program. The district will also pursue a $339,900 dollar loan from the DWSRF program.

The proposed project budget is complete and all administrative costs appear to have been accurately estimated. The monthly residential rate charge assessed because of this loan will increase from $49/user per month to $79/user per month.

Cost estimates for each alternative were presented. The cost estimates for the steel tank alternative and the contingency seemed low.

Not all the funding for this project has been secured. The district submitted an application for a grant from the TSEP and DNRC programs in May 2002. The applicant also proposed to borrow from the DWSRF program for the remainder of the project costs. Should one or both grant applications be unsuccessful, the applicant will have to increase the loan amount from the DWSRF program. While there is a high likelihood that the applicant will be able to secure project financing, any increase in the DWSRF loan will result in increased monthly rates, which are already at 203% of the target rate. The district has stated that if design phase estimates indicate a shortfall of monies for construction is possible, the project could be broken into additive alternatives, allowing the district to construct the maximum amount of improvements within the project budget. Funding for the remaining distribution system improvements would be included in Phase III of the project.

Benefit Assessment

The project will provide direct, quantifiable benefits to renewable resource conservation and management. The project will eliminate existing booster pumps (which run constantly) with new efficient, high-service pumps and new storage that will gravity feed water to the distribution system. The district will realize and energy savings and will conserve power consumption.

The grant applicant estimates that water distribution system improvements will eliminate an average of 114,673 gallons per month of leakage. This is equivalent to an average of 2.6 gpm, which represents 13% of the community's total water treatment plant production.

Construction of the new presedimentation basin will result in an increase in water treatment efficiency due to improved raw water quality, reduced chemical use, reduced backwash cycles, and reduced overall water use. The improvements will result in reduced power consumption. New telemetry will be added to control the pumps, which will result in more efficient operation of the system and energy cost savings.

Environmental Evaluation

There do not appear to be any long-term adverse impacts attributable to the construction of the new storage tank or distribution main. All of the distribution main will be laid in existing street rights-of-way with the exception of the new 14-inch main connecting the new tank to the distribution system.

The new presedimentation basin will be constructed in a wetland created by the backwash water from the existing treatment plant. According to the U.S. Army Corps of Engineers (COE), man-made wetlands

located in upland areas do not fall under COE jurisdiction. Therefore, no adverse impacts are attributed to the construction of the presedimentation basin.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 34

Applicant Name	Phillips County Green Meadows Water and Sewer District	
Project Name	Water System Improvements	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 42,900	Drinking Water State Revolving Fund (DWSRF) Loan
	$ 112,500	Treasure State Endowment Program Grant (TSEP) Grant
Total Project Cost	$ 255,400	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The Phillips County Green Meadows Water and Sewer District encompasses the area previously known as the Green Meadows Water Users Association, Inc., established in 1972. The district serves a small rural subdivision northwest of the City of Malta. There is no central collection or treatment of solid waste. Residents rely on individual septic tanks and subsurface drain fields. Domestic water is provided by a district-owned distribution system constructed in the early 1970s. It consists of a 3-inch main that transports water from wells and a storage tank to the 3-inch waterline via gravity flow.

Within the past several years, residents have experienced a severe lack of water pressure and flow. Strict water restrictions have been in place and still the last residence on the system has water less than 10% of the time.

With assistance from Phillips County, the district secured grant funding to help conduct a preliminary engineering report to investigate the cause of the lack of water. Preliminary investigations indicate that well production is adequate.

In simple terms: if three people are showering in Green Meadows at the same time, a fourth cannot fill a glass of drinking water. The threat of even a small kitchen fire becomes life threatening when the faucet you turn on to extinguish flames is dry.

The existing distribution system does not meet design and construction standards for a public water system. It is essentially a very long, dead-end line with no redundancy in case of pipe breakage, and no looping to help augment the system under peak hour (non static) conditions. It cannot provide any fire flow. Water mains are only 3 inches in diameter and water must travel almost 10,000 lineal feet to reach the last user of the system. Pressure levels under minimal water demands on the system drop to under 20 psi, far below Montana Department of Environmental Quality (DEQ) water quality standards.

Pipe depths, general condition, and ability of the system to withstand normal pressure if introduced, are unknown. Valve layout for the system is nearly non-existent. Only two valves exist, one near the storage tank and one at the point where the line enters the district. DEQ water quality standards recommend valves be located not more than one block apart or at 800-foot intervals. A consulting engineer has theorized a restriction somewhere in the distribution system. Even if the restriction could be found and fixed, the 3-inch system will still not provide adequate residual pressures for peak hour conditions. The

district is also unsure how long the existing pumps and aquifer will be reliable without expensive improvements.

There are no fire hydrants, and the existing storage tank is grossly undersized and cannot provide operational or emergency storage as required by DEQ or minimum fire flow recommended by the International Organization for Standards and Uniform Fire Code.

Because of the 1996 Safe Drinking Water Act, the district water system is defined as a public water system and must have its water tested periodically by a licensed operator. The district contracts with a licensed operator from Malta. It will be increasingly difficult to meet the rising costs associated with operator certification and testing.

The district proposes to construct a new 8-inch looped distribution system connected to the City of Malta's public water system. This will allow for adequate fire flows and consistent availability of water that meets all current standards.

The proposed project includes:

- Abandoning the existing water system for domestic household use;
- Installing a new 8-inch looped system connected to a City of Malta water main; and
- Signing a Memorandum of Understanding (MOU) between the district and the City of Malta. This MOU addresses the cost of water, waiver of annexation, testing and maintenance of system, meter installation, and assumption of ownership upon retirement of debt.

Technical Assessment

Project Background

The district water distribution system consists of wells, a 4,000-gallon storage reservoir, and a distribution system of 3-inch mains. The current public water system cannot provide fire protection or meet peak domestic demands. Currently, fire protection is provided by a rural fire department equipped with a 300-gallon pumper truck and a 2,000-gallon tender truck, providing only 4.5 minutes of fire protection. In December 2000, fire destroyed a home in the district.

Technical Approach

The goal of the proposed project is to provide an adequate water system for domestic water consumption and fire protection.

The goals will be met by constructing a new water distribution system. The new distribution system will be connected to and ultimately maintained by the City of Malta. Specifically, the improvements proposed in the preliminary engineering report (PER) include the installation of 5,900 lineal feet of 8-inch water main, three fire hydrants, 16 water meters, and other related appurtenant items. The proposed improvements will eliminate the reliance on an undersized water distribution system and storage facilities. The proposed improvements will also provide enhanced fire protection within the project area.

The PER indicates that the proposed improvements are the most cost-effective and environmentally acceptable solutions to the documented deficiencies. The recommended improvements will achieve compliance with state and federal standards. The proposed schedule is to complete design of the facilities in late 2003 and initiate construction in mid 2004, with completion and start-up later that year.

Project Management

The project management plan is thorough and describes in detail the duties and responsibilities of each of the parties involved. Project staff appears adequate and includes the district president, the district clerk/treasurer, a professional administrative consultant, and an engineering design consultant. The project management plan addresses public involvement and proposes to continue the public awareness

program developed during the planning stages of the project through completion and project closeout. The project management plan appears to provide for thorough and well-organized contract management with regulatory and funding agencies, consultants, contractors, and any other involved parties

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$29,400	**$29,400**
Professional & Technical	$0	$0	$35,000	**$35,000**
Construction	$100,000	$0	$91,000	**$291,000**
Total	**$100,000**	**$0**	**$155,400**	**$255,400**

The overall budget appears to be low. Some unit costs used to develop the construction budget appear low, and some unit costs were not provided. Cost increases could require the district to obtain a larger loan, which would increase the projected monthly user rates.

The proposed funding package is reasonable and consists of a combination of grant and loan funds, including a grant from TSEP and a loan from the DWSRF program. The TSEP grant application has been submitted. The DWSRF loan can be closed anytime and will likely occur once the grant portions of the funding package have been secured.

The district consists of 15 residential hookups and one undeveloped lot. The estimated population is 45. If the district receives the grants requested, the anticipated monthly water rate will be $44.81. The proposed rates are deemed affordable.

Benefit Assessment

The project will provide direct, quantifiable benefits. The project will result in resource conservation through the installation of water meters. Water meters will also allow the City of Malta to quantify and manage water system leakage. The recommended alternative also combines a separate small water system into a central system under the control of the city.

Environmental Evaluation

There do not appear to be any long-term adverse impacts attributable to the construction of the new water distribution mains and water meters. The uniform application environmental checklist has been completed and the selected alternative either will result in no impact on the environment or will have a beneficial impact on the environment.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 35

Applicant Name	Chinook Division Irrigation Association, Inc. Joint Board of Control	
Project Name	Fresno Dam Gate Leaf Seals	
Amount Requested	$ 100,000	
Other Funding Sources	$ 11,718	Applicant
	$ 6,100	Milk River Joint Board of Control (MRJBOC)
	$ 54,282	U.S. Bureau of Reclamation (USBR)
Total Project Cost	$ 172,100	
Amount Recommended	$ 100,000	

Project Abstract (Prepared and submitted by applicant)

This proposal is for a grant to rehabilitate the frame and leaf seals on the regulating gates of Fresno Dam. Fresno Dam and Reservoir are major features of the Milk River Project.

Fresno Dam, located on the Milk River 14 miles west of Havre, Montana, was constructed under the National Industrial Recovery Act, approved by the President in August 1935. Construction on the dam was completed in 1939.

Fresno Reservoir is a storage reservoir for the natural flow originating in the Milk River drainage and a re-regulating reservoir for water diverted from the St. Mary River drainage. Approximately 110,306 acres under the Milk River Irrigation Project, nine municipalities, the Fort Belknap Tribes (10,425 people), sportsmen and women, and recreationists rely on water stored in Fresno Reservoir for municipal and agricultural uses.

Fresno Reservoir has 33,700 acre-feet allocated to joint use storage used for flood control and irrigation. According to USBR information, since Fresno Dam was constructed, more than $10 million in flood damages have been prevented.

Fresno Reservoir provides recreation, including swimming, boating, and excellent fishing, primarily for walleyed pike and trout. Fresno also provides excellent duck and goose hunting. Rehabilitation of the gate leaf seals on the regulating gates of Fresno Dam will:

- Conserve the limited water resource available in the Milk River Basin by improving the efficiency of the regulating gates;
- Manage the limited water supply by improving control and administration of the resource;
- Preserve of the integrity of the control structure of Fresno Dam.

In all, approximately 22,000 individuals in the Milk River basin utilize water stored in Fresno Reservoir for a multitude of purposes. Numerous others can be counted as occasional users.

Technical Assessment

Project Background

Fresno Dam is located on the Milk River about 14 miles west of Havre in Hill County. It is located in Section 19, Township 33 North, Range 14 East. The dam primarily provides storage for irrigation and flood control. In addition it provides significant recreational benefits including swimming, boating, and fishing. The storage provides for storage of Milk River water and serves as a re-regulating reservoir for St. Mary River drainage. Approximately 22,000 people in the Milk River Basin obtain benefit from the project.

The Chinook Division Irrigation Association, Inc. Joint Board of Control (CDJBOC) is comprised of five of the irrigation districts on the Milk River. The member irrigation districts are also member districts of MRJBOC.

The dam was constructed in 1939 and provides water to approximately 110,306 acres of irrigated land, nine municipalities, the Fort Belknap Tribes, sportsmen, and recreationists. A comprehensive facility review of Fresno Dam completed in 1999 identified problems with the gates on the outlet works. Problems created by age and cavitation resulted in a need to rebuild the gates. The proposed project, which will replace the gate frames and gate leaf seals, will correct this deficiency.

Technical Approach

The project goal is to preserve the integrity of Fresno Dam and reservoir for future uses. The goal will be accomplished by replacing the gate frames and leaf seals on the two 5- by 6-foot regulating gates on the dam. Correction of these deficiencies on the dam outlet works will ensure long-term operation of the gates, more efficient use of the water in the dam, less water loss, and better control of the reservoir resource.

Alternatives considered in addressing the problem included complete replacement of the gates, a do-nothing alternative, and the proposed alternative to replace the gates and leaf seals. The alternative analysis concluded that the proposed project was the most cost-effective approach to the project. The do-nothing alternative would not meet the project objectives.

The project as proposed will comply with all current standards and regulations. Permitting requirements will be minimal and straightforward. The project can be accomplished within the proposed schedule.

Project Management

USBR will provide the engineering services required for design, contract administration, and construction oversight. USBR will provide overall project management. The president of CDJBOC will act as the project manager. A single contractor will be hired through a standard bid process to complete the work. CDJBOC will provide grant administration and budget control. This organization is a public entity with all meetings open to the public to provide for public input on the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$6,100	**$6,100**
Professional & Technical	$0	$0	$0	**$0**
Construction	$100,000	$0	$66,000	**$166,000**
Total	**$100,000**	**$0**	**$72,100**	**$172,100**

The budget appears to be sufficient to fund the proposed project. Costs used to develop the budget appear to be reasonable and adequate. Contingencies may be low. The proposed project was determined to be the most cost-effective alternative.

The proposed funding package appears to be a reasonable mix of state and local or federal funding. The Chinook Division Irrigation Association is providing input primarily through in-kind services. USBR is providing engineering and contract administration for the project. Grant administration will be provided by MRJBOC. The proposed funding will result in no additional annual cost to the water users.

Benefit Assessment

The primary resource benefit of the project is preservation of the existing structure. The project will provide conservation of water resources and preservation of the current water resource benefits. Preservation of the dam will ensure a more stable water supply to 666 irrigation water users, provide continued flood control and drinking water for communities, and provide water for recreation and fish and wildlife.

The proposed project will also decrease long-term operation and maintenance costs to the district. It will increase the safety of the existing dam, providing greater assurance that a failure will not occur.

Environmental Evaluation

The only adverse impacts associated with this project are short term, primarily construction related. Typical problems, such as dust pollution and noise related to construction activities will occur on a short-term basis. No long-term adverse impacts are anticipated.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 36

Applicant Name	Upper and Lower River Road County Water and Sewer District	
Project Name	Water System Improvements	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 792,000	Drinking Water State Revolving Fund (DWSRF) Loan
	$ 500,000	Treasure State Endowment Program (TSEP) Grant
	$ 2,000,000	U.S. Environmental Protection Agency (EPA) Grant
Total Project Cost	$ 3,392,000	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The newly formed Upper and Lower River Road County Water and Sewer District began developing in 1917 with the first subdivision plat. There are now eight different subdivisions and five mobile home parks in the district with on-site water and wastewater systems. The Montana Department of Environmental Quality (DEQ) and the Great Falls City/County Health Department (CCHD) authored a groundwater study in the area in 1997-98, finding high levels of nitrate and ammonia in drinking water wells. There is a long history of water quality problems in the small public systems.

Water from area wells requires treatment for aesthetic qualities before drinking. There have been numerous drinking water quality complaints from small public system users, and several boil orders issued over the years. On-site wastewater systems are degrading area wells and groundwater quality. One system in particular, the Pearson Addition Lagoon, is an open cesspool that drains raw sewage directly into the ground. DEQ and CCHD now require this situation to be corrected as soon as possible.

In response to problems, a task force was formed, a facility plan was developed, a water/sewer district was formed, and the preliminary engineering report (PER) was finalized. The best solution is to install 25,700 feet of 8-inch PVC sewer lines, 23,200 feet of 8-inch PVC water mains, and 442 water meters, and to connect to pre-existing City of Great Falls-owned water transmission and sewer trunk lines that already exist within the district boundary.

The $5.81 million dollar overall project cost (for water and sewer) is not affordable to district residents via one grant funding cycle, as debt service becomes overpowering. This application is based on a "best case scenario" wherein $3,412,000 EPA's State and Tribal Assistance Grant (STAG) funds are used to construct a first large phase. Should STAG funding be unavailable, the district must drop back to smaller phases and repeated use of more conventional grant funds. This application requests DNRC grant funds for water distribution and meter installation only.

Technical Assessment

Project Background

The district currently consists of eight subdivisions and five mobile home parks and is located along the bank of the Missouri River immediately adjacent to the City of Great Falls. Water is currently provided to users through multiple individual and public wells. Degrading wastewater systems have resulted in high concentrations of nitrate in the water supply wells and boil orders being issued to address coliform bacteria contamination.

Technical Approach

The goals of the proposed project include providing a safe drinking water supply to the residents of the district.

The goals will be met by constructing a new public water system that will be connected to the City of Great Falls. The city will be responsible for maintaining the system once construction has been completed. The improvements proposed in the PER include the installation of 23,200 lineal feet of 8-inch water main and 442 water meters. The proposed improvements will eliminate reliance on groundwater as a water supply, thus providing safe drinking water to the residents of the district. The proposed improvements will also provide enhanced fire protection within the project area.

The PER indicates that proposed improvements represent the most cost-effective and environmentally acceptable solutions to the documented deficiencies. The recommended improvements will achieve compliance with state and federal standards. The proposed schedule is to complete design of the facilities in late-2003 and initiate construction in early 2004, with completion and start-up later that year.

Project Management

The project management plan includes the use of volunteers unfamiliar with the various grant programs. Considering the size of the project and complexity of the funding package, the district should consider adding a full-time professional grant administrator to the management team. The project management plan addresses public involvement and proposes to continue the public awareness program developed during the planning stages of the project through completion and project closeout. The project management plan appears to provide for thorough and well-organized contract management with regulatory and funding agencies, consultants, contractors, and any other involved parties.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$96,686	**$96,686**
Professional & Technical	$14,000	$0	$447,380	**$461,380**
Construction	$86,000	$0	$2,747,934	**$2,833,934**
Total	**$100,000**	**$0**	**$3,292,000**	**$3,392,000**

The overall budget is low for personnel and professional services related to the administration of the project. Unit costs used to develop the construction budget appear to be reasonable and adequate. The costs of the various alternatives evaluated in the PER appear to have been developed in a consistent manner, and the proposed project was determined to be the most cost-effective alternative.

The proposed funding package is reasonable and consists of a combination of a grant from the Department of Commerce (DOC) TSEP, an EPA STAG grant, and a loan from the DWSRF program. The TSEP grant application has been submitted to DOC. The STAG grant is currently before U.S. Congress for consideration. The DWSRF loan can be closed anytime and will likely occur once the grant portions of the funding package have been secured.

The district consists of 442 residential and commercial hookups and an estimated population of 1,109. If the district receives the grants requested, the anticipated monthly water rate will be $65.00. The proposed rates are deemed affordable.

Benefit Assessment

The project will provide direct, quantifiable benefits. The project will result in resource conservation through the installation of water meters. Water meters will also allow the City of Great Falls to quantify and manage water system leakage. The recommended alternative also combines five separate small water systems into a central system under the control of the city.

Environmental Evaluation

There do not appear to be any long-term adverse impacts attributable to the construction of the new water distribution mains and water meters. The uniform environmental checklist has been completed, and the selected alternative either will result in no impact on the environment or will have a beneficial impact on the environment.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 37

Applicant Name	Gallatin Local Water Quality District	
Project Name	A Dedicated Monitoring Well Network for the Gallatin Valley	
Amount Requested	$ 99,884	Grant
Other Funding Sources	$ 23,595	Applicant
	$ 12,260	Montana Bureau of Mines and Geology (MBMG)
Total Project Cost	$ 135,739	
Amount Recommended	$ 99,884	Grant

Project Abstract (Prepared and submitted by applicant)

This project will install up to 16 dedicated monitoring wells in the Gallatin Valley to enhance current monitoring and replace some domestic wells being used as long-term monitoring points. New wells will be constructed specifically for monitoring purposes and will be sited on public land or private land with legal easements. A technical advisory committee will oversee the project. The project will be integrated with the MBMG Statewide Monitoring Program and Groundwater Characterization Program. All information generated by the new monitoring wells will be available through the Groundwater Information Center at MBMG.

The project's purpose is to provide additional scientifically sound groundwater resource monitoring information to all interested parties. This project is a cooperative effort by the Gallatin Local Water Quality District, which was formed in 1997, and MBMG. Both the district and MBMG are monitoring groundwater in the valley, but current networks rely mainly on domestic wells. Using domestic wells for long-term water-level monitoring poses problems such as access limitations caused by ownership changes, potential liabilities, and sometimes, questionable water-level or water-quality data. Additionally, important areas in the Gallatin Valley have no monitoring wells.

The project will assist managers in evaluating impacts of growth, drought, and land use change. Examples of anticipated benefits include improved groundwater monitoring up gradient of the Belgrade

public supply wells, monitoring in the rapidly growing Four Corners area, and monitoring in areas currently experiencing declines in groundwater availability. Some of these areas are the newly created Sypes Canyon Controlled Groundwater Area, and the Mountain View subdivision area located between Bozeman and Belgrade. A well is also proposed in the Bridger Canyon area, where no monitoring wells currently exist. The district has the technical and financial ability to provide long-term monitoring and maintenance of the network.

Technical Assessment

Project Background

Some of the 16 dedicated groundwater-monitoring wells in the Gallatin Valley will be placed around the communities of Bozeman, Belgrade, Four Corners, and Manhattan. All of these communities, along with the surrounding valley areas, are experiencing significant growth and changes in land use patterns.

Historically groundwater monitoring in the Gallatin Valley has relied on privately owned wells. With funding assistance from a DNRC Renewable Resource grant, in 1997 and 1998 the district worked with the U.S. Geological Survey (USGS) to assess potential sources of nitrate in groundwater within the district. While the project did establish a network of domestic wells for monitoring, it did not include any formal access agreements. Difficulties have arisen because access is uncertain, data collected from wells that are pumped may not represent natural conditions, monitoring probes can be difficult to insert and remove from domestic wells, and there is potential for liability issues. In contrast, dedicated monitoring wells on public land and private land with legal easements would give reliable long-term access, and a network of properly constructed monitoring wells would provide the most accurate groundwater information for long-term trend analysis.

Technical Approach

The project goal is to establish a permanent, dedicated groundwater-monitoring network for the Gallatin Valley, including previously unmonitored areas. To accomplish this goal, the district will install dedicated monitoring wells in areas where groundwater information is lacking, install wells in key locations to replace domestic wells currently being monitored, collect water quality samples to establish baseline water quality in previously unmonitored areas, and establish a permanent network of monitoring wells by combining new well locations with existing monitoring well locations. Information collected will be readily available to the public via the Internet through the Groundwater Information Center and the Natural Resource Information System. The district will also work with Montana State University and other education organizations to utilize the wells and monitoring program for educational purposes.

The application considered an alternative of continuing to use domestic wells for monitoring. This alternative was rejected because the data are often limited and questionable and there are several liability issues. Monitoring equipment sometimes gets stuck because of domestic well hardware and then the pump must be pulled and the well decontaminated. Workers have been shocked by underground wires, and one worker was accused of contaminating a well when removing the cap. A second alternative of reducing the number of wells was presented but not preferred because monitoring in some portions of the valley would be precluded.

To achieve its goals with a relatively small number of wells, a technical advisory committee will select optimum well locations. The network of dedicated monitoring wells will be augmented with private wells. Project coordination should be sufficient to avoid most problems. The proposed project schedule appears reasonable. The three months allowed seems adequate for obtaining access agreements for good monitoring sites.

Project Management

The district will administer and manage the project, and will assist with on-site drilling operation when possible. The district will form a technical advisory committee to provide overall project oversight such as selecting well locations, setting well design standards, and establishing procedures for collecting water

quality samples. MBMG will provide technical oversight, monitor drilling activity, oversee well completion and development, log wells, install monitoring equipment, and collect samples.

Both the district and MBMG have experience with this type of grant project. In cooperation with USGS, the district successfully completed a 1997 Renewable Resource grant that assessed potential sources of nitrate in groundwater within the district. MBMG, in cooperation with the Lewis and Clark Water Quality Protection District, has recently completed a Renewable Resource Grant project for the Helena area groundwater quality-monitoring network.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$2,254	$0	$4,975	**$7,229**
Professional & Technical	$18,432	$0	$17,014	**$35,446**
Construction	$79,198	$0	$13,866	**$93,064**
Total	**$99,884**	**$0**	**$35,855**	**$135,739**

Most of the project costs, $73,498, are associated with well materials, contracted drilling services, and a 10% contingency. Drilling costs were estimated from contacts with Bozeman area well drillers. Other significant costs are $14,432 for professional staff services (MBMG), $5,700 for 12 digital well data loggers, and $4,000 for water quality analysis. Professional services costs from MBMG include technical project oversight and management and hydrologic fieldwork. MBMG well drilling and completion oversight includes collecting cutting samples, logging well lithology, determining completion depths, determining screened interval depths, collecting water-quality samples, preparing well logs, and preparing a final report.

Overall cost estimates appear reasonable. In particular the drilling costs for labor and materials appear realistic. The matching funds are secured. The district is matching $23,595 with a cash reserve set aside for this project. MBMG is providing $12,260 as an in-kind contribution of a hydrogeologist's salary, benefits, and overhead costs.

The district will work with MBMG to ensure long-term monitoring of the wells. The well locations will be selected to supplement and improve the MBMG statewide monitoring program and to address local concerns of the district. To this end, both agencies will work together in the future to monitor the network. To ensure the long-term financial feasibility of the project, the district is prepared to assume full responsibility for monitoring, maintenance, and record keeping of the wells.

The project area covers 490 square miles and reduced funding would result in critical areas of the valley being unmonitored.

Benefit Assessment

This project will primarily improve government and citizen ability to manage the groundwater resources for the Gallatin Valley and conserve groundwater quantity. Data collected will be used to evaluate water availability for water right applications, mediate water right disputes, detect changes in water levels and water quality, and manage septic system density. The project will assist a wide range of interested parties such as the county planning office, county commission, county health department, local DNRC water rights office, and citizen advocate groups. These groups will be able to evaluate impacts of growth, drought, land and water use changes, and other changes in the Gallatin Valley, and make better-informed, long-term planning, permitting, and management decisions.

For example, the monitoring wells will provide long-term records of drought impacts to groundwater to assist the Gallatin County Health Department with managing septic system density through permitting and siting septic systems. DNRC designated a temporary controlled groundwater area (CGWA) because Sypes Canyon water levels appear to be declining. Hydrograph data from two monitoring wells proposed

for Sypes Canyon will indicate whether groundwater is in fact declining. These data will help DNRC decide whether to designate a permanent CGWA and what CGWA restrictions would be necessary. The city of Belgrade relies on groundwater for its drinking water supply. The rapidly growing Four Corners area is upgradient of Belgrade and almost all of the commercial and residential development in the Four Corners area use individual septic systems. One of the proposed monitoring wells would be installed upgradient of the Belgrade water supply wells to provide early detection of water quality changes. The district estimates the number of residents benefiting from this project to be from 8,000 to 22,000.

Environmental Evaluation

The applicant has accurately identified drilling in sensitive environmental areas as the primary potential source of adverse environmental impacts. Careful selection of drilling locations to avoid environmentally sensitive areas such as unstable slopes, critical plant and wildlife habitat areas, wetlands, and floodplains should mitigate long-term impacts. The technical advisory committee will be reviewing each site and alternative locations will be found if necessary.

Funding Recommendation

DNRC recommends grant funding of $99,884 upon approval of a project scope of work, administration, and budget.

Project No. 38

Applicant Name	Troy, City of	
Project Name	Water System Improvements	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 400,000	Community Development Block Grant (CDBG)
	$ 400,000	Montana Rural Development (RD) Grant
	$ 630,800	Montana Rural Development (RD) Loan
	$ 500,000	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 2,030,800	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The City of Troy's water system consists of predominately steel mains, galvanized services, two wells, and a 125,000-gallon storage tank. There are 532 residential users. The service area is divided by the railroad and Callahan Creek. Until the early 1990s, the supply was from O'Brien Creek.

At least half the water produced is lost to leakage. One of the wells is relatively shallow and is most likely the source of frequent bacteriological contamination. There are no meters on the services. The storage is not adequate for domestic needs or fire flows.

The city proposes to drill a new well as a backup to the questionable well, add disinfection to the wells, construct a new storage tank, replace the services, install meters on all the users, and replace several sections of main that have an extensive record of repairs caused by severe deterioration.

Technical Assessment

Project Background

The city water system consists of predominately steel water mains, galvanized steel service lines, two wells, and a 125,000-gallon storage reservoir. The city's distribution system is plagued with leaks as

documented in a leak detection survey. Undersized and dead-end water mains also contribute to low pressures and inadequate fire flows. One of the water supply wells has a history of bacteriological contamination and has recently been determined to be under the influence of surface water and cannot be used without additional treatment. The 125,000-gallon storage reservoir is inadequate for both domestic and fire flow demands. Hydrant testing and a hydraulic model have shown that the undersized and deteriorated mains result in inadequate pressures during normal domestic use and cannot provide adequate fire protection.

Technical Approach

The goals of the proposed project include:

1. Provide an additional water supply well to replace an existing well that is under the influence of surface water.
2. Provide additional storage to supplement the water supply wells during times of peak domestic use and to provide adequate fire protection storage.
3. Improve water distribution system pressures during peak water demands and fire flow conditions.

The goals will be met by construction of a new water supply well with disinfection treatment, construction of a new 180,000-gallon water storage reservoir, replacement of approximately 1,900 lineal feet of existing water main, installation of water meters, and replacement of service lines. The new water supply well will replace the existing well documented to be under the influence of surface water. The new 180,000-gallon elevated water storage reservoir will be adequate to supplement the new water supply wells during times of high demand and provide adequate storage volume for fire protection. The replacement of 1,900 lineal feet of water main proposed in this project will reduce system leakage and increase fire protection. Installation of meters will allow the city to monitor for future leaks and will likely result in water conservation. Replacement of service lines will reduce water system leakage. Water rights related to the change of point of use on a groundwater source will need to be filed.

The preliminary engineering report (PER) determined that the proposed improvements represent the most cost-effective and environmentally acceptable solutions to the documented deficiencies. The recommended improvements will achieve compliance with state and federal standards. The proposed schedule is to begin design of the facilities in early 2003 and initiate construction in April 2003, with completion and start-up later that year.

Project Management

Staff includes the mayor, the town clerk/treasurer, a professional administrative consultant, and an engineering design consultant. The proposed staff appears adequate to successfully manage the project from planning through completion and closeout. The project management plan addresses public involvement and proposes to continue the public awareness program developed during the planning stages of the project through completion and project closeout. The project management plan appears to provide for thorough and well-organized contract management with regulatory and funding agencies, consultants, contractors, and any other involved parties.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$1,600	$0	$36,450	**$38,050**
Professional & Technical	$50,000	$0	$137,850	**$187,850**
Construction	$48,400	$0	$1,756,500	**$1,804,900**
Total	**$100,000**	**$0**	**$1,930,800**	**$2,030,800**

The budget appears to be sufficient to fund the proposed project. Unit costs used to develop the budget appear to be reasonable and adequate. The costs of the various alternatives evaluated in the PER

appear to have been developed in a consistent manner, and the proposed project was determined to be the most cost-effective alternative.

The proposed funding package is reasonable and consists of a combination of a grant from the Department of Commerce (DOC) TSEP and CDBG programs and a grant and loan package from the U.S. Department of Agriculture (USDA) RD program. The TSEP grant application has been submitted to the DOC. The CDBG grant application will be submitted in January 2003. The RD grant and loan application will be submitted in January 2003. Commitment of RD funds is anticipated.

The city currently provides service to 555 residential, commercial, and institutional hookups and an estimated population of 1,121. The current monthly water rate is $14.00. If the city receives the grants requested, the anticipated monthly water rate will be $22.59. The proposed rates are deemed affordable.

Benefit Assessment

The project will provide direct, quantifiable benefits. The project will result in resource conservation through the reduction of water system leakage and subsequent reduction in energy use from pumping. The installation of individual meters will also result in water conservation and will allow the city to manage the new water supply. Groundwater, a renewable resource, will be developed for beneficial use.

Environmental Evaluation

There do not appear to be any long-term adverse impacts attributable to the construction of the new wells, storage tank, or distribution main. The uniform environmental checklist has been completed and the selected alternative either will result in no impact on the environment or will have a beneficial impact on the environment.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 39

Applicant Name	Montana Department of Corrections	
Project Name	Prison Ranch Dam Rehabilitation	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 190,665	Applicant (Prison Ranch Proprietary Fund)
	$ 338,740	In-kind contributions
Total Project Cost	$ 629,405	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The prison ranch uses eight reservoirs for irrigation. The City of Deer Lodge also uses one of these reservoirs. Five of the reservoirs have dams that are classified to be high-hazard. The term high-hazard refers to the potential for loss of life downstream, should the dam fail. In addition, downstream infrastructure at risk includes portions of the City of Deer Lodge, prison ranch buildings, and paved roads.

The prison ranch dams range in age from 30 to 50 years old. As with most old earthen embankments, these dams have deficiencies. It is necessary to make several upgrades to these dams in order to meet the required standards set forth by the Montana Dam Safety Act (MDSA). In a prison ranch dam long-term planning study, conducted by DNRC, deficiencies were prioritized according to severity, potential for

downstream loss of life and property damage, and cost/ease of repair. Through diligent work by the prison ranch, two of the five high-hazard dams are in compliance, and a third will be in compliance by September 2002.

This application pertains to the construction work necessary for Upper Taylor Dam to be in complete compliance with MDSA. Upper Taylor Dam was identified by the Dam Safety Program to be the highest priority for rehabilitation in the state. Engineering work was recently completed on this dam to identify the best repair alternatives, estimate construction costs, and develop the final construction designs. The RRGL grant and prison ranch proprietary funds will be used to complete the construction work identified to rehabilitate (1) the spillway by enlarging, extending, and lining with rock-filled gabions, and (2) the outlet by lining the existing pipes with cured-in-place plastic.

Technical Assessment

Project Background

The prison ranch stores irrigation water in eight reservoirs as part of the overall ranch operation. Five of the dams have been classified as high-hazard because of the potential loss of life should one of them fail. Upper Taylor Dam, the subject of this application, was constructed in 1951. The dam is 43 feet high, 680 feet long, and impounds 296 acre-feet of water when full. As with most earthfill dams this age, deficiencies exist that must be corrected in order for the structure to meet current dam safety standards. More specifically, this project proposes to increase the stability and capacity of the dam's emergency spillway to prevent water from overtopping the dam during an extreme precipitation event and to rehabilitate the deteriorated outlet works.

The scope of work proposed in this application is the result of a study and report prepared by a consulting firm during the past two years. Funded by this program, the study also identified work to be done on other prison ranch dams. The spillway for Upper Taylor Dam is considered by DNRC to be severely undersized. Accordingly, the rehabilitation of Upper Taylor Dam has been identified as a high priority by the DNRC Dam Safety Program.

Technical Approach

The primary goal of this project is to preserve an existing high-hazard dam by bringing it into compliance with dam safety standards. Specific deficiencies to be addressed are an undersized spillway and a 51-year old corrugated metal outlet pipe that, should it fail and leak, could lead to failure of the dam due to internal erosion, or piping. Because this dam is located a few miles west of the Montana State Correctional Facility and the City of Deer Lodge, failure could result in loss of life. Although discussed as an alternative, to do nothing is unacceptable, and would result in breaching and abandonment of the dam and reservoir. Six alternatives were considered for spillway improvement. The selected alternative is to enlarge, extend, and line the existing spillway with rock-filled gabions, or heavy wire mesh baskets, designed to provide long-term stability similar to that provided by rock riprap but usually at a reduced cost. Five alternatives were considered for outlet works rehabilitation. The selected alternative is to line the existing pipes with cured-in-place pipe and abandon the existing and seldom-used overflow riser.

Spillway rehabilitation and outlet works rehabilitation could be done simultaneously. It is estimated that the spillway work will take one construction season, or about four months beginning in the late summer when the reservoir is low or empty. The Anaconda Job Corps is being proposed for heavy construction activities associated with this work, and the actual year of construction will depend upon Job Corps availability. The current proposal is for work to be done in 2003.

Project Management

The prison ranch director will be the project manager for this project. A professional engineer will be retained by the applicant and will be responsible for construction oversight with limited project management duties. Administrative activities will be performed by existing prison ranch staff. The prison ranch director will be responsible for coordination with local and state agencies, including the

procurement of construction permits. The director will also keep the media and local community apprised of progress, since public access may be affected and will be an issue during the fall months. The prison ranch director will also coordinate activities involving the Job Corps, the prison ranch, contractors, and the engineer.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$0	**$0**
Professional & Technical	$20,000	$0	$38,500	**$58,500**
Construction	$80,000	$0	$490,905	**$570,905**
Total	**$100,000**	**$0**	**$529,405**	**$629,405**

Administrative duties associated with this project will be performed by existing prison ranch staff and the prison ranch director. Because of this, no administrative costs are shown in the budget, as they may be considered fixed program costs. A substantial portion of the costs will be met with match funding consisting of $190,665 from the Prison Ranch Proprietary Fund, $215,240 from prison ranch in-kind services (mostly labor) and $123,500 from the Anaconda Job Corps heavy equipment training program.

This will be the second prison ranch dam rehabilitation project to be successfully constructed using RRGL grant dollars in conjunction with prison ranch labor and the Job Corps. The scenario lends itself to providing a nearly unlimited contingency should unforeseen conditions or additional work become necessary during the course of the project.

The budget is adequate. Engineering costs are estimated at about 9% of the total cost of the project; this lower-than-average percentage is due in large part to the fact that most project management duties will be handled by the prison ranch director. Actual construction cost estimates are based on a technical report prepared by a consultant during the past two years, and are based on historic costs for similar work. They appear to be very complete.

The only concern with the match funding is the availability of the Job Corps. In the event heavy construction equipment is not available for an entire construction season, two seasons may be required to complete the work.

Benefit Assessment

The primary resource benefit associated with this project is the preservation of an existing facility that, in conjunction with seven other dams, makes it feasible to irrigate 2,500 acres. The project will bring Upper Taylor Dam into compliance with dam safety requirements, and will provide protection of downstream life and property. The indirect benefits of the project, those that are already being provided by Upper Taylor Dam, include conservation and management as well as the enhancement of riparian areas, fish and wildlife habitat, and some multiple use.

The prison ranch maintains a herd of about 1,700 cattle, and an equal number of yearlings. The operation lends itself to the overall financial operation of the correctional facility, and this project and the continued operation of Upper Taylor Dam will provide obvious economic benefits to the state.

The project has public support as demonstrated in letters submitted with the application from state agencies, Powell County, and the Deer Lodge Valley Conservation District.

Environmental Evaluation

The Upper Taylor Dam project will have minimal environmental impact. The original size of the dam and the reservoir are not being changed. Short-term construction impacts will be minimal since the project site is located on the prison ranch and is not accessible to the public except under special circumstances.

The reservoir is not a fishery, and disturbances to waterfowl will be minimal since construction will not be performed during the nesting season.

The positive environmental benefits of the project include the continued storage of irrigation water as well as the safety and health of persons and property below the dam as far away as Deer Lodge.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 40

Applicant Name	Fort Shaw Irrigation District	
Project Name	Water Quality and Quantity Improvement Project Phase III	
Amount Requested	$ 89,122	Grant
Other Funding Sources	$ 78,170	Applicant
	$ 7,100	Sun River Watershed
	$ 15,125	U.S. Bureau of Reclamation (USBR)
Total Project Cost	$ 189,517	
Amount Recommended	$ 89,122	Grant

Project Abstract (Prepared and submitted by applicant)

The Fort Shaw Irrigation District is the second largest irrigation project on the Sun River, distributing water to approximately 10,000 acres on 177 farms between the towns of Simms and Sun River. This aging system includes 12 miles of canal, 89 miles of laterals, and hundreds of turnouts and cement structures. The irrigation project was originally completed in 1908 and has had very few upgrades until recently. Despite all the work accomplished over the past seven years, the many previous years of neglect have left the system in dire need of repair. Maps depicting past work, current work in-progress, and proposed projects demonstrate there is still a lot to be accomplished to conserve water, control erosion, and improve water quality in the Sun River.

Starting in 1996, the district began an aggressive water quality and quantity improvement project. This included installation of a remote operated headgate, canal lining, and flow monitoring devices, and a water conservation study.

This project will move on to Phase III goals which are to: (1) continue to improve overall irrigation efficiency, (2) reduce losses from delivery systems, and (3) improve water quality and quantity in the Sun River from these improvements. It will accomplish this by replacing irrigation turnouts to effectively monitor on-farm consumption, removing and installing new delivery systems, continuing the ditch lining program to reduce the significant seep problem, and monitor improvements. These improvements will increase the efficiency of the system, divert less water (allowing more water to remain in the Sun River), and improve water quality from reduced erosion and reduced chemicals and salinity in the return flows.

The project will reduce water consumption and diversion from the Sun River by 15%. Water quality improvements of 10% should be achieved in the return flows. An active monitoring program to document actual improvements is in place.

Technical Assessment

Project Background

The district is located west of Great Falls on the south side of the Sun River. The district distributes water to approximately 10,000 acres on 177 farms. This project is Phase III of a water conservation and management project to reduce water consumption and improve water quality and quantity in the Sun River. The improvements will impact small farmers, fisheries, wildlife, and recreation in the area, as well as drinking water.

Technical Approach

The goals of this project are: 1) to improve overall irrigation efficiency and 2) improve water quality and quantity in the Sun River.

The objectives of the project are:

- Replace 20 farm turnouts
- Replace 4 lateral ditch control valves
- Line approximately 3,500 feet of earth canal
- Replace the K-Ditch headworks
- Replace an earth canal with 1,200 feet of PVC pipe

Three alternatives were discussed regarding the installation of the pipeline to replace the canal. The only alternative discussed for the remaining parts of the project was the no-action alternative. The application lacked technical documentation regarding the selected alternatives, but the chosen alternative was well documented. USBR will provide technical input, and some excavation work will be done by a contracted professional. The remaining work will be done by district staff, the Sun River Watershed coordinator, and USBR. All easements and permits to do the work have been obtained. Work is expected to begin in August 2003.

Project Management

The district will manage, coordinate, and administer the majority of the project. District secretarial staff will assist in administration. USBR and the Sun River Watershed coordinator will provide technical assistance. The district will coordinate with all local, state, and federal agencies that have any jurisdiction with the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$7,545	**$7,545**
Professional & Technical	$0	$0	$19,600	**$19,600**
Construction	$89,122	$0	$73,250	**$162,372**
Total	**$89,122**	**$0**	**$100,395**	**$162,372**

Proposed funding for the project appears to be adequate. Material, labor, and equipment costs used to develop the budget appear reasonable. The selected alternatives are common solutions to common problems.

The proposed funding package is a reasonable mix of local, federal, and state funds. Some local and federal funding will be in the form of in-kind work/services.

District assessments will be increased by $2/acre. This will be in addition to a $1.50/acre increase in 2001 that was designated for new projects. The increase will bring total assessments to $15/acre. The

increase will remain in effect to pay for future system improvements. The application indicates that this assessment is affordable to the water users.

Benefit Assessment

Long-term renewable resource benefits will be realized in the conservation and management of natural resources. The project will eliminate leaks from turnouts, measure water use, eliminate seepage from canals with lining, and eliminate soil erosion and seepage. The application states that 4,500 acre-feet of water will be conserved annually, resulting in an increased quantity of water remaining in the Sun River. Better water management will result in less non-point source pollution from field run off to the Sun River. Resource protection and development will also result from improved management.

Environmental Evaluation

No long-term adverse environmental impacts will occur as a result of this project. Detailed information on wetlands, threatened and endangered species, soils and water quality must be addressed in the final design report. The irrigation district has procured all necessary permits.

Funding Recommendation

DNRC recommends grant funding of $89,122 upon approval of a project scope of work, administration, and budget.

Project No. 41

Applicant Name	Butte-Silver Bow Local Government	
Project Name	Basin Creek Dams #1 and #2 Site Improvements	
Amount Requested	$ 100,000	
Other Funding Sources	$ 303,006	Applicant
	$ 403,006	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 806,012	
Amount Recommended	$ 100,000	

Project Abstract (Prepared and submitted by applicant)

Basin Creek Dams #1 and #2, located in Butte-Silver Bow County, were built in the late 1800s and early 1900s. No major site improvements have been completed on either dam since initial construction. Both dams are classified as high-hazard dams by the DNRC Dam Safety Division, and both dams are a critical component to Butte-Silver Bow's potable water supply system, supplying approximately 36% of Butte's drinking water.

Both dams require significant upgrades to bring them into compliance with Montana Dam Safety Act (MDSA) requirements for high-hazard dams. The emergency spillway on each dam must be expanded and rehabilitated to allow the dams to safely pass large storm events. In addition, critical elements of Basin Creek Dam #1 require replacement to allow safe dam operation into the future, to ensure the safety of local residences, and to allow the dam to supply potable water to the city of Butte.

The proposed project would involve improving the emergency spillway of each dam. In addition, critical elements of Basin Creek Dam #1, such as the parapet wall, outlet works valving, real time reservoir level monitoring system, and dam access would be improved. This will allow each dam to meet MDSA requirements, allow Basin Creek Dam #1 to continue to supply potable water to the city of Butte, and ensure the safety of local residences.

Technical Assessment

Project Background

Basin Creek Dams #1 and #2 are located in Silver Bow County approximately nine miles southwest of Butte. The dam provides storage for drinking water supply for the area served by the Butte-Silver Bow Public Works Department. In addition, the dams provide protection to recreation areas and the population below the dams. The projects directly benefit approximately 15,000 people.

The dams were constructed in the late 1800s or early 1900s. No major improvements have been made to the dams since construction. Both dams are classified as high-hazard by DNRC. Both dams need spillway improvements to meet the requirements of the MDSA for high-hazard dams. Other critical elements of the dams needed to meet public safety issues are being addressed.

Technical Approach

The project goals are:

- Upgrade the existing spillways on the two dams to bring them into conformance with the MDSA
- Make other improvements as needed to resolve existing safety issues with the dams

Alternatives considered in addressing the problem were:

1. No Action;
2. Repair and upgrade the Basin Creek dams; and
3. Provide an alternate water source.

The project as proposed will comply with all current standards and regulations. Permitting requirements will be relatively straightforward. The project will require normal coordination, contract administration, etc. While being time consuming, this should not hinder the project. No specific schedule is presented, but most of the pieces are in place to complete the design phase of the project and award a contract.

Project Management

Management for this project will be typical of relatively complex projects of this type. The Butte Silver Bow Water Utility Department (BSBWUD) will be the primary project manager. It will contract with a principle engineering firm to handle final design and construction oversight. BSBWUD will handle tracking of all aspects of the engineering contract as well as the construction contract. The engineering consultant will handle design and construction oversight and provide support and advice to BSBWUD. BSBWUD will also handle to coordination of efforts between agencies and will handle the public input aspects of the project. BSBWUD has the experience and ability to handle the primary management responsibilities.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$6,252	$0	$44,124	**$50,376**
Professional & Technical	$18,755	$0	$132,573	**$151,127**
Construction	$74,993	$0	$529,515	**$604,509**
Total	**$100,000**	**$0**	**$706,012**	**$806,012**

The budget appears to be sufficient to fund the proposed project. Costs used to develop the budget appear reasonable and adequate. The proposed project was determined to be the most cost-effective alternative.

The proposed funding package appears to be a reasonable mix of state and local or federal funding. BSBWUD will have an approximate 38% share in the project. The remainder will come through an RRGL grant and a TSEP grant which will be considered by the 2003 Legislature. The proposed funding will result in no additional annual cost to the water users

Benefit Assessment

The project will preserve and enhance the existing drinking water source for the 1,500 people served by the system. The proposed project will also decrease long-term operation and maintenance costs to the district. It will increase the safety of the existing dam, providing greater assurance that a failure will not occur, and that downstream recreation developments will be protected.

Environmental Evaluation

The only adverse impacts associated with this project are short-term, primarily construction related impacts. Typical problems, such as dust pollution and noise related to construction activities will occur on a short-term basis. No long-term adverse impacts are anticipated.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of project scope of work, administration, and budget.

Project No. 42

Applicant Name	Hill County	
Project Name	Beaver Creek Dam Outlet Works Repair Project	
Amount Requested	$ 100,000	Grant
	$ 400,000	Loan
Other Funding Sources	$ 3,000	Natural Resources Conservation Service (NRCS)
Total Project Cost	$ 503,000	
Amount Recommended	$ 100,000	Grant
	$ 400,000	Loan

Project Abstract (Prepared and submitted by applicant)

Beaver Creek Dam was planned, designed, and partially funded by NRCS and completed in 1974. The dam is owned, operated, and maintained by Hill County. This structure was planned for multi-purpose uses and provides flood prevention, irrigation, recreation, and fish and wildlife uses.

The existing outlet works consist of a 30-inch concrete pipe with an upstream guardian gate, downstream pressure chamber with regulating gates, and baffled outlet. The 10- and 30-inch slide gates are used for regulating reservoir releases. In spite of using two valves, both gates have suffered cavitation damage. The gates are located inside the pressure chamber, making inspection difficult. One person cannot remove the cover, and resealing the cover is difficult. The lift for the 30-inch gate is broken, repairs have been unsuccessful, and individual replacement parts are unavailable. The entire gear assembly and gate will need replacing. Without this gate operating properly, water cannot be managed in a timely manner to plan for storage needs from spring runoff and/or flood events. The 30-inch gate is also critical for lowering the water surface quickly if emergency repairs are needed.

According to DNRC, the existing dam outlets create a safety concern. The dam is classified as high-hazard because of the potential for loss of life.

Currently, the existing system leaks with a loss of three acre-feet per day. This is due to cavitation and seating of the gate assemblies within the pressure chamber. The gates are also 30 years old and have exceeded their useful life.

This project is to mitigate problems with the outlet works at Beaver Creek Dam. This proposal (Phase I) will replace the existing outlet works' pressure chamber and slide gates with a fixed-cone valve.

Technical Assessment

Project Background

Beaver Creek Dam is located about 13 miles south of Havre in Hill County. The dam provides storage for flood control, irrigation, recreation, and fish and wildlife.

The dam was constructed in 1974 by NRCS under the PL-566 program. The dam is now owned by the county. A five-year inspection report completed by NRCS in 1999, made recommendations for the repair of several aspects of the dam. Two major concerns from this report that still need to be addressed include outlet system repairs and some seepage concerns. This proposal deals with the gate system repairs. The seepage repairs will be made in the future. The presented analysis considered alternatives for repair of the dam that included both this phase of work as well as the future work on the seepage problems.

There is no question that these repairs are needed. NRCS and the county will need to resolve some of issues with the methodology, but this will be done in the design phase.

Technical Approach

The project goal is to make repairs to the dam as recommended by the 1999 five-year inspection report. This phase will concentrate on the repair of the outlet works. The project will improve the operation of the gate works for better management of the releases from the reservoir. It will also eliminate the cavitation that is presently occurring.

Alternatives considered in addressing the problem included installation of various types of gates and valves along with the alternative of gate repairs. The repair alternatives were cheaper but not selected because they did not address the long-term problem of cavitation as completely.

There is presently some disagreement between review agencies and the engineer as to the extent of the required work. This will be resolved in final design. Funding requests and availability are adequate regardless of the approach taken. NRCS will have to approve final design of the proposed repairs prior to installation.

The project as proposed will comply with all current standards and regulations. Permitting requirements will be reasonably straightforward. The project will be implemented through a traditional design and construction bid process. While being somewhat time consuming, there is no reason to believe that this approach will not be effective and can be accomplished within the proposed schedule. Public involvement is included in the proposal.

Project Management

The Bear Paw Development Economic District has been designated by the county as the grant administrator and responsible for overall project management. An engineer will be hired to provide final project design and to manage and oversee the construction contract. NRCS must approve any revisions to the dam and will provide review, approval, and guidance input to the project. A complete implementation schedule has been developed and is realistic.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$5,857	$12,000	$0	**$17,857**
Professional & Technical	$23,399	$14,999	$3,000	**$41,398**
Construction	$70,744	$373,011	$0	**$443,745**
Total	**$100,000**	**$400,000**	**$3,000**	**$503,000**

The budget appears sufficient to fund the proposed project. Costs used to develop the budget appear to be reasonable and adequate. Final design and negotiation between the county and NRCS will determine the best final approach to the project. It is possible that, depending on the final chosen approach to the repairs, a smaller loan would be required. The proposed project was determined to be the most cost-effective alternative.

The proposed funding package appears to be a reasonable mix of state and local or federal funding. The state portion of the funding will be provided through an RRGL grant and an RRGL loan, both of which will be considered by the 2003 Legislature.

Benefit Assessment

A primary benefit of the project is to preserve the existing dam in a safe manner.

The project will provide conservation of the limited water resource and ensure that it will be available for long-term future use. Improvements to the gates will allow for proper management and use of the water in the reservoir. With better control of the outlet system, a high water level can be maintained in the reservoir, which will improve the fish and wildlife and recreation benefits realized by the dam.

The project provides for water delivery to the Chippewa Cree tribe. This benefit will be ensured in the long term with the completion of this project.

The proposed project will also decrease long-term operation and maintenance costs to the owners. It will increase the safety of the existing dam, providing greater assurance that a failure will not occur.

Environmental Evaluation

The only adverse impacts associated with this project are short term, primarily construction related impacts, such as dust pollution and noise related to construction activities. Some potential for construction-related storm water runoff issues exist, but the proposal address the need to mitigate these issues. No long-term adverse impacts are anticipated.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget. Also recommended is a loan authorization of $400,000. Recommended terms of the loan are 4.5% for up to 20 years.

Project No. 43

Applicant Name	Melstone, Town of
Project Name	Water Conservation System
Amount Requested	$ 99,929 Grant
Other Funding Sources	$ 0
Total Project Cost	$ 99,929
Amount Recommended	$ 99,929 Grant

Project Abstract (Prepared and submitted by applicant)

The Town of Melstone is facing a severe shortage of water supply. The only water source currently available is the Musselshell River, which was already nearly dry in May 2002, when it should be at its highest flow. The town is currently trying to rehabilitate an old oil well to produce water from an aquifer about 3,000 feet below the surface. This has been done with two other area wells, though the quality was very poor. The yield will be about 20–40 gpm, based on the results from the other two wells. This is not sufficient to meet the town's average day demand of 36,000 gallons, and is definitely insufficient to meet a peak day demand. If reverse osmosis (RO) is used to treat the water, there would be significant waste of water due to very high alkalinity and other contaminants. The current surface water treatment system also has lost water due to backwashing.

The town did have success in using a "scouts honor" approach to water conservation, but meters are required to have any true conservation program. Much waste is often from leaks that no one may even be aware of. Through use of meters, all water beyond the main distribution system will be accounted for.

The proposed conservation project will be integral to any new source development and treatment system. By installing a metering system now, the town will be able to stretch out its limited raw water supply (in the expanded reservoir paid for by the town), and if an RO system is installed, lower demand will limit O&M costs.

Technical Assessment

Project Background

The town is located in eastern Musselshell County, north of the Musselshell River and north of U.S. Highway 12, about 22 miles east of Roundup. The recent drought has been especially harsh in the Musselshell watershed. The area relies on the Musselshell for irrigation water and drinking water. The flows in the Musselshell stopped in some areas last fall and levels this spring looked more like late summer. The town anticipates it has approximately one month of storage in raw water ponds. The U.S. Army Corps of Engineers (COE) has offered to use water trucks, but the water would need to be transported from Lewistown, more than 100 miles away.

The town is working toward rehabilitating an existing oil well. Unfortunately, the water quality (based on data collected from 2 similar wells) is anticipated to be extremely poor. A water treatment facility such as a reverse osmosis (RO) system will be required to treat the water. The flow rates from the rehabilitated well are expected to be only 20–40 gpm. If the production rate is toward the lower end, it would not be sufficient to meet the current (unmetered) average day demand of 36,000 gpd.

Technical Approach

The proposed project is to purchase and install water meters. This conservation project will be integral to any new source development and treatment system. Based on data presented in the application, a comparison of metered communities to un-metered communities suggests that meters may account for a 66% reduction in water usage. By installing a metering system now, the town will be able to stretch out its limited raw water supply and if an RO system is constructed, the lower demand will limit O&M costs.

For analysis and comparison purposes, the technical narrative conservatively assumed that meters would reduce the demand from the Melstone users by 25% and 50%. A preliminary cost analysis was performed looking at three water treatment alternatives (nanofiltration, RO, and ultra-filtration), each with and without installing meters. The results of the cost comparison indicated that the installation of meters would result in savings of more than $100,000 in capital costs alone regardless of the treatment alternative selected. The project is reasonably scheduled for completion in October 2003.

Project Management

The town will administer all aspects of the proposed project with advice provided by the project engineer. The proposed project management plan identifies adequate and capable staff (town clerk) to successfully administer and manage the purchase and installation of water meters from planning through completion and closeout.

The project management plan recognizes and thoroughly provides for the management of all agreements and contracts associated with the proposed project, including the bidding procedures for purchasing and installing the water meters.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$0	**$0**
Professional & Technical	$13,034	$0	$0	**$13,034**
Construction	$86,895	$0	$0	**$86,895**
Total	**$99,929**	**$0**	**$0**	**$99,929**

The system is financially feasible. Cost estimates were clearly documented and appear reasonable. The current residential water rates average $37.95/month, which is 133% of the target rate. Though costs from this water conservation project will not impact assessments directly, rates will have to be increased as the town of 58 residences and 14 commercial properties pay off the existing bills on the water system and contribute toward its match for a preliminary engineering report grant. It is expected that water rates will increase to $43.66/month. O&M costs presented in the application included $60/month for reading and downloading meter data. The applicant presented cost estimates showing that the benefit to future O&M budgets (smaller water treatment system will be required with decreased water demand) far outweigh the estimated O&M costs for the water meters.

RRGL funds will be used to finance the engineering, materials and construction of new water meters/pits at each user's service connection. In some cases, where needed, adjacent curb boxes will be replaced at the same time. O&M costs will not be paid for from the RRGL grant.

Benefit Assessment

Water meters placed at the point of use will conserve water usage and help reduce the town's O&M costs and improve performance of its existing plant. This will also extend the amount of time the raw water reservoirs would be effective. The use of meters will allow more flow-by in the Musselshell River benefiting downstream users and riparian life. Installation of meters at the point of usage will help the town to manage the water by helping to locate leaks and identify homes with leaking fixtures. The proposed project is a necessary phase in preserving water service to the town.

The project will not impact recreational use of the Musselshell River, but it will increase flow, which will preserve habitat and protect riparian life downstream of Melstone. If meters are not installed and the water shortage problem is not solved, jobs will be lost. Documented support from Senator Burns, COE, Montana Department of Environmental Quality, and DNRC was included in the application. Public support does not seem to have been solicited yet, and is not included in the application.

Environmental Evaluation

The proposed improvements involve the installation of individual water meters on an existing service line located in road rights-of-way. Previously undisturbed soils will not be impacted. No long-term adverse environmental impacts are anticipated, in fact, the applicant suggests that environmental impacts would only be beneficial, in that this important water conservation measure would reduce the desire of residents to construct additional wells for water supply.

Funding Recommendation

DNRC recommends grant funding of $99,929 upon approval of a project scope of work, administration, and budget.

Project No. 44

Applicant Name	Glasgow Irrigation District	
Project Name	Vandalia Diversion Dam Rehabilitation, Phase III, Struts and Walkways	
Amount Requested	$ 100,000	
Other Funding Sources	$ 57,750	Applicant
Total Project Cost	$ 157,750	
Amount Recommended	$ 100,000	

Project Abstract (Prepared and submitted by applicant)

Glasgow Irrigation District proposes to:

- Provide conservation of the district's water resources by improving efficiency and reducing seepage and spill;
- Improve management of the water resource by better utilization of flows during the irrigation season; and
- Maintain water deliveries to irrigators by preserving the integrity of Vandalia Dam.

This proposal is for a grant to continue rehabilitation of Vandalia Diversion Dam. Constructed between 1913 and 1917, Vandalia Dam is the only diversion structure for the district. After more than 85 years of continuous operation, the facility is in need of significant rehabilitation. Phase I rehabilitated the canal inlet and tunnels. Phase II will rehabilitate the north bridge pier. Phase III will continue rehabilitation of the dam with the struts, walkways, and buttress walls.

Rehabilitation will preserve the structural integrity of Vandalia Dam, which is vital to delivery of irrigation water to district members. The district includes approximately 106 farms covering 18,011 acres. A rural population of approximately 591 persons relies on the project facilities for irrigation water delivery. Numerous others depend on the reservoir created by Vandalia Dam for irrigation pumping. Sportsmen enjoy the use of the reservoir for fishing. Water users upstream (irrigators and municipalities), will also benefit indirectly from the project.

The project facilities are the economic backbone of our agriculture community, and the key to the economic stability of the communities of Vandalia, Tampico, Glasgow, and Nashua. The district has been working since the late 1980s to rehabilitate, repair, and modernize project facilities. The district has completed a $2.2 million federal Rehabilitation and Betterment (RB) Project and several cost share grants with DNRC. District members have reduced their annual economic return in order to meet financial responsibilities created by the 1995 federally funded RB loan.

Technical Assessment

Project Background

Vandalia Diversion Dam is located on the Milk River about three miles west of Vandalia in Valley County. The diversion dam is the only source for diverting water into the Vandalia Main Canal. The dam diverts water for approximately 106 farms covering 18,011 acres. The reservoir behind the dam provides additional irrigation water through pump stations and provides water-based recreation benefits such as fishing.

The dam was constructed between 1913 and 1917 and has been in continuous use since then. Parts of the structure have deteriorated over time. Regular maintenance and inspections have been completed over the years by the district and the U.S. Bureau of Reclamation (USBR). An engineering analysis of the structure was completed by a private engineer, leading to recommendations for repairs in several phases. This project will be the third phase of this proposed long-range plan for complete rehabilitation of the structure. It will ensure continued use of the project for many years. Failure to complete rehabilitation on this type of structure would eventually result in failure and a much higher cost replacement project.

Technical Approach

The primary project goal is to preserve the integrity of Vandalia Diversion Dam. A second goal is to preserve the water resources available to the district. The goals will be accomplished by rehabilitation of the struts, walkways, and buttress walls on the dam. Correction of these deficiencies on the dam will be one of several phases that together will ensure long-term operation of the structure, more efficient use of the water in the dam, and less water loss.

Alternatives considered for the overall rehabilitation of the structure included: do nothing, rehabilitate the structure in a series of steps funded totally from the district budget, and rehabilitate the project in phases with grants being used for funding. The last would decrease the time required to complete the rehabilitation.

The third alternative was chosen. Phases I and II are nearing completion.

Alternatives considered for Phase III of the project include: complete replacement of the struts and walkways, and repair of the buttresses; and repair of these portions of the structure.

It was decided that the first alternative is the best approach primarily due to the greatly increased service life.

The project as proposed will comply with all current standards and regulations. Permitting requirements will be relatively straightforward and should not delay the project. The project can be accomplished within the proposed schedule.

Project Management

The district will manage and complete all aspects of the project, with consultative assistance from USBR and a consulting engineer. Public input will be accomplished through normal newsletters and through regular irrigation district meetings, which are open to the public.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$6,850	**$6,850**
Professional & Technical	$6,850	$0	$6,850	**$13,700**
Construction	$93,150	$0	$44,050	**$137,200**
Total	**$100,000**	**$0**	**$57,550**	**$157,750**

The budget appears adequate to fund the proposed project. Costs used to develop the budget appear reasonable and adequate. Some individual unit prices presented in the application may be low. Overall, the budget appears to be well thought out and adequate. The proposed project was determined to be the most cost-effective alternative.

The proposed funding package appears to be a reasonable mix of state and local funds. The district is providing input primarily through in kind services. USBR will primarily be a consultant. The proposed funding will result in no additional annual cost to the water users.

Benefit Assessment

A primary benefit of the project will be to preserve and protect the structure for future use. The project will provide conservation of the limited water resource and provide water supply to the 106 farms and 18,011 acres of land in the district. The project will ensure continued fish and wildlife and recreation benefits resulting from the reservoir behind the dam. This project is not providing new benefits, but is assuring the future availability of present benefits and more efficient water use. The proposed project will also decrease long-term operation and maintenance costs to the district.

Environmental Evaluation

The only adverse impacts associated with this project are short term, and primarily construction related. Typical problems, such as dust pollution and noise related to construction activities will occur on a short-term basis. No long-term adverse impacts are anticipated.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 45

Applicant Name	Richland County Conservation District	
Project Name	Irrigation Potential of Groundwater Underlying the Lower Yellowstone Valley	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 6,998	Applicant
	$ 30,000	DNRC Irrigation Development Program
	$ 18,041	Montana Bureau of Mines and Geology (MBMG)
	$ 5,000	Sidney, City of
	$ 30,000	U.S. Bureau of Reclamation (USBR)
Total Project Cost	$ 190,039	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The purpose of this project is to identify groundwater resources in a buried channel aquifer underlying parts of the Yellowstone River Valley in Richland County. This channel was incised into the underlying bedrock, allowing thick deposits of coarse-grained sand and gravel to be deposited. In the channel, the depth to bedrock is as much as 150 feet. Outside the channel, bedrock is generally less than 50 feet deep. The thick deposits of sand and gravel are saturated with water and form a high–yield aquifer underlying the western part of the City of Sidney. Identifying this resource will be accomplished by delineating the aquifer from its known extent near Sidney to unmapped areas both north and south of town. The aquifer is best defined near Sidney where it supplies the city with good quality water from seven high-yield wells. Another well field 10 miles to the north supplies water to the Town of Fairview. Little is known about the location or character of the aquifer under the valley between these two water supplies. The aquifer has also been encountered in several wells south of Sidney.

The Richland County Conservation District proposes to define the location and character of this aquifer to facilitate development of this resource for irrigation without significantly impacting other water users in the valley. Sidney currently is the largest water user from the buried channel aquifer. Based on water-use records from Sidney, this aquifer has a good potential for additional development. High recharge rates from irrigation ditch leakage and infiltration of excess flood-irrigation water recharge the aquifer annually. Local farmers have expressed interest in developing the water. When Lone Tree Dam was removed, the loss of surface irrigation water was mitigated by constructing an irrigation well into the high-yield aquifer near the airport. Sidney is concerned that additional water development may impact its existing well field and reduce the potential for expansion. The city is interested in obtaining information on this aquifer system so it can to protect the water resource, while promoting economic development through additional irrigation development.

The district proposes to conduct an exploratory test-drilling program, install test wells, sample water quality at many of these wells, and collect additional groundwater data to define the extent of this aquifer. This information will provide the framework to guide future development of this resource and allow partnerships with state and federal agencies to wisely manage groundwater development. The funds requested by the district in this grant application will be used to work toward this end.

Technical Assessment

Project Background

The proposed study area of the Lower Yellowstone River Valley in east central Montana contains the City of Sidney and extensive tracts of agriculturally developed land. Agricultural land in this area has historically relied on irrigation water produced from shallow wells less then 50 feet deep. During development of petroleum reserves in the 1960s, some deeper, high-yield wells were completed in the study area, and further investigation indicates the presence of a buried channel aquifer about 100 feet below ground surface and at least one mile wide. The complete vertical and lateral extent of the aquifer is unknown. Sidney now relies on seven wells from this aquifer that together can yield up to 1,500 gallons per minute. The applicant states that the quality of water produced from the aquifer is excellent for irrigation and estimates that the aquifer has the potential to provide water to irrigate over 21,000 acres at an application rate of 18 inches per acre. With the support of local farmers and the City of Sidney, the district has proposed to better define the lateral and vertical extent of the aquifer and its potential for producing high volumes of water region wide.

Technical Approach

The project goal is to document, describe, and map potentially high-yield aquifers underlying the Yellowstone River Valley between the southern boundaries of Richland County north to the Town of Fairview. The proposed schedule is reasonable. Project objectives are clearly stated and provide a reasonable approach to accomplish the goal. Project objectives are to 1) map potential high-yield aquifer areas; 2) identify and inventory existing wells; 3) conduct exploratory drilling to more accurately

characterize high-yield aquifers; 4) evaluate water quality and potential yields at selected wells; and 5) use collected data to further refine the nature and extent of high-yield aquifers.

The no-action alternative would result in a higher likelihood of limitations to economic growth in the region due to a shortage of adequate irrigation water. No economic analysis or discussion of additional feasible alternatives is provided. Compliance with regulations, standards, and permitting requirements are not described in the application.

The district does not discuss in detail how it will address water right issues and potential impacts of additional groundwater development on existing water users. The proposal does not clearly describe how the district would manage groundwater development.

Project Management

The district proposes to manage the project through a Memorandum of Understanding with MBMG. The district will track project schedules, review invoices, and submit quarterly reports to DNRC. A technical advisory committee composed of district board members and interested residents will be established to provide guidance on the project, and to provide information to the public throughout the project. The technical reviewers noted that the advisory committee should include professionals who can provide advice on groundwater conditions, the irrigation potential of the Lower Yellowstone Valley, water rights, and other water uses. The district will also coordinate with the City of Sidney. MBMG will conduct the technical portion of the project and help the district with public meetings and reporting.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$6,998	$0	$6,998	**$13,996**
Professional & Technical	$93,002	$0	$83,041	**$176,043**
Construction	$0	$0	$0	**$0**
Total	**$100,000**	**$0**	**$90,039**	**$190,039**

The applicant proposes to fund the project with the use of matching funds from five sources: applicant, the City of Sidney, MBMG, USBR, and DNRC. There was no documentation provided in the application that matching funds have been secured. If matching funds are secured, the project appears to be adequately funded. If not secured, funds for the project would be reduced by $65,000. Unit costs are reasonable.

Benefit Assessment

This project will enhance existing benefits through the development of groundwater resources in Richland County. Other resource benefits include resource conservation by ensuring measurable renewable resource benefits through implementation of improved water supply network.

Environmental Evaluation

The environmental evaluation does not provide mitigation measures for potential impacts and does not describe how groundwater resources will be developed in an environmentally sound manner.

Impacts to existing water users will result from increased consumptive use and decreased irrigation return flow where irrigation practices will be changed.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 46

Applicant Name	Milk River Joint Board of Control (MRJBC)	
Project Name	Nelson Reservoir Pumping Unit Design and Construction - Phase I: Final Engineering Report	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 9,000	In-kind contribution
Total Project Cost	$ 109,000	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by the applicant)

The Milk River has been called the "International Lifeline of the Hi-Line" because it serves as a lifeline for agriculture, recreation and wildlife, and municipal water supply. Most of the water supplied for agriculture, recreation, wildlife, and municipal water supply is via the Milk River Project, one of the earliest federal irrigation projects.

Water in the region is in critically short supply. While all stakeholders in the Milk River Basin have faced significant shortages in the past, irrigated agriculture has been especially hard hit, with crops often receiving one-third or less of the water volume required for full crop production. In addition, settlement of Native American water rights in the region and full development of Canada's share of the Milk River will subject the irrigators in the Milk River basin to a further restricted water supply.

Because of the current water shortages and the potential that the water supply will become even more restricted, MRJBC has begun developing alternatives to augment the Milk River Project water supply. The most innovative and beneficial alternative for augmenting the water supply is the proposed Nelson Reservoir Pumping Unit.

This pumping unit would divert available water flowing in the Milk River and pump it into Nelson Reservoir for storage. This pumping unit would increase available water for irrigation and provide a sustainable water supply to the surrounding unique ecosystem.

MRJBC has established the primary goal for this project to be to provide supplemental water to the stakeholders served by the Milk River Project by conserving, developing, managing, and preserving the Milk River as a renewable resource.

MRJBC is proposing to utilize these grant funds to further refine this project by completing a final engineering report.

Technical Assessment

Project Background

The Milk River Project supplies water to more than 140,000 irrigated acres across north central Montana. MRJBC represents the eight irrigation districts within the Milk River Project. On average, irrigators in the basin receive approximately 15 inches of water each year, but low on-farm efficiencies limit the amount of water reaching the rooting zone of crops to about 6.5 inches. This compares to the need of 18 inches of water for full crop production. In drought years, irrigators receive as little as 2 inches of water. These chronic and sometimes severe water shortages have led MRJBC to begin investigating innovative alternatives for augmenting the basin's water supply.

Technical Approach

The primary goal of the proposed Nelson Reservoir Pumping Unit is to provide supplemental water to the stakeholders served by the Milk River Project. The pumping unit would accomplish this goal by capturing

and storing water from the Milk River that is currently lost to the basin as bypass flows. The captured water would be used for irrigation and habitat enhancement. The pumping unit would also improve the operational flexibility and efficiency of the other water management facilities located throughout the basin. The preferred and recommended alternative is dual pumping stations located at Big Neil Slough. The system would consist of a diversion dam in the Milk River, two 150 cfs pump stations, an intake facility, a transmission main, and a discharge outlet.

The first step in the project, which is the subject of this grant request, is to prepare a final engineering report (FER). The FER will take 6 months to complete and will consist of the following tasks:

- Final engineering report planning
- Environmental scoping
- Water availability analysis
- Pumping unit final design analysis
- Financial planning/funding source identification
- Final engineering report preparation
- Presentation and public participation
- Aerial surveying (to be subcontracted)

No specific licenses or permits are required to conduct the FER, but the pumping unit would require numerous licenses and permits, which will be identified in the FER. Since the unit would be a component of the Milk River Project controlled by the U.S. Bureau of Reclamation (USBR), it would require evaluation through the National Environmental Policy Act process prior to construction.

Project Management

The project will be managed and administered by MRJBC, with the chairman of the board acting as project manager and primary liaison among DNRC, USBR, the consulting engineering firm hired to conduct the FER, and all other state and federal agencies involved with the project at this stage. If MRJBC hires a Milk River project manager, that person will assume these responsibilities. The proposed project management appears adequate for the proposed project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$9,000	**$9,000**
Professional & Technical	$100,000	$0	$0	**$100,000**
Construction	$0	$0	$0	**$0**
Total	**$100,000**	**$0**	**$9,000**	**$109,000**

The present worth (capital and O&M costs over 20 years at 6% interest) of the selected alternative for Nelson Reservoir Pumping Unit would be approximately $12,004,400. The FER will better determine the amount of water that could be developed by the unit, but initial estimates range from 19,500 to 35,000 acre-feet per year. Based on the present worth estimate, the pumping unit would provide water at a cost of $344 to $618 per acre-foot of water stored, or $109/acre of land served (based on the 110,306 acres that would be served by this project). This cost is considered high for supplying irrigation water, but may be reasonable when all of the secondary benefits are included. It is not clear if the selected alternative of 150 cfs is optimal or if a lower pumping rate would meet project needs at significantly less cost. One additional consideration is that the pumping unit may help in complying with the Fort Belknap Compact, which calls for the mitigation of 35,000 acre-feet of impact to irrigation project users.

The cost of the FER is beyond the financial resources of MRJBC, thus all but in-kind administration costs are requested as grant funding. The unit costs used to develop the project budget appear to be

reasonable; however, the number of hours and personnel assigned to the project appears to be excessive, resulting in an excessive budget.

Benefit Assessment

The proposed Nelson Reservoir Pumping Unit would provide multiple resource and citizen benefits. The project would conserve water by reducing river conveyance losses; provide enhanced resource management by allowing greater operational flexibility and efficiency of all facilities throughout the Milk River Project; allow the development of Milk River water that currently flows out of the basin; help protect existing wildlife habitat surrounding Nelson Reservoir; enhance recreational opportunities associated with the reservoir; and stimulate local economies by increasing irrigated crop production.

Environmental Evaluation

The proposed FER would have essentially no impact to the environment. The proposed Nelson Reservoir Pumping Unit would not require an increase in reservoir capacity, thus additional flooding would not be an issue. The intake, pumping stations, transmission lines, discharge outlet, and associated facilities would create temporary impacts during construction, but no long-term adverse environmental impacts have been identified. The project has the potential to create environmental benefits by supplying water for enhanced plant and wildlife habitat. A National Environmental Policy Act evaluation process will be required prior to construction.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 47

Applicant Name	Pablo-Lake County Water and Sewer District	
Project Name	Water Distribution System Improvements	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 100,000	Applicant
	$ 157,000	Drinking Water State Revolving Fund (DWSRF) Loan
Total Project Cost	$ 357,000	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The Pablo water system was constructed in 1973 and was administered by Government Services of Lake County. In December of 1987, the Pablo-Lake County Water and Sewer District was formed and charged to provide water and sewer services to the community pursuant to Section 7-13-2241 of the Montana Code Annotated. In 1998, 967 lineal feet of 10-inch mainline and appurtenances were added to the system along Old Highway 93. The cost of this project was paid by the developer for whom the line was installed.

When the original 10-inch mainline along 3rd Avenue East and 7th Street North was constructed in 1973, the pipe was not bedded properly. As a result, the pipe has been resting on large cobbles and boulders for the last 25 years, causing stresses in the pipe that have resulted in 6 major breaks in this section of pipeline. Five of these breaks have occurred in the last four years, resulting in the loss of 2.2 million gallons of water. These breaks have resulted in the complete drawdown of the district's reservoir, reducing the flows available for fire protection because the system's wells must pump full-time just to meet the daily water demands when the reservoir is empty. Furthermore, each new break increases the

potential for contamination to enter the pipeline and pollute the entire system. Such an event could cost thousands of dollars to remedy.

The proposed project would replace approximately 4,160 lineal feet of 10-inch mainline pipe along 3rd Avenue East and 7th Street North. The new line would be a 10-inch PVC line installed within the street right-of-ways and bedded with the appropriate material to prevent the current problems. The replacement line would also add several fire hydrants and gate valves to the system.

Technical Assessment

Project Background

The project is located in Pablo, an unincorporated community in Lake County. Pablo is situated on U.S. Highway 93 seven miles south of Polson and Flathead Lake within the Flathead Indian Reservation. The original water system consisted of one groundwater well (Well #1), a 200,000 gallon storage tank, and a distribution system of 4-, 6-, 8-, and 10-inch PVC pipe. Since the original system was constructed, several improvements have been made including the construction three new wells (1974, 1979, and 1989), the addition of 13,000 lineal feet of water main (1974, 1994, and 1998), and the addition of 340 meters in 1989.

The distribution system is relatively new, being constructed in 1974, and is in relatively good condition. The biggest problem is with the transmission line along 3rd Avenue East and 7th Street North that provides water to the community from the wells. The 10-inch PVC transmission main was constructed in 1973, and has experienced six major leaks; five of those leaks occurred in the last four years, resulting in the loss of 2.2 million gallons of water. These breaks have resulted in the complete drawdown of the district's reservoir, reducing the flows available for fire protection. Each break introduces the potential for bacteria contamination. The pipe is resting on an improper bedding of large cobbles and boulders, causing the pipe to split under load. The leaks have caused property damage in at least one case.

Technical Approach

The goal of this project is to eliminate the worst leaks in the system by replacing 4,160 feet of 10-inch PVC transmission pipe along 3rd Avenue East and 7th Street North. Several new hydrants and valves would also be added. The preliminary engineering report examined several alternatives, including no action, slip lining, and pipe replacement.

Project Management

A reasonably experienced and qualified management team is in place and the district has the knowledge to organize and direct this team. Legal counsel has been retained to help with such issues as land acquisition, right of way, debt elections, rate structures, etc. Bond counsel has also been retained to assist with issuance of bonds and other financial legal matters. The project will be closely coordinated with the tribe, regulatory agencies, and funding agencies. The project budget appears to include adequate funds to administer the project with a few minor exceptions.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$6,000	**$6,000**
Professional & Technical	$0	$0	$58,660	**$58,660**
Construction	$100,000	$0	$192,340	**$292,340**
Total	**$100,000**	**$0**	**$257,000**	**$357,000**

The target water rate for Pablo is $20.59/user/month, and the current average water rate is $15.42/month or 75% of the target. Funding sources include a grant, a loan, and district reserves. Based on the

financial numbers presented in the application, the proposed funding strategy will result in a water user cost of $27.41 per month. The application includes a resolution by the district establishing a user rate schedule for water through the year 2004. The numbers presented in the application are accurate and are more than enough to cover the proposed project, however, there is conflicting information as to what the final rate will be and how it will be implemented.

It is not clear that the public has been sufficiently informed of the actual user rate to be applied as a result of this project and therefore, the level of public support is difficult to assess. The letters of support presented make no mention the user rate, and it is not clear that those presenting the letters of support know what the rate will be. The financial feasibility of the project is dependent on a successful bond election, and public support is critical.

The project cost seems reasonable and sufficient engineering and contingency costs are included.

Benefit Assessment

The project will provide measurable conservation of a renewable resource by eliminating excessive leaking of a water transmission main. The new transmission main will improve the ability to manage the use of the water resource and thereby improve stewardship of the resource. The project will also reduce repairs and associated short-term environmental impacts due to construction. The project will provide temporary construction jobs.

Environmental Evaluation

Temporary adverse impacts will occur during construction of the new transmission main. The majority of these impacts will occur within the existing footprint of already disturbed areas along city streets. An environmental checklist has been prepared delineating environmental impacts. Natural resource agencies have been contacted and comments received on potential environmental impacts. The project will have an overall positive impact on the environment by improving the efficiency of use of a natural resource.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of project scope of work, administration, and budget.

Project No. 48

Applicant Name	Cut Bank, City of	
Project Name	Water System Improvements	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 200,000	Applicant
	$ 500,000	Community Development Block Grant (CDBG)
	$ 600,000	Montana Rural Development (RD) Loan
	$ 500,000	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 1,900,000	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant.)

The City of Cut Bank Water System Needs Analysis (Needs Analysis) prepared in 1998, recommended several phases of improvements to the city's water system. The plan was submitted to the Montana

Department of Environmental Quality (DEQ) in 1998, and the city secured project funding from the following three sources for Phase I improvements:

- TSEP - $500,000 Grant
- DNRC RRGLP - $100,000 Grant
- Drinking Water State Revolving Fund Program (DWSRF) - $861,000 Loan

Phase I improvements included constructing a raw water reservoir with pumping and transmission mains; constructing a new instream water intake in Cut Bank Creek; repairs to the water treatment plant; repairs to existing storage tanks; and replacing deteriorated and undersized water mains. An updated engineering estimate increased construction costs from approximately $2 million to $3 million for the above listed construction items. The city elected to reduce the scope of the project in Phase I by deferring construction of the raw water reservoir with pumping and transmission mains to Phase II at a later date. Repairs to the water treatment plant and to existing storage tanks were completed in June 2001. Construction of the new instream water intake was completed in September of 2001.

Due to drought conditions, stream flows become dangerously low to the extent that demand nearly exceeds available supply. Last summer, the city had to ration water usage due to low flows. Frequently, agricultural waste and sedimentation upstream from the city washes into Cut Bank Creek and contaminates the city's water source for up to three days at a time. The city has no raw water storage to provide uninterrupted clean water during these emergencies, which places tremendous pressure on the water treatment plant. The city also must use treated water to backwash its raw water infiltration gallery located under Cut Bank Creek

An off-stream reservoir will be constructed near the water treatment plant. Raw water will be pumped to the off-stream reservoir as generally dictated by Cut Bank Creek flow and quality conditions. The reservoir will store 90 to 95 acre-feet of water. This amount of storage would provide a current average demand flow of about 700,000 gallons per day for about 42 days, or six weeks. The settling of silt and solids within the raw water reservoir will act as a pretreatment and will significantly reduce the demand on the water treatment plant. This raw water reservoir will also serve as the primary source for backwashing of the raw water infiltration gallery, resulting in a cost savings because it will eliminate the need to use treated water for backwashing.

A raw water pump station and transmission main will be constructed in conjunction with the off-stream reservoir to pump water from Cut Bank Creek to the reservoir and then to the water treatment plant.

Technical Assessment

Project Background

The proposed project is an off-stream water storage reservoir for the City of Cut Bank's public water supply system. Cut Bank is located on the eastern edge of Glacier County about 25 miles south of the Canadian border. The city's drinking water source is Cut Bank Creek, and the intake and water treatment plant for the public water system are located just northwest of town. In 1998, a water system Needs Analysis was prepared to assess the public water system and prioritize needed improvements for phased construction. Some of the Phase I projects - repairs to the water treatment plant, a new water intake, and improvements to the finished water storage tanks - were completed in 2001. This proposed project is one of the Phase I items that was identified in the 1998 engineering report, but for which funding was not available. During these past drought years, the city has had trouble with inadequate water quantity due to low flow in Cut Bank Creek, and water rationing has been necessary. Historically, the creek has also had high sediment loading in the springtime. This highly turbid water (up to 1,000 NTU) causes havoc with the water treatment plant's filters and chemical processes and raises treatment costs.

Technical Approach

The goal of this project is to alleviate problems with the city's surface water source by completing the raw water storage reservoir project that was identified in the 1998 preliminary engineering report (PER).

Three alternatives for supplementing flows in Cut Bank Creek were considered: (1) in-stream raw water storage, (2) development of a groundwater source, and (3) off-stream raw water storage. The no-action alternative was not considered. In-stream storage was not considered viable due to negative effects on fish populations. Developing a groundwater source was not considered viable because of the objectionable water quality in the aquifer. The third alternative, off-stream storage, ranked highest in the alternatives analysis and was chosen as the solution to the city's problems. Different alternatives for construction of the off-stream reservoir, such as different liner types, the use of two cells, a covered reservoir, or a different location were not discussed.

O&M requirements of the new raw water storage reservoir were not discussed thoroughly. With possible heavy sediment loading to the reservoir, some dredging may be necessary as often as every five years. The PER indicates that water will be withdrawn from the reservoir only when Cut Bank Creek cannot meet demand and during periods of poor raw water quality in the creek. If the water stagnates and warms up during long periods of non-use, algae growth might be a problem. The addition of copper sulfate for algae control, if necessary, could be a significant expense for the water system. The killed algae would then need to be physically removed from the pond, so that it did not pass through the filters. O & M for sediment and algae buildup were not addressed in the PER.

Project Management

In 2001, the city managed its Phase I water system improvements using TSEP, DNRC, and DWSRF monies. The city is therefore familiar with the accounting procedures and coordination required to manage this project successfully. The proposed management plan provides for adequate staffing for administration of the project and thorough and well-organized contract management. The project management plan provides for good public involvement. Since the proposed project is located away from the city, there should not be any hardships on local residents due to construction activities.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$89,000	**$89,000**
Professional & Technical	$25,000	$0	$193,000	**$218,000**
Construction	$75,000	$0	$1,518,000	**$1,593,000**
Total	**$100,000**	**$0**	**$1,800,000**	**$1,900,000**

The proposed funding package is a realistic combination of grants, loans, and $200,000 from the city's water fund. Cut Bank might not qualify for CDBG funding. If the city is ineligible for a CDBG grant or does not receive one, it will need to finance a larger loan.

The average monthly user rate for the 1,475 households on the Cut Bank water system is about $41.06. The projected increase due to debt repayment for this water storage project is estimated to be about $2.37, bringing the user rate up to $43.43. The project engineer expects no increase in O&M costs because of this project, and feels that the additional costs associated with the improvements are offset by the decrease in O&M of the recently improved water treatment plant. If O&M costs for the new reservoir are greater than anticipated, user rates will need to be raised.

Benefit Assessment

The citizens of Cut Bank will clearly realize benefits from this project. Construction of the off-stream reservoir will give the city better control of its water supply. During low flow periods or times of highly turbid water, the city will utilize water stored in the reservoir. The use of settled water during periods of high turbidity in the creek will maximize the efficiency of water treatment.

Environmental Evaluation

Construction of the proposed new raw water pump station will take place on the bank of Cut Bank Creek, causing some environmental concerns. Construction permits and a short-term exemption from Montana's Surface Water Quality Standards will be necessary. The off-stream reservoir will be constructed in a reclaimed gravel pit. The new reservoir would be classified as a "high-hazard dam" by DNRC, mainly due to the location of the Burlington Northern Santa Fe Railroad along its southern boundary. A permit will need to be obtained and plans and specifications will need to be reviewed by the DNRC Dam Safety Program. There will be negative short-term environmental impacts due to construction, such as noise, dust, and fumes. These can be mitigated with standard control measures such as watering for dust control and working during the day.

Funding Recommendation

DNRC recommends grant funding of $100,000, upon approval of a project scope of work, administration, and budget.

Project No. 49

Applicant Name	Pleasant View Home Sites County Water and Sewer District	
Project Name	Water System Improvements	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 9,300	DNRC Planning Grant
	$ 91,250	Drinking Water State Revolving Fund (DWSRF) Loan
	$ 9,550	Montana Department of Commerce Intercap Loan
	$ 210,140	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 420,240	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The Pleasant View Subdivision was created in 1967 in a rural area east of Kalispell. The first homes were completed in 1969, and at that time the South Water Well was completed to serve the homes in the neighborhood. The subdivision continued to grow, so the North Water Well was built in 1972 to meet increased demand and Montana Department of Environmental Quality (DEQ) requirements. A third well, the New North Well, was built in 1986 to help with low flow rates that were occurring during peak demand. The North and South wells each have a storage tank designed to ease variable demand.

In 1991, the system began to receive warnings of coliform bacteria from DEQ. The warning in 1991 placed a boil order in effect until the situation could be improved. Over the years, chlorination has been used as a method to temporarily fix the problem. However, in recent years, the water system has regularly failed tests for non-fecal coliform bacteria and warnings to the homeowners had to be issued.

In the last two years, power costs for the water system have more than doubled due to increased supply costs and pumps that typically run 24 hours per day. The water system has three problems that need to be resolved.

First, the bacteria problem is occurring in the storage tanks and at the dead end water lines that exist throughout the complex layout of the existing system. The water is lying stagnant for too long, and removal of the contaminants through chlorination and other methods has proven ineffective for the long term. DEQ expects the current water system to continually test positive for non-fecal coliform bacteria until the system is changed.

Second, the power consumption of the water system is far above what is to be expected of a water system of this size. This is due to pumps that typically run 24 hours per day. This is costing the system $1,353 more per year in electricity bills than is necessary.

Third, the current system has no metering devices at user locations. Consequently, it is difficult to identify if water consumption is excessive and to bill customers based on usage.

The preliminary engineering report (PER) will demonstrate that the most effective solution to the stated problems will be the following:

- Eliminate the underground storage tanks for any purpose other than fire flow reserves. This will reduce the opportunity for coliform bacteria to accumulate;
- Use pumps to maintain pressure and flows at the well sources. This will reduce the amount of time that the pumps are required to run, reducing the power bill significantly;
- Simplify the water system design to a loop system design with consistent pipe sizes to each residence. This will eliminate the dead-end water lines that also lead to bacteria accumulation;
- Use water meters at each junction for flow measurements. This will help to identify excess usage and allow the district to bill excess water users at a higher rate than standard users.

Technical Assessment

Project Background

The Pleasant View Homesites County Water & Sewer District is located in northwestern Montana in Flathead County five miles east of Kalispell. The Pleasant View subdivision was created in 1967. The first homes were completed in 1969, and at that time, the South Water Well was completed to serve the homes in the neighborhood. The subdivision continued to grow, so the North Water Well was built in 1972 to meet increased demand and meet DEQ requirements. A third well, the New North Well, was built in 1986 to help with low flow rates that were occurring during peak demand. The North and South wells each have a 10,000-gallon concrete storage tank designed to ease variable demand. The distribution system is a non-looped system consisting of approximately 4,100 lineal feet of 3- and 4-inch PVC pipe. Because the system is not looped, several dead ends exist on the system.

The water system has three problems that need to be resolved. First, coliform bacteria are accumulating in the storage tanks and dead end water lines throughout the system. The water lies stagnant for too long, and removal of the contaminants through chlorination and other methods has proven ineffective for the long term. Water users have been under a boil order since 1991. DEQ expects the current water system to continually test positive for non-fecal coliform bacteria until the system is changed. The second problem is that the power consumption of the water system is far above what is expected of a water system of this size. The booster pumps typically run 24 hours per day. This costs the district significantly more per year in electricity bills than is necessary. The third problem is that the current system has no metering devices at user locations. Consequently, it is difficult to identify excessive water consumption and to bill customers based on usage.

Technical Approach

The proposed project will:

1. Eliminate the underground storage tanks for any purpose other than fire flow reserves.
2. Well pumps and hydropneumatic tanks will be used to maintain pressure and flows in the system.
3. Simplifying the water distribution system design to a loop system design with consistent pipe sizes to each residence.
4. Water meters will be installed for each residence.

The PER contained several deficiencies, including addressing past operation and maintenance of the system and water quality test results. The alternative analysis also did not justify the selection of the highest cost alternative.

Project Management

The project management plan indicates that the consulting engineer will perform most of the administrative functions associated with the administration of the project. The plan provides for public involvement through regularly scheduled board meetings and provides for contract management.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$27,940	**$27,940**
Professional & Technical	$28,000	$0	$36,100	**$64,100**
Construction	$72,000	$0	$256,200	**$328,200**
Total	**$100,000**	**$0**	**$320,240**	**$420,240**

The project budget is complete, and the budget is sufficient to complete the proposed project. The proposed funding scenario includes a combination of grants and loans.

The projected average assessment for service is $69.18 per month. This exceeds the minimum target rate by 230%. Project costs are reasonable and appear to be adequate, however the recommended alternative is the highest cost alternative, and justification is not provided for choosing the highest cost alternative.

Benefit Assessment

The proposed project will improve the efficient use of renewable resources by installing water meters. Eliminating the booster pumps will conserve electricity. A telemetry system allowing for remote operation of the water system coupled with meters, which will allow the district to identify leakage or excessive waste of water, results in improved management of the renewable resource. Repair of the water system will preserve these benefits.

Environmental Evaluation

An environmental checklist has been prepared delineating environmental impacts. The chosen alternative will result in the least adverse environmental impact. Temporary short-term impacts will likely occur during construction.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 50

Applicant Name	Gardiner-Park County Water District	
Project Name	Water System Improvements	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 16,700	Applicant
	$ 222,600	Drinking Water State Revolving Fund (DWSRF) Loan
	$ 664,500	Environmental Protection Agency (EPA) Grant
	$ 500,000	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 1,503,800	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant.)

Gardiner is an unincorporated community, situated at the north entrance to Yellowstone Park. The Gardiner-Park County Water District was created in 1947. Since that time, the district has undergone many changes including: replacement of all 1948 pipe; installation of the airport well, the booster station, and additional pipelines in 1985; addition of a 10-inch river crossing, a new well, a new booster pump, and protection of the spring source in 1996; and, in 2002, replacement of the last 1,500 feet of cast iron main originally installed in the 1940s.

The district's water supply has levels of arsenic contamination in excess of the new EPA maximum contaminant level (MCL) of 10 parts per billion (ppb). The arsenic contaminant test readings for Gardiner run from 21 to 27 ppb; therefore, the water needs to be treated to bring it into compliance with this new EPA standard. Arsenic is associated with very high skin, bladder, and lung cancer risks. Even though Gardiner is not required to meet the new MCL until 2006, the imminent health concerns of the people require treatment of the water in a timely manner. Additionally, the 150,000-gallon water storage tank located in Yellowstone Park does not maintain water during high-demand days, causing obvious lack of water when needed.

The highest priority for both protection of health and for meeting enforceable state and federal regulations for drinking water is to begin treating for arsenic as soon as possible. The best alternative for this problem is to provide a treatment system using granular ferric hydroxide (GFH) media as outlined in the preliminary engineering report (PER). The low cost, no chemical requirements, and low operator requirements make it ideal for small communities. It is also very important that the district provide an additional 2,250 feet of 8-inch pipe outside the booster station, thereby doubling the capacity of the water system.

Technical Assessment

Project Background

The district owns, operates, and maintains the public water system that serves Gardiner, some of the surrounding area, and limited development in Yellowstone National Park. Currently, the National Park Service is building a multi-million dollar Heritage Center near its Gardiner entrance, which is to be served by the district's public water supply system. The 100,000-gallon water storage tank in the park does not maintain an adequate water level during high demand days, which is a hydraulic concern that needs to be addressed. Arsenic levels in water from the two public water supply wells in Gardiner range from 21 to 27 ppb, which are in excess of the new MCL of 10 ppb. Arsenic is associated with very high skin, bladder, and lung cancer risks.

Technical Approach

The two primary goals of this project are to remove the arsenic in the public water system to below the new MCL of 10 ppb and to allow the Yellowstone Park tank to remain full. The proposed project consists of the two top-priority improvements identified in the PER: (1) an arsenic removal system using GFH media and (2) an additional 2,250 feet of 8-inch pipe outside the booster station parallel to an existing pipeline. These improvements will meet the project goals.

The following eight alternatives for arsenic removal were compared in the PER: 1) enhanced lime softening, 2) conventional filtration, 3) point-of-use, 4) activated alumina, 5) ion exchange, 6) GFH media, 7) membrane systems, and 8) no-action.

The no-action alternative was eliminated because the arsenic MCL is currently being violated and must be met by January 2006. Alternative 6 (GFH media) was selected as the most viable treatment option. The project's engineer proposes to pilot test GFH using two different GFH pilot systems. The DWSRF program strongly suggests that another treatment technology also be pilot-tested in Gardiner, but the project engineer claims that their costs are all too much higher than those for GFH. The Montana Department of Environmental Quality (DEQ) Public Water Supply Program states that pilot testing of two

technologies would be required, especially considering that GFH has not yet been used much in the United States. Three Forks recently pilot-tested GFH and activated alumina for arsenic removal. Three Forks then selected an eVOX system that allows arsenic to be removed with a pressurized garnet filter. The National Sanitation Foundation has approved eVOX, but not yet GFH, a requirement before its use would be approved by DEQ.

Alternatives considered for keeping water in the Yellowstone Park tank are: 1) providing a new groundwater source, 2) providing a surface water, 3) providing an additional storage tank, and 4) increasing booster station capacity by adding 2,250 feet of pipe from the booster station. A 1993 water study in Gardiner considered the first two options and eliminated them due to poor water quality in the aquifer and high surface water treatment costs, respectively. The tank alternative was also eliminated because of its higher cost and the difficulty in obtaining permission to construct it in Yellowstone Park. The addition of the booster station pipeline was chosen and was recommended in a report written in 2000. DEQ is familiar with the Gardiner-Park County water system hydraulics, and feels that adding a line from the booster pumps is the next improvement necessary to correct the water system.

Project Management

The proposed project involves several agencies, and the district chose to hire a project administrator to manage the project from start to finish. The administrator will keep each funding agency informed of project progress. The project management plan outlines the duties for the project administrator, engineer, attorney, bond council, district clerk, and district board. The engineer is scheduled to be on site during any construction. While this may be more expensive than using an engineering technician, it will help to ensure quality control, especially with the arsenic removal facility. The engineer will be responsible for submitting final plans and specifications to DEQ. The project administrator will issue press releases to keep the public informed of the project. The articles will provide information on project progress and will encourage the public to attend the monthly district board meetings.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$55,200	**$55,200**
Professional & Technical	$0	$0	$221,000	**$221,000**
Construction	$100,000	$0	$1,127,600	**$1,227,600**
Total	**$100,000**	**$0**	**$1,403,800**	**$1,503,800**

The project budget appears accurate, with reasonable percentages used for engineering design, construction inspection, construction contingency, and administrative costs.

The current average monthly water rate for the each of the 280 homes in Gardiner is $30.42. With a sewer rate of $14.06 per month, the combined water and sewer rate is $44.48, which is just above the combined target rate of $42.77 per month. After the project is completed with the proposed funding package, the combined water and sewer rate will be $50.67, which is 118% of the target rate. The estimated O&M costs were based on the use of GFH for arsenic removal. Until pilot testing is completed at the site, it is difficult to make an estimate of the actual O&M costs.

The proposed funding is a combination of grants, loans, and $16,700 in district funds. Each of the funding elements is dependent on the others for qualifying as match funds. Competition for a STAG grant is tight. If the DNRC grant is not awarded, the district will increase rates to raise the $100,000 needed for the project.

Benefit Assessment

The proposed project will result in benefits in the management and protection of renewable resources. It will enhance existing benefits provided by the Gardiner-Park County public water supply, and users will

be protected from the cancer risks associated with arsenic in drinking water. The proposed project has good public support.

Environmental Evaluation

The proposed pipe installation work will occur in previously disturbed areas and solely in the existing right-of-way. The new arsenic treatment building will be located adjacent to the booster station. There will be short-term negative environmental impacts due to dust during construction, but they can be mitigated using a watering truck. The proposed GFH system will generate an estimated 30 cubic yards of non-hazardous solid waste every 10 to 15 years, according to the project engineer. If the GFH media is taken to exhaustion, it might become a hazardous waste. It is recommended the media be tested before disposal until its classification as non-hazardous or hazardous is clear. If it is hazardous, it will need to be shipped out-of-state. The PER indicates that the amount of backwash water discharged to the wastewater treatment system will be minimal. However, removal of arsenic from all of the well water (even that used for summer irrigation) will increase the loading of arsenic to the public wastewater system. In turn, the sludge produced by the wastewater treatment processes can be expected to have a higher arsenic content, which may be more difficult to dispose of safely

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 51

Applicant Name	Huntley Project Irrigation District	
Project Name	Anita Dam Safety Repairs and Sediment Removal	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 120,550	Applicant
Total Project Cost	$ 220,550	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The project consists of dam safety repairs and maintenance. The need for this project is readily observable and was documented by the U.S. Bureau of Reclamation (USBR) in a dam safety study prepared in 2001. Wave action is eroding the top of Anita Dam. The proposed action will provide protection against wave action. The project will include reconstruction and armoring of the top of the upstream slope of the dam. Riprap will be purchased and placed (1) to replace the car bodies currently on the upstream face of the dam, (2) to repair and stabilize the upstream face of the dam, and (3) to serve as a buttress against future wave action.

Sediment deposited in the reservoir interferes with the operation of the reservoir and has pushed the main flow path into the outlet works against the toe of the dam. Total removal of sediment in the reservoir is not feasible at this time. The sediment removal proposed for this project will be (1) from the reservoir basin in the area of the outlet works to improve its function, and (2) from a flow channel to be created that will convey water toward the outlet works via a path away from the base of the dam. The sediment currently present deposited over a period of 70 years. While this proposed action may allow for the re-accumulation of sediment, it is expected to occur over a similar time.

The total cost for these repairs and maintenance is estimated at $220,550. The Huntley Project Irrigation District is capable of contributing $120,550 from its operating budget over a five-year period toward these

efforts. The district is applying for a $100,000 grant from the Montana Renewable Resource Grant and Loan Program to assist in these efforts.

Technical Assessment

Project Background

Anita Dam is located in Yellowstone County south of Pompeys Pillar. The dam is an irrigation storage dam constructed by USBR between 1933 and 1937 as part of the Huntley Project. The storage provided by Anita Dam is used during peak irrigation periods when the flow in the Highline Canal is insufficient. Wave action has resulted in significant erosion on the upstream face of the dam. Sediment deposition in the reservoir has resulted in a build up around the outlet works, pushing the primary flow path into the upstream toe of the dam and causing erosion damage to the toe. The proposed repairs will correct these two primary problems, resulting in a safer dam and a system that is easier to operate and maintain. It should provide additional storage, increasing the probability of water being available for recreation or for fish and wildlife purposes.

Technical Approach

The project goals include:

1. Repair the upstream face of the dam to prevent further erosion and possible failure.
2. Remove sediment from the reservoir and thereby improve operating efficiency to allow for full potential production on irrigated land.

The goals will be met by accomplishing two primary tasks. The first objective is to repair the upstream face of the dam by placing a section of fill and rock riprap on the dam in the area of the present erosion. This will provide long-term protection from the erosive action of the waves. Car bodies will be removed from the slope area. The second objective is to remove a portion of the sediment in the reservoir, particularly in the area of the outlet works. The inlet flow will then be directed away from the toe of the dam. Useable storage in the reservoir will be increased. Several alternatives were considered and the proposed alternative is the most cost-effective way to meet the project goals. The project, as proposed, will comply with all current standards and regulations. Permitting requirements will be minimal and straightforward. The project will be easy to implement and can be accomplished within the proposed scheduled time.

Project Management

Management for this project should be relatively simple in that the project is not complex. An engineer will be hired to complete a final design for the project. A contractor will be hired to construct the project, coordinate permitting, and provide construction oversight, quality control, and pay verification. The district manager of the Huntley Project will provide overall project management. USBR will provide design review and oversight.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$5,200	**$5,200**
Professional & Technical	$0	$0	$40,000	**$40,000**
Construction	$100,000	$0	$75,350	**$175,350**
Total	**$100,000**	**$0**	**$120,550**	**$220,550**

The budget appears adequate to fund the proposed project. Costs used to develop the budget appear reasonable and adequate. The proposed project was determined to be the most cost effective alternative.

The proposed funding package appears to be a reasonable mix of state and local funding. The district is providing approximately 55% of the funding in direct cost and services provided.

The proposed funding will result in an additional annual cost to each water user of $55.64. This appears to be a reasonable cost for the irrigators to absorb.

Benefit Assessment

A primary benefit of the project is to preserve the existing facility for long-term use.

The project will provide direct benefits to the 629 Huntley Irrigation Project users. Increased availability of water will allow the users to plant larger acreages in high value crops and will allow for potentially greater amounts of land being placed in agricultural use. There is also a potential for the project to provide additional water based recreation benefits and fish and wild life benefits. These additional benefits are not quantifiable but will be available if all water is not used for irrigation.

The proposed project will also decrease long-term operation and maintenance costs to the district. It will increase the safety of the existing dam, providing greater assurance that a failure will not occur.

Environmental Evaluation

The only adverse impacts associated with this project are short term, and primarily construction-related. Typical problems, such as dust pollution, related to construction activities will occur on a short-term basis. The placement of the removed sediment on the adjacent land could increase erosion and sediment movement until it is stabilized. Mitigation efforts including seeding and protecting the disposal sites are proposed.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 52

Applicant Name	Whitefish, City of	
Project Name	Water Distribution System Improvements	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 146,682	Applicant
	$ 547,300	Drinking Water State Revolving Fund (DWSRF) Loan
	$ 500,000	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 1,293,982	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The City of Whitefish's existing water distribution system includes over 40 miles of water main, two storage tanks, many valves, fire hydrants, and approximately 2,512 water service connections. Source water comes from Haskell Basin/Creek and is augmented with water from Whitefish Lake during the high water demand months. The raw water is treated at the city's new water treatment plant, which went online in October 2000. Separating the City of Whitefish north to south is an extensive railroad yard with 13 sets of tracks at its widest area. The distribution system connects the south portions of Whitefish with the north portion with only two major water transmission mains. The majority of the city's population base lies south of the railroad tracks and relies on two transmission mains.

In August 2000 the city selected an engineer to investigate existing water distribution and storage capabilities and recommend improvements. The recommended improvements from this investigation were to pursue additional crossings across the railroad yard to improve the viability of the distribution system.

The main problem with the city water distribution system is that only two main crossings exist that connect the north and south portions. The majority of the water demand (80%) lies in the south portion of Whitefish and relies solely on two very old, unlined water mains under the railroad yard. There is a history of water main leaks with both of these crossings, and the O'Brien Crossing was shut down for a period of years and was finally rehabilitated and lined with an 8-inch slip piping. Both railroad crossings exist as un-cased conduits that are more than 80 years old.

Five alternatives were evaluated to eliminate total reliance on the existing old crossings. To accommodate anticipated growth, the preferred alternative would tie into the existing distribution system at Edgewood Drive, cross the Whitefish River using an existing railroad crossing casing for upsized piping. This project would create a new major water main feed from the north to the south side of the railroad tracks. This solution provides a more reliable system with added expansion to the west side of the city, and makes the system less vulnerable due to failure of the existing aged crossings.

Technical Assessment

Project Background

The City of Whitefish is an incorporated community in north-central Flathead County 12 miles north of Kalispell. Separating the city north to south is an extensive railroad yard. The distribution system connects the south portions of the city with the north portion with only two major water transmission mains. The majority of the city's population base lies south of the railroad tracks and is relying on two transmission mains.

The two transmission mains both cross the railroad yard and are located on Texas Avenue and O'Brien Avenue. The original 12-inch crossing at O'Brien Avenue was installed between 1910 and 1920 and was installed without casing piping and consists of cast iron piping. In approximately 1980, this crossing developed leaks that started to soften and undermine sections of the railroad tracks and subsequently was valved off for several years. In 1982, this crossing was TV inspected and an 8-inch PVC slip line pipe was installed. The 12-inch uncased water main crossing at Texas Avenue has a similar history. Through the years, there have been several pipe failures; fortunately all were located between railroad track sections and could be repaired without having to pull tracks. During repairs of this line, approximately 80% of the population must rely on a single transmission main, which limits supply capacity and available fire flow.

Technical Approach

The proposed project would create a third transmission main to eliminate total reliance on the existing old crossings. The project would consist of installing a new 18-inch main beginning at Edgewood Drive, crossing the Whitefish River, upsizing existing piping along Birch Point Drive, and utilizing an existing railroad crossing casing for the upsized piping. This solution provides a more reliable system with added expansion to the west side of the city, and makes the system less vulnerable due to failure of the existing aged crossings.

The preliminary engineering report (PER) contained an overall system map that was difficult to read. It did not allow for a full understanding of the distribution system. The cost estimates associated with the horizontal drilling under the river were substantially higher than costs seen in bid tabulations for previous projects. No supporting information justifying these higher cost estimates was presented in the PER.

Project Management

The staff being proposed to administer the project are professionals who have managed similar projects in the past. The city expects to procure the services of a consulting engineer for design and construction administration in the near future. The assistant city engineer will oversee the design and construction management for the city, including maintaining consultant communications. Technical review and construction related management would involve additional city engineering staff. The city has successfully administered previous grants and loans for various public utilities.

The project management plan provides for thorough and well-organized public involvement and contract management. In addition to regularly scheduled city commission meetings, the city intends to hold routine public meetings in order to educate and inform the public.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$77,500	**$77,500**
Professional & Technical	$0	$0	$196,682	**$196,682**
Construction	$100,000	$0	$919,800	**$1,019,800**
Total	**$100,000**	**$0**	**$1,193,982**	**$1,293,982**

The project budget is complete and includes adequate detail to show that the budget is sufficient to complete the proposed project. The proposed funding scenario includes a combination of grant and loan funds and appears reasonable with a high probability of success. The applicant will also contribute reserves to the project.

The projected average assessment for service is $30.11 per month. This is within the range recognized as reasonable by the Montana Department of Commerce funding programs. With the exception of the estimated costs for the horizontal drilling, the project costs are reasonable and appear to be adequate. The cost estimates associated with the horizontal drilling under the river were substantially higher than costs seen in bid tabulations for previous, similar projects. The recommended alternative is the second lowest least-cost alternative based on a present worth analysis presented in the PER.

Benefit Assessment

The resource benefits resulting from this project are minimal. The proposed project will provide the city with improved control over the water supply by providing redundancy to the existing major distribution routing. The additional redundancy allows city staff to perform minor and major leak repairs to existing leaking pipes without limiting water supply to the majority of the city. The proposed project will preserve a water system that has been in existence for nearly a century.

Environmental Evaluation

Natural resource agencies have been contacted and comments received on potential environmental impacts. The alternative chosen is not the most environmentally sound alternative. The preferred alternative includes a river crossing whereas the other lower cost alternatives do not. Short-term adverse impacts may occur during the construction of the river crossing, and will need to be addressed.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 53

Applicant Name	Black Eagle Water District	
Project Name	Wastewater System Improvements	
Amount Requested	$ 50,000	Grant
Other Funding Sources	$ 164,200	Applicant
	$ 214,200	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 428,400	
Amount Recommended	$ 50,000	Grant

Project Abstract (Prepared and submitted by applicant)

The Black Eagle Water District contracts with the City of Great Falls for treatment of the community of Black Eagle's sewage and for providing its domestic water supply. The district owns and maintains the community's wastewater collection system and the water distribution system. The wastewater collection system consists primarily of 1920s-era clay tile sewer mains, brick and hand-formed concrete manholes, and, in some places, haphazard service connections and extensions. Many parts of this aging system have deteriorated to the point of failure, which has led to several associated health and safety problems.

Black Eagle's existing system serves a community of approximately 914 people. It currently has 483 total sewer accounts, of which 427 are residential, 46 are commercial, and 10 are inactive. The system has several health and safety problems including:

- Occasional backups on problem sewer mains;
- 1920s ungasketed clay tile sewer pipe allows leakage, inflow, infiltration, and root problems;
- Crumbling sewer manholes; and
- Haphazard system connections and extensions.

Because of these problems, the district must repair and rehabilitate portions of its sewer system to meet modern construction standards. The district would have difficulty financing these improvements without assistance because of the low-income levels of the majority of Black Eagle citizens.

Technical Assessment

Project Background

Black Eagle is a community of approximately 914 people that borders Great Falls on the west and north and the Missouri River on the south. The Black Eagle Water District was formed by special election in 1982. The district owns, operates, and maintains its own wastewater collection and water distribution systems. The district contracts with the City of Great Falls for treatment of its wastewater and for supply and treatment of water for its distribution system. Currently, the district pays the city an average of $50,000 per year for wastewater treatment service. The relationship between the city and the district is mutually beneficial.

The district is responsible for over 24,000 lineal feet of gravity sewer mains within its boundaries. Some of the mains are over 80 years old and consist primarily of 1920s-era clay tile sewer pipe. Some of the manholes are brick or hand-formed concrete construction. The wastewater system has experienced numerous problems over the years, including infrequent backups in some sections.

Technical Approach

The goal of this proposed project is to rehabilitate the wastewater collection system in Black Eagle. Objectives include elimination of sewer main backups, elimination of leakage and root problems, and elimination of haphazard system connections and extensions. The proposed sewer rehabilitation project is a standard solution to a standard problem. Alternatives are therefore limited in scope, consisting of the

no-action alternative and various pipe replacement or rehabilitation methods. Choices between which sections of pipe are to be rehabilitated can also be made. For the proposed project, the alternatives considered for improving the wastewater collection system were: (1) no-action, (2) rehabilitation of sewers and manholes by lining them in place, (3) open trench replacement of sewers and manholes, and (4) rehabilitation of priority problems in the collection system. With the no-action alternative, the existing sewer pipe and manhole problems would continue. The second alternative, which utilizes sliplining of sewer mains, is considered the most cost-effective approach for correcting the problems under paved streets within developed areas. Disturbance to homeowners is minimized and streets do not need to be repaved. The third alternative requires excavation and replacement of the failing sewer mains and manholes. The fourth alternative would rehabilitate the areas of the collection system with the most severe problems by a variety of techniques. Rehabilitation methods would be chosen that were the most cost-efficient and technically feasible for each section of the system. Pipe bursting would be used for sections of main with severely offset joints. The project engineer anticipates no problems with the process. Approximately 3,920 feet of sewer main would be rehabilitated with the fourth solution alternative. Certified operators are not required for wastewater collection systems, and the district therefore does not have a paid operator on staff nor has there been a regular program of sewer main flushing. This raises some concerns about the long-term viability of the proposed project.

The four alternatives were compared on the basis of the following criteria: solves health problems, operational issues, estimated total cost, energy requirements, land requirements, technical feasibility, environmental impacts, construction problems, and public comments. Because three of the alternatives are all rehabilitation of the existing sewer mains and just vary by the construction methods employed, cost is an important factor in their comparison. No land or energy changes result from these alternatives, and the reduced operation costs would be equally the same. The project is planned for implementation in 2003, once TSEP and DNRC grant funds are available.

Project Management

The project management team includes the district chairman and clerk/treasurer, a community consultant as project manager, and a project engineer. The project engineer will be in charge of all construction-related activities. The project manager will be responsible for overall project management and ensuring compliance with applicable federal and state requirements. The district's clerk/treasurer will be the financial officer. The district chairman will have ultimate authority and responsibility for the project. Public input will be sought at district meetings held during the course of the project. Project status reports will be given at these meetings.

The project management plan provides for thorough and well-organized contract management with regulatory and funding agencies, consultants, and contractors.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$2,000	$0	$10,000	**$12,000**
Professional & Technical	$15,000	$0	$47,000	**$62,000**
Construction	$33,000	$0	$321,400	**$354,400**
Total	**$50,000**	**$0**	**$378,400**	**$428,400**

The proposed funding package includes grants and district reserves. The district funds have already been committed and are available upon receipt of grant funding. The administrative and financial costs, including the cost for professional services, are modest, but should be adequate. No fee was included for legal services, which may cost $500 to $1,000 for contract reviews and legal notices.

The combined monthly target rate is stated as $30.62 in the application. Residential sewer user fees for the 427 homes are currently at $16.50 per month and the average monthly water rate is $19.00, for a combined average rate of $35.50 (16% above the target rate). The current water and sewer rates will not

change because of this project, since only grant monies and district reserves will be used to fund the project, and operation and maintenance costs will not increase.

Benefit Assessment

With rehabilitation of the existing sewer mains that are in disrepair, the benefits reaped by the wastewater collection system can be realized for more years. Repairing cracks in the sewer mains and manholes will prevent wastewater from percolating to the underlying bedrock aquifer. Because of these improvements there will be some renewable resource benefits in preservation and management.

With rehabilitated sewer mains, sewage backup problems and emergency repairs should be less frequent. The district currently performs sporadic maintenance and repairs as needed. This mode of operation raises some concerns with the long-term care of the new sewer mains.

Environmental Evaluation

Almost 90% of the problem sewer mains are proposed for replacement using trenchless technologies, such as slip lining, and there is relatively little disturbance to the area overlying the sewer. The only environmental problems will be temporary ones associated with short-term construction activities, such as noise, odors, and traffic detours. With the proposed 520 feet of open-dig sewer replacement, dust and erosion will be added problems, but can be mitigated using water trucks, hay bales, and other measures.

Funding Recommendation

DNRC recommends grant funding of $50,000 upon approval of a project scope of work, administration, and budget.

Project No. 54

Applicant Name	Montana Bureau of Mines and Geology (MBMG)	
Project Name	Irrigation Technical Assistance Program	
Amount Requested	$ 99,925	Grant
Other Funding Sources	$ 29,862	Applicant
	$ 30,000	DNRC Irrigation Development Program
Total Project Cost	$ 159,787	
Amount Recommended	$ 99,925	Grant

Project Abstract (Prepared and submitted by applicant)

Increasing the water supply for irrigation is the focus of the DNRC's Irrigation Development Program program established by the Legislature in 1999. The purpose of this proposed project is to assist Montana citizens with assessing the potential of using groundwater resources for irrigation. Large volumes (700–1,000 gallons per minute [gpm]) of high quality (total dissolved solids less than 1500 mg/l and sodium absorption ratio less than 10) water are required for irrigation development. When prompted by landowner inquiries, project funds will be used to evaluate the landowner property to determine if groundwater resources are adequate in quality and quantity to support its use for irrigation.

The highest likelihood of finding adequate groundwater for use in irrigation is in areas of Montana that are underlain by thick deposits of water-saturated sand and gravel. These are generally restricted to alluvial and glacial outwash deposits. To determine if water resources are adequate for irrigation requires knowledge of the potential capacity of wells, water quality, aquifer extent, aquifer flow, and recharge potential. This project will assess resource potential on both a regional scale that may involve several potential irrigation projects, and on a smaller scale, evaluating individual irrigation projects. At a regional

scale, data will be compiled into maps showing areas of existing high-capacity irrigation wells, and existing data will be used to extrapolate and assess the potential in nearby or geologically similar areas. Assistance will be provided to landowners in designing a drilling, sampling, and aquifer-test program to evaluate the possibility of high-yield well development. The potential for developing groundwater for irrigation can be determined by evaluating geologic conditions, drilling records, water quality, and water-level data.

MBMG proposes to define the location and character of groundwater resources to facilitate development of these resources for irrigation without significantly impacting other water users. Results of this project will provide the framework to guide future groundwater development and will establish partnerships with state and federal agencies to wisely manage groundwater resources.

Technical Assessment

Project Background

In recent years, the DNRC Irrigation Development Program has been working with producers to identify sources of groundwater for irrigation development. Cooperation between DNRC and MBMG to develop preliminary interpretations of groundwater development potential has been an integral part of the DNRC program. Detailed evaluation of irrigation potential for producers applying for assistance has not been part of the Irrigation Development Program.

The proposed program is intended to support the Irrigation Development Program by assessing the potential for irrigation development in alluvial valleys, glacial outwash deposits, and buried channel aquifers. The proposed project area includes all of Montana, although the emphasis focused mainly in northern and eastern Montana. Evaluations of locations for irrigation potential will be based on requests for development assistance received by DNRC. The project will provide technical assistance to DNRC to help determine the most appropriate areas for future groundwater development and will help establish partnerships with state and federal agencies to manage groundwater resources.

Technical Approach

The goal of this project is to document, describe, and map potentially high-yield aquifers underlying the river valleys and glacial outwash deposits in eastern and northern Montana. MBMG, along with the support from Irrigation Development Program, proposes the following objectives for the assessment project:

1. Delineate potential high-yield aquifers using all available data.
2. Complete a detailed site evaluation for individual producers.
3. Evaluate the feasibility of irrigation development.

The initial goals will be met by defining regions of potential high-yield aquifers based on a review of existing water rights, producer information, water quality, and well logs. A database and base maps will be prepared in a GIS format using the data obtained from existing well logs to define the boundaries of potential high-yield aquifer(s). Additional well inventory and water quality data will be collected to supplement identified data gaps. The detailed site evaluation will be completed to confirm well locations and collect additional hydrogeologic, water quality, and water quantity data. Following evaluation of the data, a feasibility analysis will be completed to help identify appropriate potential locations for constructing high-yield irrigation wells. Reviewers stated that the project's objectives should be limited to delineating potential high-yield aquifers and evaluating the feasibility of regional scale.

The alternative analysis included only the chosen alternative and the no-action alternative. There was no clear comparison of these two alternatives and no financial or environmental documentation given in support of the chosen alternative.

Project Management

The proposed project will be managed and administered by MBMG staff. Technical work will also be completed by MBMG staff. The management plan was lacking a specific coordination plan among state agencies.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$0	**$0**
Professional & Technical	$99,925	$0	$59,862	**$158,787**
Construction	$0	$0	$0	**$0**
Total	**$99,925**	**$0**	**$59,862**	**$159,787**

The budget appears to be sufficient to fund the proposed project. Material, labor, and equipment costs used to develop the budget appear to be reasonable and adequate. However, detailed alternatives and alternatives costs are not provided. Project administration costs should also be identified and travel costs documented and justified.

The proposed funding package appears to be a reasonable mix of state and local funds. In addition to the DNRC grant requested in this application, the applicant has committed $29,862 in matching funds and will apply for an Irrigation Development Program grant.

Benefit Assessment

The project will provide direct, quantifiable benefits and would directly contribute to the development and management of groundwater resources in Montana. Managing the groundwater resource and evaluating surface water to groundwater interactions will likely have a positive benefit for wildlife as long as wildlife habitat is not adversely impacted by additional stresses on the near-surface aquifer system.

The proposed project would provide a resource for access to the hydrogeologic data necessary to evaluate and develop groundwater resources throughout the state. Technical information provided through the project will help landowners to effectively manage the groundwater resource in their area.

Environmental Evaluation

This project does not have any long-term environmental impacts or any potential adverse impacts. However, the potential for water rights issues resulting from additional withdrawals from aquifers or closed basins will need to be monitored and addressed.

Funding Recommendation

DNRC recommends grant funding of $99,925 upon approval of a project scope of work, administration, and budget.

Project No. 55

Applicant Name	Geraldine, Town of	
Project Name	Water System Improvements – Phase II	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 500,000	Community Development Block Grant (CDBG)
	$ 135,600	Montana Rural Development (RD) Grant
	$ 500,000	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 1,235,660	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The Town of Geraldine is located in Chouteau County, approximately 70 miles east of Great Falls. The town's spring collection system continues to be affected by ongoing drought conditions and is not able to satisfy water demands. Two deep wells in town are activated to help supplement the spring water supply. However, the water quality of the wells is poor, with offensive taste and odor, and excessive mineral concentrations. The well water violates the Environmental Protection Agency Primary and Secondary Drinking Water Regulations.

The distribution system contains 2,850 feet of 2-inch polyethylene main lines. The undersized mains are a result of previous town management not enforcing proper installation during construction. A hydraulic test showed that the available flow is marginally sufficient for residential use and lawn irrigation.

The town's water storage capacity is insufficient. The single day water demand volume of 188,000 gallons plus an additional 108,480 gallons of additional fire storage is not being satisfied with the existing 100,000-gallon storage tank.

The town is proposing a project to help provide adequate water supply, storage, and system efficiency and to address immediate water quality concerns. The project will construct a 200,000-gallon water storage tank and drill a new municipal well. The well and storage tank will be sited to allow for the mixing of the spring water and new well water supply. The undersized 2-inch main will be replaced.

Technical Assessment

Project Background

The town presently utilizes a spring source for the major portion of its potable water needs. The springs supply water through approximately 12 miles of gravity feed transmission piping to the town and other water users along the line. When the spring source is insufficient, the town is forced to supplement its water supply with two existing groundwater wells (wells #3 and #4).

The spring collection system provides good quality water, but continues to be affected by ongoing drought conditions and is not able to satisfy the water demands. The quality of the existing well water is poor with offensive taste and odor, and excessive mineral concentrations. The well water violates the EPA Primary Drinking Water Standards for fluoride and Secondary Drinking Water Standards for hardness and total dissolved solids.

Technical Approach

The goal of the proposed project is to provide adequate water supply and storage, improve system efficiency, and address immediate water quality concerns. The objectives of the project are as follows:

- construct a new municipal well,
- construct a new 200,000-gallon water storage tank,

- replace 2,850 feet of undersized 2-inch mains, and
- re-route the water main to the existing 100,000-gallon storage tank to provide mixing prior to distribution to users.

The selected alternative includes a new well source and storage tank located south of town closer to the spring source. The intention is to mix the well water with the spring water to improve the quality of the increased supply. Other alternatives considered included reconditioning the existing well #3 and adding a booster pump, constructing the new well and storage tank in the Town of Geraldine or locating them near the Hawarden Water Users Association.

Because meters have just recently been installed, data are not yet available for determining actual demands on the system. However, the preliminary engineering report (PER) stated that the spring source and Well #4 combined do not satisfy the system demand, allowing for normal irrigation. The applicant stated that it was the professional judgment of the project hydrogeologist that better quality water would be found and at a suitable flow rate south of Geraldine.

The quality of the well water is poor. Mixing the well water with the spring water would provide dilution benefits that would improve the general quality of the water provided to the town. In addition to locating the proposed well and storage tank near the existing spring source, the proposed project will construct a bypass of the existing spring water transmission main to the existing 100,000-gallon storage tank. The objective will be to mix the spring water with the well water in the storage tank, thus improving the water quality supplied to the town users.

Other alternatives to improve water quality included completely abandoning the existing well and developing new wells, or construction of a water treatment plant.

The preferred alternative also includes the construction of a 200,000-gallon at-grade tank near the town of Square Butte. An elevated tank was considered but eliminated due to cost. Other alternatives included locating an on-grade tank near the Town of Geraldine or near the Hawarden Water Users Association.

The project will replace the undersized 2-inch mains with 8-inch mains to provide fire flow, install hydrants in the areas of the new main replacements, and replace or add new fire hydrants as needed in other areas of town.

It appears that the appropriate state and federal regulations and standards have been considered in each of the alternatives. The project schedule appears adequate. Water rights issues will need to be addressed.

Project Management

The application included a management plan that details the administrative structure, project management tasks, and financial management considerations for the water system improvements. The mayor, town clerk, town attorney, project engineer, and project manager all have specific roles in managing the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$27,270	**$27,270**
Professional & Technical	$0	$0	$207,000	**$207,000**
Construction	$100,000	$0	$901,390	**$1,001,390**
Total	**$100,000**	**$0**	**$1,135,660**	**$1,235,660**

The project budget appears to be sufficient to fund the proposed project. The budget includes costs for contract administration, professional and technical costs, issuance of bond costs, and easement and surveying.

The water system services 359 people, which includes 159 connections in the town and 44 rural connections. The combined target rate for Geraldine is $32.56. It is anticipated that the new combined rate will be $51.73, which is 159% above the target rate. When the town constructed the transmission line, the town entered into a water use agreement with the users located along the transmission piping. The agreement set forth the monthly rate for 20 years. Hence, the town is unable to raise water rates on those connections until the water use agreement is re-negotiated in 2005.

In comparison to other projects, the total project cost appears to be adequate. The estimated cost to construct a new 1,950-foot well and 200,000-gallon storage tank is $855,900. Associated O&M costs are $5,860/year. Routing a bypass transmission line from the existing main to the existing 100,000-gallon storage tank for mixing was estimated to cost $140,000. Replacement of 2,850-feet of undersized 2-inch mains with 8-inch pipe was estimated to be $239,760. The PER did not anticipate any increased O&M costs associated with either the transmission line or distribution mains.

The town has submitted an application to the TSEP Program and will submit one to the CDBG program (January 2003) and RD program (November 2002) for funding. As stated above, rates will increase by $5.58.

Benefit Assessment

Management: Construction of the new storage tank will help overcome a water storage deficiency. Rerouting the transmission main and siting the new tank and well near the springs will allow for mixing of the two sources and improve water quality. Replacing the undersized 2-inch mains will improve availability of water for residential and irrigation use.

Development: The project will construct a new municipal well to provide increased supply to the community.

Preserve/protect: Re-routing the transmission main will improve water quality provided to the town. Replacement of the water mains in town will allow fire protection flow and bring that part of the system into compliance with DEQ 1.

The project will not affect natural resource based recreation, fisheries, or wildlife habitat. No permanent jobs will be created. Three letters of endorsement were included in the application from two business owners and the county commissioner.

Environmental Evaluation

A portion of rangeland will be taken out of production by the tank site and well-head protection. Mitigation measures will be implemented to prevent potential erosion problems. No other long-term adverse affects are anticipated.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 56

Applicant Name	Harlem Irrigation District	
Project Name	Lower Harlem Irrigation Canal Improvements Phase I	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 8,500	In-kind contribution
Total Project Cost	$ 108,500	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by the applicant)

The Harlem Irrigation District is one of eight districts served by the Milk River Project. The current system's inefficiencies and drought in the past years have caused significant losses in crop yield due to the severity of water shortages.

The Lower Harlem Irrigation Canal (LHIC) distributes flow to 15 users, half of whom receive inadequate amounts of water to produce successful crops. The system is limited because there is not enough water diverted into the canal. Consequently, downstream irrigators and their crops have suffered losses.

The district anticipates updating the entire LHIC to expand the utilization and conservation of the area's renewable resources. Under the proposed project, the district will enlarge crossing structures and portions of the ditch, as well as line portions of the ditch. The district could then continue with plans to develop the remainder of the canal, eventually allowing adequate flow to all users.

Improvements will aid in conserving water. If the system adequately served downstream irrigators with water during all years, farms would thrive in normal years, and the land and water could be conserved during times of drought. Lining will conserve water by reducing seepage within the canal.

These improvements will aid in the development of the district's irrigation facilities. Adequate irrigation flow will allow lost crop acreage to be revived and nearly 800 acres of potentially irrigable lands to become successful cropland.

Results will also be seen in management and preservation tactics. Irrigators may be more agreeable to stricter management of the facilities if they are receiving adequate water amounts; and a lined canal will help preserve cropland by keeping it usable for irrigation.

Renewable Resource grant funds are needed to upgrade the LHIC so that users will be provided with adequate water for their lands.

Technical Assessment

Project Background

The district is located in Blaine County and serves 11,377 acres within the Milk River Project. The LHIC, which serves approximately 40% of the irrigators in the district, diverts water from the Milk River via two pumps with a combined capacity of 50 cfs. Inadequacies in this canal system result in consistently late or inadequate water deliveries to approximately 1,000 acres of downstream irrigation. The district has tried to resolve this problem through system maintenance, upgrades, and restrictions to upstream irrigators, and is currently in the process of preparing a draft conservation plan to identify specific facility problems and solutions. The district would like to provide more water to irrigators by increasing the amount of water diverted into the canal, but the culverts in the canal are too small to handle the desired increase in flow.

Technical Approach

The goal of the proposed project is to provide adequate water to all users of the LHIC by increasing the capacity of the LHIC from 50 cfs up to 90 cfs. Phase I of the project, which is the subject of this grant request, consists of replacing seven existing culvert crossings to increase their capacities. Later phases of the project include increasing the capacity of the siphon at the end of the canal and increasing the capacity of the two intake pumps at the head end of the canal. Completion of all three projects will allow the district to provide all vested entities with the water they require.

The preferred alternative consists of replacing five of the seven culverts with new round corrugated metal culverts, replacing the culvert under U.S. Highway 2 with a round concrete culvert, and replacing the culvert that currently serves for water transport only with an open lined ditch.

Grant funding would be used to investigate the existing capacity of the canal and culverts, design the replacement structures, provide construction oversight, and install the replacements. Designs and specification would be completed before September 2003 and construction would be completed prior to the 2004 irrigation season. There are several regulations and permits that will need to be addressed prior to construction, but most will not likely hinder the project. However, based on information presented in the application, it is not clear if water is both physically and legally available for diversion at the proposed increased rate.

Though the proposed alternative, when combined with the proposed later phases, would meet the project objective, it is not clear whether other projects would accomplish the same objective for less cost and better long-term results. It is also unclear whether the additional flow would be adequately managed to optimize water use.

Project Management

The project will be managed and administered by the district with the president of the district acting as project manager and primary liaison among DNRC, Milk River Joint Board of Control, the consulting engineering firm, and the selected construction company. The district's ditch rider will provide general construction oversight. The consulting engineer will be responsible for coordinating with Montana Department of Transportation regarding the U.S. Highway 2 crossing. Project management appears to be adequate for the proposed project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$8,500	**$8,500**
Professional & Technical	$12,120	$0	$0	**$12,120**
Construction	$87,880	$0	$0	**$87,880**
Total	**$100,000**	**$0**	**$8,500**	**$108,500**

The present worth (capital and O&M costs over 20 years at 6% interest) of the selected alternative for culvert replacement would be approximately $414,081. Based on the present worth estimate, replacing the culverts would cost approximately $414 per acre (based on the approximately 1,000 acres that would directly benefit) or $10,352 per cfs (based on a 40-cfs increase in canal capacity). No information is provided regarding the costs of the later phases of the project, which would be required to be completed in order to accomplish the project goal, so a complete financial assessment of the overall project cannot be made at this time.

Benefit Assessment

The primary renewable resource benefit of the proposed canal improvement would be improved water management. Increasing the capacity of the canal crossings will allow the district to proceed with its plan

to ultimately divert more water into the LHIC. By increasing the amount of water delivered to downstream irrigators, the project will also help preserve approximately 1,000 acres of irrigated lands than could otherwise go out of production.

Environmental Evaluation

The proposed project would have minimal short-term and long-term impacts to the environment because it would involve replacement of structures that are already in place.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 57

Applicant Name	Meadowlark Water and Sewer District	
Project Name	Wastewater Collection System	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 385,000	Pollution Control State Revolving Fund Loan (PCSRF)
	$ 477,500	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 962,500	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The Meadowlark Water and Sewer District was established in 2000. The district includes a subdivision that is located south of Havre, along U.S. Highway 87. The subdivision is not contained within the city limits of Havre. There is no public utility within the district. Sewage treatment currently consists of individual septic systems, with individual disposal fields.

The homes on the south end of the subdivision are located in an area with a perched water table. The lower 9 to 10 homes are frequently inundated with groundwater and surface run off. This has caused the disposal fields to fail. The failed systems sometimes overflow into a drainage canal that leads to a ditch along U.S. Highway 87, which in turn leads to a minor drainage to the Milk River. This poses a serious risk to human health and water quality.

The district proposes to construct a collection system. The gravity system would collect wastewater from each house, convey it approximately 2,900 lineal feet, and connect to an extension of the City of Havre's collection system.

Technical Assessment

Project Background

The district includes a subdivision in Hill County, approximately two miles west of Havre along U.S. Highway 87. The subdivision is not contained within the city limits of Havre. There are no public utilities within the district. Sewage treatment is currently individual septic systems, with individual drainfields. Water is supplied by individual or shared wells.

Soils in the area are predominately tight clay. This has caused some homeowners to install two or even three drainfields, which they use alternately on a periodic basis. Even with the multiple drainfields, the tight soils have interrupted operation, resulting in sewer systems backing up into the homes. When the

disposal fields fail, they sometimes overflow into a drainage canal that leads to a ditch along U.S. Highway 87, which in turn leads to a minor drainage to the Milk River.

Technical Approach

The goal of the project is to provide a central collection system. New service lines would be connected to the existing line from the house, ahead of the septic tank. The existing septic tanks would be taken out of service. The main would then be extended to an extension of the City of Havre's wastewater collection system. The conveyance system (lift station and force main) is under the jurisdiction of a Rural Special Improvement District (RSID 30).

A letter from the Hill County Sanitarian verified that the subdivision has experienced problems with the drainfields over the last 20 years. No soils test pit data was included in the application to describe the soils or indicate shallow groundwater.

Alternatives that were evaluated included:

- Advanced on-site wastewater treatment
- Gravity sewer
- Combination of gravity sewer with lift station
- Force main with grinder pumps
- Site treatment with total retention system

An implementation schedule indicated that if funding is received, the project design will commence in September 2003 and construction will be completed in September 2004.

Project Management

The district will hire a consultant to act as project coordinator, responsible for overall project management and ensuring compliance with applicable federal and state requirements for the Renewable Resource Grant Program. The chair of the water and sewer district, the district secretary/treasurer and a yet to be retained attorney will complete the management staff. A management plan was submitted with the application describing the responsibilities of the staff. The proposed staff appears to be adequate.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$26,892	**$26,892**
Professional & Technical	$0	$0	$147,898	**$147,898**
Construction	$100,000	$0	$687,710	**$787,710**
Total	**$100,000**	**$0**	**$862,500**	**$962,500**

Capital and O&M costs appear reasonable. The estimate includes bond costs and legal fees. The subdivision currently includes 23 homes, a church/school, and 10 vacant lots. Since there are no existing public utilities serving the subdivision, there are no existing user rates. The target rate for the District is $18.83. The proposal is requesting that TSEP provide a grant greater than $500,000 to make the project affordable. If TSEP cannot fund this greater amount, the project will not be able to proceed. If the increased TSEP grant is received, user rates will be $40/mo (211% of target). Without the increased TSEP grant, rates will be $153.27/mo (803% of target). TSEP does not anticipate that the district would qualify for the increased hardship funding.

Benefit Assessment

The project will not enhance or provide natural resource based recreation. Nor will it enhance Montana's fisheries and wildlife habitat. The system will improve management of the wastewater and will eliminate

point sources of pollution. The application stated that a certified operator would be hired to oversee the district's wastewater system. Public support was documented in three letters from a resident, a real estate lender, and the County Planning Board. Public meeting minutes indicate that the meetings were mostly informational. Very few comments either supporting or disagreeing with the alternatives were voiced by the attendees.

Environmental Evaluation

The project consists of installing collection mains and connecting to an existing main at an existing manhole. The environmental checklist was completed. It is anticipated that the proposed project will only have short-term adverse environmental effects during construction. The lines will be installed in previously disturbed areas. The preliminary engineering report states construction will be outside of the floodplain though this is not substantiated by any letters from DNRC.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 58

Applicant Name	Columbia Falls, City of	
Project Name	Fourth Avenue West Water and Sewer Upgrade Project	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 20,000	Applicant (sewer cash reserves)
	$ 43,925	Applicant (water cash reserves)
	$ 109,160	Special Improvement District (SID) Revenue
	$ 220,000	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 493,085	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The city converted from a surface water reservoir to two deep wells in 1995. The distribution system was constructed based on a network that floated on the reservoir. When the wells were completed, they were located within the network grid and connected to the reservoir trunk line by much smaller pipes. Some water piping along the project route is sized to provide domestic water service to only a few residences. Some residences along the route are currently served by private wells and private septic system because of this deficiency.

Wells are connected to the network through a series of piping loops that are not adequate in size to permit efficient flow. Flow capacity is especially deficient for fire flows to large structures. Flow from the wells would be severely restricted even under normal demand conditions if any portion of the loop were out of service. Within the immediate project vicinity, about five blocks are served by a two-inch water pipe; no fire flow is available. The piping size eliminates the opportunity to connect additional existing residences along the route. About 14 lots do not have domestic sewer connections. Some residences along route are currently served by private wells and private septic systems.

The city proposes to correct these problems by replacing the existing water piping with a 12-inch pipe to provide necessary flow capacity from the Clare Park well to the 16-inch trunk line. The city will also install fire hydrants where they are lacking and renew the existing connections for water and sewer to each lot along the project route. The project will provide a new connection to each lot for lots not currently connected.

Technical Assessment

Project Background

The project area is within Columbia Falls, a city of 3,645 people located in northern Flathead County. The proposed construction would occur along 4th Avenue West from Highway 2 to 16th Street, then from 16th Street to the end of the existing 12-inch main on 5th Avenue West. In 1998, the city completed a water and wastewater facility plan for a comprehensive evaluation of its systems. The plan identified the 4th Avenue West area as one location where significant declines in fire flow potential exist. The existing 2- and 6-inch water mains do not allow for the location of fire hydrants at recommended intervals in this neighborhood and they hinder the flow of water from the Clare Park well (one of the city's two public water supply wells) to the remainder of the distribution network. This proposed project is second on the city's list of three short-term priority projects for the water system. The first project, construction of a maintenance bypass for the existing storage tank, was recently completed.

Technical Approach

The goal of this project is to correct deficiencies in the water distribution system. Main objectives of the proposed project are: (1) to resolve the deficiencies in fire flows and pressures caused by small diameter mains in the project area and (2) to provide a needed east interconnect between the central 16-inch water main and the south 12-inch main from the Clare Park well. The project consists of the installation of 2,600 feet of 12-inch water main, 325 feet of 6-inch water main, 60 water service connections, and 12 sewer service connections in the area of 4th Avenue West.

Two other alternatives were considered, but one required an easement and neither alternative met all of the project objectives. A cost comparison of alternatives was not made.

The proposed implementation schedule is based on receipt of TSEP and DNRC grants in July of 2003, with design and construction in August of 2003. No problems are anticipated that should delay the project. In March 2002, the city council unanimously agreed to create a SID fee for some residents along 4th Avenue West north of Talbot Road as a way to help pay for the water system improvements. The council also unanimously agreed to begin the process to annex 37 lots wholly surrounded by the city along Third, Fourth, and Fifth avenues. These homes are in the area of the proposed project. Montana law allows cities to annex wholly surrounded land, and virtually no legal recourse exists to stop the annexation.

Project Management

The proposed staff seems very capable of managing the project. The project is relatively straightforward and very similar to other projects completed successfully by the City of Columbia Falls. The city clerk/finance director, the city attorney, and the city manager will work together to conduct budget monitoring and payment processes to secure necessary financial audits. The city manager and the project engineer will coordinate the various funding sources with the respective program managers.

The proposed project was presented to the city council at a public meeting this past March after public notice. One key element of the proposed funding package involves the creation of a SID within the project area. The public has been kept aware of the project. Additional public meetings will be held to meet the requirements for establishing the SID. At least one public meeting will be dedicated to discussion of the project, how it will be executed, and the timeline for various construction aspects and completion of the project. Affected property owners and tenants adjacent to the 4th Avenue West project will be kept informed of construction scheduling by city personnel.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$33,085	**$33,085**
Professional & Technical	$0	$0	$0	**$0**
Construction	$100,000	$0	$360,000	**$460,000**
Total	**$100,000**	**$0**	**$393,085**	**$493,085**

The estimated total project cost is $493,085, with $20,000 of this amount going toward new sewer service lines along 4th Avenue West. The major proposed funding source for the project is a $220,000 TSEP grant. The DNRC grant request is for $100,000. The city will contribute $20,000 from sewer cash reserves and $43,925 from water cash reserves, in accordance with its Capital Improvement Plan. Creation of a SID will provide $109,160 toward the project.

The current combined water and sewer rate for the 1,246 homes in the city is $37.58, which is just below the target rate of $38.49, listed in the latest Montana Department of Commerce Community Development Block Grant application guidelines. The projected combined rate for fiscal year 2003-2004 is $57.40, which is well above the target rate. The monthly assessment for the 66 homes in the SID will be $13.78 to repay the principal on the debt (the city water department will pay the interest on the SID). The debt limit capacity of the city is near a maximum allowable limit for the general fund and sewer fund, making grants a necessity for this project.

There is an increase of $1,577 in monthly O&M costs because of this project. This amount (4% of the value of the fixed assets) is required by city policy as a contribution into the replacement and depreciation account.

Benefit Assessment

Some renewable resource benefits of management and protection will be realized from the project because construction of the new water main will allow the city to better utilize its water from the Clare Park well. The project will improve fire flows and pressures within the water distribution system. The proposed second main route for water from the Clare Park well to the water storage tank will provide better system reliability. The proposed project may provide additional benefits through renewable resource management by eliminating some individual household wells in the project area. Those homes with individual wells may then tie into the public water system if they desire. The elimination of individual drainfields, for those annexed homes that choose to connect to the public wastewater system, will stop the possible movement of contaminants into the aquifer that is used by the community public water supply wells and into the Flathead River.

Environmental Evaluation

Adverse environmental impacts are short-term and related to construction within an existing residential neighborhood. Dust control measures and hours of operation will be specified to avoid the negative impacts of dust, fumes, and noise. A storm drainage plan will be required during construction. Localized traffic will be negatively impacted, with 4th Avenue West narrowed to one lane during construction. Parking and access to the City Park and swimming pool will be inhibited during the construction period. Construction equipment drivers will need to be observant of overhead power lines in the project vicinity to avoid possible conflicts.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 59

Applicant Name	Columbus, Town of	
Project Name	Stormwater Improvements in Columbus	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 115,000	Applicant
	$ 855,000	Pollution Control State Revolving Fund (PCSRF) Loan
	$ 500,000	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 1,570,000	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The storm drainage in Columbus has historically consisted of surface drainage structures, i.e., culverts, swales, curbs, and gutters. However, with the continued development in the original downtown, more impervious area is continually being generated. Culverts under Pike Avenue were sized for conditions at the time of installation and have not been upgraded.

Increased runoff and undersizing of the original system have resulted in public health and safety problems. Once the unmanaged runoff flows reach Pike Avenue, the existing crossings can no longer effectively handle the flows. This results in deep ponding and flooding of businesses and homes in this area.

In addition, ponded stormwater easily infiltrates the sanitary sewer systems via standing water over manholes, causing an overload that results in raw, untreated water running through the streets and into flooded buildings. This alone is a serious condition. This also causes an increase in flows at the wastewater treatment facility of approximately 50,000 to 100,000 gallons per day, an increase of 25% to 50% of normal flows. In addition, poor drainage pathways produce ice-sheets in the winter that have caused pedestrians to slip and fall.

The proposed drainage system will collect most of the water flowing into the 1st Avenue North corridor between 2nd and 8th Streets. This system, when completed, will have two outfalls, one at 2nd Street and Pike Avenue, and the other discharge will be divided at 8th and 1st Avenue. A 12-inch line will run south to connect to an existing 12-inch system that crosses under Pike Avenue, and a 24-inch line will connect with an existing system of 9th Street.

The west line (2nd to 5th Street) will involve the construction of a 1,500-foot storm sewer line that will run from the intersection of 1st Avenue North and 5th Street to a crossing under Old Highway 10 at its intersection with 2nd Street. The storm sewer system will have inlets placed at the intersections of 3rd, 4th,and 5th Streets along 1st Avenue. An energy dissipation structure will be installed along 2nd Street to reduce flow velocities before entering the drainage ditch upstream of the crossing under Old Highway 10.

The east line (from 6th to 8th Streets) will consist of the construction of another 1,500 feet of storm sewer piping that starts at the intersection of 1st Avenue North and 6th Street and continues to the intersection of 8th Street and 1st Avenue. This system will have inlets at each intersection along 1st Avenue (6th, 7th, and 8th Streets). Again, this system will have a split discharge at 8th Street and 1st Avenue. This flow will be split between south and east piping reaches.

In addition to the stormwater piping system, the streets that are under direct influence of this project will be excavated and brought back to grade with an appropriately designed pavement structure for projected traffic loads. In addition, sidewalk, curb, and gutter will be installed along these disturbed areas. This will greatly improve drainage and will provide a quality roadway and means of travel for years to come.

Technical Assessment

Project Background

The proposed project is located in downtown Columbus. It will generally occupy the 24-block area between 2nd Street and 9th Street and between Pike Avenue and 4th Avenue North. This area has experienced ponding water and associated problems with damaged pavement, sidewalks, and residential property damage. Stormwater is currently managed largely by a surface flow system and a piping network serving the south and east sides of the project area.

Technical Approach

The community is proposing a network of inlets, conduits, curb and gutter repairs, cross-pans, street improvements, and detention basins for conveyance and disposal of storm water from the downtown area. The new system would tie into the existing system on the south and east sides of the project area and the ditch system carrying water to the Yellowstone River. The applicant has performed a fairly extensive alternative analysis and has developed a recommended alternative based on cost and anticipated benefit. It appears that a financially feasible and affordable alternative has been recommended for implementation.

Project Management

The applicant has allotted an adequate level of effort for management of the project from an administrative standpoint. Construction management services, budgeted at $45,000 for this project, represent only 4% of the estimated construction cost without contingency.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$1,000	$0	$95,400	**$96,400**
Professional & Technical	$19,500	$0	$229,722	**$249,222**
Construction	$79,500	$0	$1,144,878	**$1,224,378**
Total	**$100,000**	**$0**	**$1,470,000**	**$1,570,000**

The project budget is complete, but a number of items may be understated. Budgeted amounts for personnel, office, and legal costs may be low. Based on possible shortfalls in estimated costs, the administrative budget could be low by as much as $50,000.

Affordability analysis appears to be reasonable. One minor issue is that the annual O&M budget of $8,240 is said to include depreciation, repair, and replacement, although individual cost estimates for these items are not included. The expected average user rate of $6.91 per month is somewhat high compared to other Montana communities, although it is within reason.

An issue that confuses the financial analysis of this project is the manner in which the expected user rate increase is expressed in the application. It appears that the applicant has tied the debt service and operating costs of the proposed storm sewer to the existing sanitary sewer flat rate. The proposed average rate increase for this project is $6.91. The application states that the town is considering a monthly stormwater service charge to all residents and businesses. However, without this being in place, it is difficult to determine how the system will be paid for.

Benefit Assessment

Resource benefits are difficult to quantify. The application contains very little supporting data or sampling results. Without the ability to compare the proposed project outcome to the existing situation, it is difficult to determine the resource conservation, management, development, or protection criteria.

Environmental Evaluation

Based on the applicant's completed environmental checklist, there will be no long-term adverse environmental impacts. Short-term impacts normally associated with construction can be mitigated. An environmental evaluation was completed for the alternative analysis.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 60

Applicant Name	Libby, City of		
Project Name	Johnston Acres Water System Improvements		
Amount Requested	$	100,000	Grant
Other Funding Sources	$	350,000	Applicant
	$	98,975	Montana Department of Commerce Intercap Loan
Total Project Cost	$	548,975	
Amount Recommended	$	100,000	Grant

Project Abstract (Prepared and submitted by applicant)

City of Libby water service is available in the project area (Johnston Acres neighborhood). The original gravity distribution system was constructed in 1911 for the Libby Water & Electric Company. Mountain States Power Company purchased the supply and distribution system in 1925, then sold the system to Pacific Power & Light (PP&L) in 1954. PP&L expanded the utility to serve users both in Libby and beyond the city limits. The city bought the entire supply and distribution system in 1986 and constructed a water treatment plant in 1998.

The water distribution system has the following deficiencies:

- Undersized distribution lines;
- Improperly placed mains and lines;
- Aged, leaking distribution lines;
- Unacceptably low water pressure;
- Hydrants with inadequate flows;
- Too few hydrants; and
- Portions of the system located on private property without easements.

The existing water distribution system will be upgraded with 5,600 lineal feet of 8-inch main, 800 feet of 6-inch main, 20 new gate valves, 3,700 lineal feet of ¾-inch service line, and 8 new fire hydrants. Additionally, 1,400 lineal feet of 12-inch water transmission main will replace the existing under-sized main, four existing hydrants will be replaced, and 105 service connections will be provided.

These improvements will remedy the deficiencies in the system and will protect water quality in the shallow aquifer.

Technical Assessment

Project Background

The City of Libby is located in northwest Montana along U.S. Highway 2. Johnston Acres, situated on the southern edge of the city, was annexed into the city in 1998. The 60-acre neighborhood includes approximately 76 dwellings. City water service is available in the neighborhood.

Mains in the neighborhood vary from ¾-inches to 2-inches in diameter and a number of them were hand dug and are very shallow. No two users can irrigate, wash clothes, or otherwise use residential quantities of water at the same time without unacceptable drops in pressure (8 to 10 psi). All water users in the neighborhood complain of low pressures. Existing mains are so small that fire hydrants cannot be installed. The preliminary engineering report (PER) also identified transmission mains on the west and south boundaries of the planning areas. These mains cross private properties for which the city has no easements. All of the water mains are at least 40 to 50 years old. Leakage is a major problem throughout the Libby system, and it is assumed that leakage in the planning area is very high as well.

Proposed improvements include replacing or upgrading undersized distribution and transmission mains and replacing service lines, fire hydrants, and gate valves.

Technical Approach

The goals of the proposed project are to make improvements to the water distribution system servicing the Johnston Acres neighborhood to protect human health and safety and to reduce or eliminate water wastage.

The objectives to achieve these goals include relocating or upgrading the existing water distribution system to provide access for maintenance and adequate pressures for domestic and fire flows, adding or replacing fire hydrants, and eliminating leaking water mains. The project will install 5,600 lineal feet of 8-inch main, 800 feet of 6-inch main, 20 new gate valves, 3,700 lineal feet of ¾-inch service line, and 8 new fire hydrants. Additionally, 1,400 lineal feet of 12-inch water transmission main will replace the existing undersized main, four existing hydrants will be replaced, and 105 service connections will be provided.

PERs were written for both the water and sewer systems for the city. In addition, a neighborhood planning report for Johnston Acres was written to address the needs of the area. Data from existing water meters for the city indicate great losses of water. Depending on the season, 40% to 80% of the water is unaccounted for. Based on a hydraulic model, it was determined that only 28% of the hydrants could meet the 1,000-gpm minimum fire flow while maintaining a minimum pressure of 20 psi. Several letters and comments from residents indicate that low pressure is a problem.

In general, the recommendations in the PER do not have an identified alternative other than "no action." No alternatives were discussed in the neighborhood report. Compared to doing nothing, the selected alternative is the preferred alternative. The public supports the proposed water system improvements.

The proposed schedule appears reasonable. Design will begin in July 2003 and construction would be completed by October 2004.

Project Management

The city clerk apparently has extensive experience with managing public infrastructure projects, tracking costs and expenditures, and maintaining the necessary files to comply with program requirements. An engineering firm will complete the design and provide construction administration. Public meetings have been held, and the public appears to be supportive of the project. The project management plan mentions continuing public involvement with a newsletter and neighborhood meetings during construction.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$0	**$0**
Professional & Technical	$0	$0	$90,400	**$90,400**
Construction	$100,000	$0	$358,575	**$458,575**
Total	**$100,000**	**$0**	**$448,975**	**$548,975**

DNRC RRGL funds are being requested for water system improvements only in Johnston Acres. Additional funding for water improvements will come from the city's water reserves and from an Intercap loan.

Seventy-six households will be served by the proposed project. Currently, the city has two bond issues, which are being paid from revenue: a water revenue bond to purchase the system, and a sewer revenue bond to construct the treatment plant. A third revenue bond is also in place to pay for the construction of the new water treatment plant. Because of the indebtedness, the rates are exceeding the target rate by 183%. A direct appropriation was received by the city to mitigate the impacts of the asbestos contamination in the community. The council has agreed to borrow funds from the appropriation to pay off the water system, purchase bonds, and sewer treatment plant construction bonds (about $1,000,000). Repayment would be from the existing water and sewer revenues, but with no interest. Repaying the bonds early also allows the bond reserve monies (about $350,000) to be used for capital projects. User rates will remain unchanged. The short-term Intercap loan will be repaid from the revenue not required for interest payments for the two retired bond issues.

The cost estimate for the project appears to be adequate. The selected alternative to make water system improvements for Johnston Acres is estimated to cost $548,975. Costs for handling and disposing hazardous materials were not included.

Benefit Assessment

Conservation benefits will be achieved by improving the efficient use of water. Management benefits will be achieved by relocating the portions of the transmission main to public rights-of-way, installing user services on the users' properties, and replacing mains. Leakage will be eliminated in the neighborhood, which improves the city's ability to control the water. Preservation benefits will be achieved by protecting the quality of water by eliminating leaks.

Environmental Evaluation

No long-term adverse environmental impacts are anticipated with this project. For the most part, construction will occur in already disturbed areas within existing road easements.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 61

Applicant Name	Three Forks, City of	
Project Name	Water System Improvements	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 65,000	Drinking Water State Revolving Fund (DWSRF) Loan
	$ 327,000	Treasure State Endowment Program (TSEP) Grant
	$ 175,000	U.S. Environmental Protection Agency (EPA) Grant
Total Project Cost	$ 667,000	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The City of Three Forks public drinking water system was originally constructed in the 1920s and 1930s. There were major additions to the system in the 1970s, 1980s, and 1990s. There are five operational groundwater wells with a total storage capacity of 1,250,000 gallons.

Three of the wells have continually decreased in production capacity over the last 10 to 20 years for reasons unknown at this time. Possible factors include depressurization of the confined or semi-confined aquifer by long-term withdrawal of water, plugging of openings into the wells by mineral incrustation, plugging of the water-bearing sand near the wells by mineral incrustation or bio-fouling, and penetration of the water-bearing zones by fines from overlying or underlying strata. Of the remaining wells in service, one is high in arsenic and the other is plagued with taste and odor problems.

The system does not currently meet Montana Department of Environmental Quality (DEQ) standards for water works, which require the system production capacity to equal or exceed the maximum day demand. Alternatives for increasing production capacity include development of a new groundwater source or construction of an arsenic removal facility for well #2. These alternatives are discussed in great length in the preliminary engineering report (PER) included in this grant application. The recommended and preferred alternative is to construct a water treatment facility to remove arsenic from well #2.

The city is applying to the Renewable Resource Grant and Loan Program, TSEP, EPA, and if deemed eligible, the Community Development Block Grant Program (CDBG) for assistance in funding the project.

Technical Assessment

Project Background

The City of Three Forks is located in central Montana near the Jefferson, Gallatin, and Madison rivers. The proposed project involves construction of a treatment facility to remove arsenic from existing wells in the community. The existing water supply cannot meet the future 20-year average day demand, nor can it satisfy the current maximum day demand. Three of the four wells in use have problems with sulfur and iron. Production is diminishing in the existing wells. Productive wells in the community have had problems with high arsenic concentrations in excess of the drinking water standard and have been taken out of service. The proposed plan is to install a treatment process on these wells and to reinstall them as a component of the water supply system. The water system serves approximately 1,750 people and the city has experienced an annual growth rate of 4% in the last decade.

Technical Approach

The project goal is to provide the community with a water system that will provide service for a 20-year period. The PER evaluated three alternatives, including construction of deep wells, shallow wells, and installation of an arsenic removal system. The conclusion of the report was that deep wells might not provide adequate supplies, and shallow wells may be classified as groundwater under the influence of surface water. Consequently, installation of an arsenic removal system and use of existing wells would

provide the most reliable source of water for the city. The engineer conducted pilot plant studies to determine the effectiveness of the proposed arsenic removal process. A detailed cost analysis and comparison of viable options was not provided in the report. The selected option is costly to operate and it is not clear, given the information in the PER, that the proposed system is the least expensive option for the city to build and operate. The removal process, when backwashed, will generate a wastewater that contains a portion of the removed arsenic. This waste stream is to be sent to the sewer system and may cause elevated levels of arsenic in the lagoon sludge. The schedule for design and construction provided in the application is achievable.

Project Management

The project budget allows for limited funding to use city staff on the project to manage the financial and administrative aspects of the project. The city mayor, city council, and city clerk/treasurer will all have defined roles in project management. The mayor is the designated project manager, with the assistance of the city clerk for financial reporting. The project engineer will assist in the administration of the technical aspects of the project. Given the complexity of the project financing, it may be beneficial for the city to use some outside assistance to help manage the project and address the requirements of each grant and loan program.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$22,500	**$22,500**
Professional & Technical	$15,440	$0	$84,080	**$99,520**
Construction	$84,560	$0	$460,420	**$544,980**
Total	**$100,000**	**$0**	**$567,000**	**$667,000**

The budget strategy provided in the application is sound and relies on other grant and loan programs that fund public facilities. The applicant is a local government and has the ability to collect charges for debt and operation. Current charges for water service are approximately $16.30 per month, and the new costs will add approximately $4.70 per month for debt and O&M. The project charges affect an estimated 780 households.

A cost breakdown was provided for the recommended alternative, but detail was lacking and the costs were not shown on a unit-price basis. Detailed costs estimates were not provided for the other options considered, and a comparative present worth analysis for the options evaluated was not provided. The PER provided good information on the operational costs of replacing media for the arsenic removal process, and provided a detailed description regarding the overall operational requirements of this treatment option. The operational cost of the proposed facility is substantial and more information would have been helpful in evaluating this treatment alternative. Information on energy use, chemical use, labor requirements, media disposal costs, and other aspects of operating the facility were not discussed except in very general terms.

Matching funds are derived from other sources (not yet secured), and include a TSEP grant, a special EPA grant, and a DWSRF loan. The city has an application pending for a TSEP grant. The city indicated that the EPA has verbally agreed to provide a demonstration grant. DWSRF loan funds will also be used to finance the project, and an application will be submitted to this program in the future. The application discussed scenarios if grant funds were not received.

Benefit Assessment

The proposed project provides limited resource benefits. Existing wells will be used to supply water to the arsenic removal process. Motors that are more efficient will be used on the pumping equipment resulting in a long-term savings of energy. The arsenic removal facility will not likely result in any additional conservation of water. Withdrawal from local groundwater aquifers will be roughly the same as needed to

supply basic water demands, with or without the project. Public health will benefit over the long term from a supply of water that does not contain arsenic. The project will improve the benefits of the water resources as a water supply. Because the arsenic is found in the water supplies as a natural constituent, it cannot be said that arsenic removal is improving the quality of the water. The arsenic in the water may ultimately end up in the biosolids in the wastewater, which could limit the use of this recyclable resource material for land application, if solids are removed from the town's sewage lagoons. No evidence of new jobs or public support was provided in the application.

Environmental Evaluation

The environmental checklist indicated that arsenic-laden backwash might impact the quality of the biosolids in the lagoon depending on the quantity and concentration of arsenic removed from the system. This could present a potential environmental hazard, ultimately affecting the method and disposal of biosolids from the sewage lagoon. Further analysis should be provided on the effect of the backwash water on the biosolids before being suggested as the endpoint for the arsenic. Given the potential issues associated with disposal of arsenic, the problems with in dealing with the waste streams from the removal system should have been discussed in more detail. The PER did not provide any analysis of environmental impacts of alternatives other than that provided in the environmental checklist. Letters from agencies with oversight authority were not provided.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of a project scope of work, administration, and budget.

Project No. 62

Applicant Name	Lake County Solid Waste District	
Project Name	Solid Waste Transfer Station	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 1,056,818	Applicant
	$ 540,182	Montana Department of Commerce Intercap Loan
	$ 500,000	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 2,197,000	
Amount Recommended	$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

Lake County Solid Waste District has operated the solid waste collection and disposal systems in Lake County since 1972. There are multiple container sites where residences dispose of trash. The district collects the waste daily and transports it to the landfill near Polson. The landfill is a Class II facility, and meets the state requirements for operation.

Space for disposal was projected to be consumed by 2002. The district submitted an application for expansion in 1999. Due to serious concerns over the stability of a lined cell, the district suspended the processing of the application and retained an engineer to evaluate the option of building a transfer station. Since space was becoming an issue, the district requested and received an amended permit to increase the vertical height and therefore the volume available. The increased volume should be adequate for disposal until 2005.

The district has selected the transfer station option and is planning to construct the facility on county-owned lands, near the county shops, with good access to U.S. Highway 93. The estimated cost is $2,197,000.

Technical Assessment

Project Background

In the late 1990s, the district began the process of permitting a landfill expansion because the existing landfill was reaching capacity. The district abandoned the landfill permitting process in early 2000 because of difficulties in obtaining a landfill license for the expansion area. The county elected to pursue permitting and construction of a transfer station to replace the landfill. Waste will then be transferred to another permitted landfill, probably within Montana. The current landfill is projected to reach capacity in late 2004 or 2005. The district has until this date to permit, design, and construct a new transfer station.

Technical Approach

The goal of this project is to permit and construct a solid waste transfer station before the existing landfill reaches capacity. The proposed project is located immediately west of U.S. Highway 93 and approximately three miles south of Polson on county-owned property. The project will include a scale house, scales, office building, roll-off container site, and transfer facility as well as access roads and other supporting infrastructure. The waste haulers and public will weigh in at the scale house and be directed to either the container site or the transfer facility for dumping. Wastes dumped at the transfer station will be pushed into a hopper that will direct wastes into an open-top trailer. A grizzly compactor will be then used to optimize the amount of waste that can be placed in the transfer trailer. The loaded transfer trailers will transport the wastes to a licensed landfill. The scales will allow the county to record the weight of waste brought into and transferred out of the facility.

Three alternative designs were analyzed: 1) a block compactor with a conveyor feed, 2) a block compactor with gravity feed, and 3) an open top trailer load with no compactor. The analysis looked at the capital and O&M costs for each alternative and demonstrated that the costs per ton of waste for each of the alternatives are all similar. The selected alternative was not evaluated in the alternative analysis. Therefore, there is no clear comparison that supports the preferred alternative.

Energy requirements and relative energy efficiencies were not addressed in the PER. This may be important because the selected alternative will likely require more transfer trailer trips than the block compactor alternatives. This will result in higher energy consumption through fuel usage.

The project schedule is well developed and feasible.

The Montana Department of Environmental Quality (DEQ) is in the process of permitting the transfer station. DEQ is writing the environmental assessment for the project, intending to meet the district's schedule for permitting the transfer station. The completed project will meet state and federal regulatory requirements.

Project Management

Lake County will be responsible for the overall oversight and management of the project. County staff will be responsible for the grant and loan administration. County staff will also be responsible for coordination between the district, funding agencies, engineering consultants, and contractor. The county attorney and the consulting engineer will provide construction management and oversight services. The management staff is experienced and qualified to successfully manage the project from planning through completion and close-out.

Public involvement is not well documented in the application. There are not any advertisements or notices for district meetings in the application encouraging public involvement in the project. Some of the district monthly meeting minutes and a few newspaper articles are included in the application. The meeting minutes do not show a significant degree of public involvement. The application states that the district will continue to work with the local media to keep users informed during the project. No letters of public support were included in the application.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$3,000	**$3,000**
Professional & Technical	$0	$0	$254,400	**$254,400**
Construction	$100,000	$0	$1,839,600	**$1,939,600**
Total	**$100,000**	**$0**	**$2,097,000**	**$2,197,000**

The overall project funding strategy and budget is feasible. Audit fees, office costs, and bond counsel expenses were not included in the budget. The contingency should be able to handle these unaccounted costs, and in spite of the deficiencies the overall budget is still feasible for the project. The unit costs of the budget are reasonable.

The district currently serves a population of 14,879. The current assessment is $103 per year.

There was no O&M budget included in the application, therefore it is not possible to determine if the district's assessment is adequate. The county solid waste manager has stated that the transfer station will require an equal number of employees and less equipment costs than the landfill, so the existing solid waste budget should be sufficient. The problem is that the county's new solid waste system will involve costs that are not part of the current budget. These costs include debt service on the transfer station and possibly transfer trailers; operation and maintenance costs for the transfer station; and landfill tipping fees.

The applicant has committed district funds to the project. The applicant has also applied for TSEP funding. The district will apply for Intercap loan funds once the grant funds have been committed.

Benefit Assessment

Land originally slated for landfill expansion within the county will be conserved, but the waste will be transferred to another landfill within Montana. This will eventually result in the development of additional land for landfill space at that site. Transferring the waste will also result in additional consumption of fuel and oil products. The transfer station will allow the county to recycle wastes more efficiently. Only voluntary recycling is proposed at the transfer station, which will result in a small portion of the total waste stream being recycled. Waste picked up by the district and commercial haulers is not planned to be part of the recycling stream.

The project may also reduce point sources of pollution since the landfill expansion will not occur. The existing unlined landfill used for several decades by the county is adjacent to the previously proposed landfill expansion area.

Environmental Evaluation

It is difficult to determine if there will be adverse environmental impacts from this project given the lack of detailed information. There is no documentation that the tribe has been contacted regarding potential environmental and cultural resources on the site.

Traffic impacts due to the transfer station were not addressed in the application. It is estimated that the transfer station will average over 100 vehicles per day. This will obviously have some impact on U.S. Highway 93 and contributing arterials.

Funding Recommendation

DNRC recommends grant funding of $100,000 upon approval of project scope of work, administration, and budget.

The following projects, listed alphabetically, are not recommended to receive grant or loan funding.

Applicant Name	Big Sky County Water & Sewer District #363	
Project Name	Riparian Corridor Wetland and Stream Crossings Restoration	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 45,609	Applicant
Total Project Cost	$ 145,609	
Amount Recommended	$ 0	Grant

Project Abstract (Prepared and submitted by applicant)

The riparian zone provides a critical interface, or linkage, between the upland (terrestrial) zone and the deep water (aquatic) zone. These areas are of prime importance to water quality, water quantity, stream stability, and fisheries habitat.

Big Sky County Water & Sewer District is undertaking a wastewater treatment facility and pipeline expansion project that will significantly impact the streambeds and the riparian wetland corridors of two primary streams in the Big Sky area. Project activities include construction of a bridge over, and the trenching of a pipeline through, the West Fork of the Gallatin River in Meadow Village at Big Sky. As the pipeline continues, it will also cross the pristine South Fork of the Gallatin in a narrow, backcountry canyon several miles north of the community.

The Big Sky Riparian Corridor Wetland and Stream Crossings Restoration Project provides for the mitigation and remediation of disturbances to the ecologically sensitive riparian areas, wetlands, and streambeds that will occur during the construction process. DNRC Renewable Resource Program grant funds, if awarded, will specifically finance a comprehensive plan of assessment, design implementation, and post-construction monitoring to ensure that these critical habitat areas are restored to their delicate balance and suffer minimal disruption.

The district and the Big Sky community in general are deeply committed to the protection and preservation of their watershed, to making sure that no long-term adverse affects remain, and to the local philosophy that “we all live downstream.”

Technical Assessment

Project Background

Big Sky is an unincorporated resort community located in Gallatin and Madison counties. The district, formed in 1993, owns, operates, and maintains the central water and wastewater systems that service the area. In 1991, 47 million gallons of partially treated sewage seeped from Big Sky sewage lagoons. The Montana Department of Health and Environmental Sciences (now Montana Department of Environmental Quality) issued a compliance order placing a moratorium on new sewer connections until problems could be solved. Improvements completed in 1996 and 1997 included lining and expanding the wastewater storage ponds, constructing a new filtration treatment plant, and installing a new irrigation system at Meadow Village Golf Course. The moratorium was lifted in 1996.

Subsequent controversy over a proposed new plan that entailed disposing of 15 million gallons of treated wastewater annually into the Gallatin River led to a lawsuit. As a result, the District shelved plans for river discharge and forged a joint agreement with a new neighboring development, the Yellowstone Mountain Club (YMC), to spray treated effluent on the golf course proposed at YMC. The joint agreement calls for construction of a new wastewater treatment plant, new lined storage ponds, and 9 miles of pipeline to pump treated effluent from the treatment facility to the new golf course. Total project costs exceed $25 million.

Construction of the treatment plant, ponds, and pipeline will result in disturbance of riparian areas and streambeds of the South and West Forks of the Gallatin River. The proposed project is intended to identify wetland and riparian impacts and to restore riparian habitat features following construction.

Technical Approach

Project goals and objectives include restoring riparian areas and streambeds affected by construction of a bridge across the West Fork and a pipeline crossing in a narrow canyon of the upper South Fork. The crossing requires a trench through the river that is expected to be 6 to 8 feet wide. Specific activities required to achieve the objectives are not addressed. The district intends to hire a consultant to assess pre-construction conditions, monitor riparian impacts during construction, and develop plans for mitigation and remediation of adverse effects. Anticipated actions include streambank treatments, riparian plantings, creation or enhancement of fish habitat, and noxious weed control. The consultant will work in cooperation with construction personnel, geologists, biologists, and water resource experts.

The application does not address alternatives that would avoid impacts to wetlands and riparian areas, such as directionally drilling pipelines under the scour depth of streams, or constructing aerial pipeline crossings.

Project Management

Because a large component of the project is to characterize resources in the project area and develop plans for restoration and mitigation, it is important to know how information obtained by resource specialists will be incorporated into project design. The task breakdown indicates that the project manager and fisheries biologist will identify fisheries issues, but there is no indication of how fisheries issues will be integrated into bridge and pipeline construction. The task breakdown also indicates the project manager will determine habitat enhancement alternatives, but there is no time allocated for a riparian ecologist, fisheries biologist, or fluvial geomorphologist to aid in completion of this task. The proposal does not include a project schedule, which is needed to ensure that data are collected at appropriate times and construction activities are scheduled at times least damaging to resources (e.g., during low-water periods in late summer and fall).

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$7,674	**$7,674**
Professional & Technical	$4,100	$0	$35,679	**$39,779**
Construction	$95,900	$0	$2,256	**$98,156**
Total	**$100,000**	**$0**	**$45,609**	**$145,609**

The budget appears to allocate time and money for duplicative tasks associated with wetland development—i.e., 30 hours for wetland delineation and 28 hours for determining aerial extent of wetlands and locating wetland boundaries.

The budget allocates 25 hours for constructing wetland mitigation sites—this does not appear adequate given the high quality of the wetlands affected.

The estimated cost for materials to revegetate disturbed areas is $8,000, but there is no budget item for plant materials to be used. Because this is a key part of the proposal, more information on types, sources, and costs of plant materials is needed.

There appear to be inconsistencies between the budget hours in the budget narrative and the task breakdown.

The design phase of the project states that a fisheries and aquatic inventory will be conducted, but it is not clear that time and money are budgeted for this data collection.

The amount budgeted for restoration of 2 acres of wetland, 250 feet of streambank, and 40 feet of stream channel is $125,012. This seems very high for the work that is proposed.

Benefit Assessment

The construction phase of the project will not result in resource benefits or preserve the existing integrity of the affected wetlands and riparian areas. The restoration phase, if successful, will restore riparian and wetland vegetation to pre-project levels, but there will be no net improvement over pre-project conditions. If restoration is not completely successful, there will be a net loss of riparian and wetland vegetation.

The pipeline crossing the South Fork of the Gallatin will require a Section 404 Permit from the U.S. Army Corps of Engineers and a 310 permit. Typically, conditions for these permits are to avoid impacts to wetlands and waters of the United States and to mitigate for lost or degraded ecological functions and values. The applicant will have to do the restoration proposed in this grant application with or without a grant from DNRC.

Environmental Evaluation

Construction of a pipeline through streams that are prime trout habitat and disruption of Category I wetlands have the potential to cause long-term and short-term impacts. These impacts are not addressed in the grant proposal narrative.

There is no information on the potential for destabilizing stream channels, nor are scour-depth calculations presented. The photo of the crossing site of the South Fork shows the stream to have a high-gradient channel composed mainly of cobbles and boulders. It appears this site may not be an appropriate site for a pipeline crossing due to the dynamic nature of the channel, especially during floods.

Funding Recommendation

Funding is not recommended for this project. Costs for the restoration of two acres of wetlands seem inordinately high and the budget has inconsistencies in it. The application does not address negative environmental impacts or technical alternatives to impacting wetlands and riparian areas.

Applicant Name	Cartersville Irrigation District	
Project Name	Sand Creek Siphon Replacement	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 20,000	Applicant
	$ 10,000	Special Assessment
Total Project Cost	$ 130,000	
Amount Recommended	$ 0	Grant

Project Abstract (Prepared and submitted by applicant)

The Cartersville Irrigation District is located on the north side of the Yellowstone River and extends from Forsyth to four miles east of Thurlow. This area was first irrigated about 100 years ago with diversions from an old slough in the river. In 1934, a diversion dam was constructed at Forsyth to divert water from the Yellowstone River. The dam has subsequently been re-covered with concrete twice.

A recreation area used for fishing, camping, picnicking, and boat launching has been constructed at the diversion dam on the south side of the river at Forsyth. Water backed up by the district's diversion dam is the source of water for the city of Forsyth.

One of three main spillways for the district is located at Sand Creek and is of major importance to the irrigation system. The Sand Creek siphon channel was severely eroded from a large flood in the fall of 1987. The conduit was exposed as the channel degraded. Sandstone rock was placed over the pipe to offer some protection from future floods. The channel from the siphon to the Yellowstone River is unstable and eroding, probably partially in response to wastewater flows from the canal operations.

The district received a DNRC grant to engage the services of an engineering firm to evaluate the damages to the Sand Creek siphon. The engineering proposal would prevent further erosion and ensure irrigation use below the siphon. The project would insert a smooth HDPE conduit, with a friction factor of 0.009 as a replacement. This smooth pipe will pass up to 140 cfs and still leave a comfortable freeboard in the canal upstream. The conduit would be placed at a deeper depth and the inlet and outlet transitions would be replaced.

Technical Assessment

Project Background

The district is located north of the Yellowstone River and extends from Forsyth to four miles east of Thurlow. A dam was constructed in the Yellowstone River at Forsyth to divert water to the district and its canal system in 1934. About 10,000 acres are included within the district.

In 2002, the district hired a consultant to evaluate its system and make recommendations for improvement alternatives. The top priority improvement is the replacement of the Sand Creek siphon. As it exists, the siphon is constructed of corrugated metal pipe and has a capacity of about 100 cfs. The applicant states that another 40 cfs is required to provide adequate irrigation to 3,500 acres downstream from the Sand Creek crossing. Additionally, flooding in 1987 left the siphon exposed and subject to failure. Efforts have been made to provide cover and riprap over the pipe, but the problem continues due to the shallow installation of the pipe.

This project proposes to replace the Sand Creek siphon with a new 60-inch HDPE pipe installed to adequate depth to prevent exposure and capable of passing 140 cfs of available irrigation water.

Technical Approach

The condition of the existing siphon has not been determined, but it is suspected that it is badly deteriorated. It is not capable of handling adequate flows to meet the needs of the district. To meet the required capacity, this project will replace the siphon with a new conduit installed at a depth sufficient to prevent exposure due to erosion. It is anticipated that construction will take place in the fall of 2003 or the spring of 2004. The application does not include construction of material alternatives for siphon replacement.

The district proposes to work closely with the Rosebud Conservation District in the design and construction of this project. No permitting or water rights issues are expected.

Project Management

The district plans to hire an engineer to obtain field data and design the new siphon. Included will be the preparation of a set of bid and construction documents. The district will be responsible for ensuring construction in accordance with plans. Administration of the project and grant management will be performed by the Rosebud Conservation District working with the district's clerk and board of directors. All construction and access is on private land and will require permission and coordination with the appropriate landowners.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$6,500	**$6,500**
Professional & Technical	$0	$0	$8,500	**$8,500**
Construction	$100,000	$0	$15,000	**$115,000**
Total	**$100,000**	**$0**	**$30,000**	**$130,000**

The project budget includes the following sources of match funding from the district:

1. $20,000 from reserves that have been collected from current assessments of $8.50 per acre.
2. $10,000 to be collected by a special assessment of $1 per acre on 10,000 acres.

It is proposed that annual assessments be increased by $1 per acre to $9.50 per acre to fund additional improvements identified in the 2002 report.

The administrative fee is reasonable at 5% of the total project cost. Engineering fees of $8,500 represent 7% of the total cost. Both are reasonable for a project of this scope.

Because the technical report submitted with the application does not discuss construction and material alternatives for the siphon replacement, it is difficult to determine the financial and performance feasibility of the project. Cleanup and the status of the existing siphon after replacement are not addressed, nor are they included in the cost estimate for the project. Additionally, costs were only determined for one alternative, and operation and maintenance are not discussed.

Benefit Assessment

Because of the inadequate capacity of the existing Sand Creek siphon, not all of the water available to the district for irrigation is being utilized. The water not utilized is wasted down three drainages, including Sand Creek, to the Yellowstone River. This project will provide the means to better utilize an additional 40 cfs of available water, thus providing conservation and development benefits. In addition, the new siphon will enable the district to better manage its available resources and to maximize the beneficial use of a limited renewable resource.

Environmental Evaluation

The environmental impacts associated with this project are, for the most part, beneficial. Adequate irrigation will be provided to an additional 3,500 acres of feed crops including corn, grain, and hay. Due to its remote location on private land, construction impacts will be minimal to the public. Mitigation efforts may be required to control sediment during construction.

Funding Recommendation

Due to deficiencies in the application, funding is not recommended at this time. DNRC recommends the district further investigate alternatives for the Sand Creek siphon replacement, including cost estimates and the long-term cost of operation and maintenance. A technical feasibility report that follows the guidelines contained in the grant application booklet for this program and reapplication for future funding is recommended at this time.

Applicant Name	Homestead Acres County Water and Sewer District	
Project Name	Water System Improvements	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 35,699	Applicant
	$ 147,815	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 283,514	
Amount Recommended	$ 0	Grant

Project Abstract (Prepared and submitted by applicant)

The Homestead Acres County Water and Sewer District, formed in 1976, is located 3 miles north of Great Falls and serves 184 residences in an area over 3 square miles. The water system was constructed in 1979 and consists of three wells (well #2 was abandoned in 1999 due to poor water quality), three 50,000-gallon storage tanks, and over 18 miles of 4-, 6-, and 8-inch transmission main. The system was not designed to deliver fire flows and therefore does not contain fire hydrants, although it does contain numerous blow-off hydrants for system flushing. The existing water system has been plagued with many different problems in the past (main breaks, water shortages, etc.) most of which have been corrected. A 1997 investigative engineering report identified problems with the system, which were corrected, without grant assistance, including multiple water main leaks, one booster station renovation and one new booster station, storage reservoir roof replacement and electrical phase protection for well pumps. Also in 1997, the district supplied meters to all residents.

A 2002 preliminary engineering report (PER) study identified several continuing problems. Well #1 has a bent alignment and was severely compromised during scheduled maintenance (the pump and piping became lodged in the casing, the submersible pump was sheared off, and was not recoverable). During scheduled maintenance in November 2001, the same problems were encountered with the same results. There are at least two submersible pumps at the bottom of the casing hole, which cannot be recovered. Upon completed recent maintenance, well #1 was placed back in service with the same size pump and discharge piping. It is anticipated that during the next maintenance event (required every two years due to the hard water corrosion problems) similar problems will again be encountered with the same results. The two wells combined presently produce 170 gpm, which falls short of the maximum day demand of 241 gpm. The average day demand is 80.22 gpm and therefore each existing well is capable of producing average day demands independently. Therefore the main deficiency with the existing two raw water sources is that they cannot (combined) produce flows equal to or in excess of maximum day demands (Montana DEQ Circular 1,3,2.1.1) and every time maintenance is performed they lose a pump due to the non-alignment of the existing well #1. There is no feasible means of re-aligning a drilled and cased well, and therefore a new well is proposed.

After recent pipe repair and replacement, water loss is still at 20%, possibly due to thievery of water through taps upstream of individual installed meters (there are several such illegal taps suspected). The district wants to move all meters to standard locations (within roadway rights of way) in standardized meter pits to prevent up-stream tapping. This will also eliminate any possible cross-connections or back flow problems, which currently exist.

The PER indicates numerous deficiencies with the existing water system. Corrections have been prioritized to include improving the potable water source capacity (such that the combined source water flow from the new well and the existing well #3 can supply the required maximum day demand flow) by drilling a new well and installing all the residence meters at standard locations within standard enclosures. The proposed new well will be drilled adjacent to the wells #1 and #3 (outside the zone of influence distance), which will result in a similar depth and capacity. It is proposed that Well #1 be utilized as a secondary well, with the installation of a smaller submersible pump (anticipated to be 4-inch maximum) inclusive of 2-inch discharge piping. Once the new well comes on line, well #1 will be modified with a smaller submersible pump and discharge piping that can be removed during scheduled maintenance.

Other deficiencies have been identified in the PER, such as the need for line loops and level control valves. These improvements are not financially feasible at this time and have been placed on the district's capital improvements plan to be addressed in the future.

Technical Assessment

Project Background

The district is a community of 184 homes located 3 miles north of Great Falls on Bootlegger Trail (Montana Secondary 225). The water district was formed in 1976 and is responsible for the public water system. The homes have individual septic tanks and drainfields for wastewater treatment and disposal. The water system consists of two 1000-foot wells, three 50,000-gallon storage reservoirs, and over 18 miles of transmission piping. Historically, routine operation and maintenance were neglected and the system fell into a state of disrepair and perpetual problems. It is now a very labor-intensive operation for the district. The system deficiencies include significant water leaks, dead-end mains, a bent well casing that makes pump installation and removal difficult, unmetered water use at some homes, and pressure problems (both high and low). There are now new district board members and a water system operator who are able and willing to improve the water system for the community.

Technical Approach

The goal of this project is to upgrade the Homestead Acres water system so that it can provide an adequate quantity of water throughout the district. The proposed project consists of construction of a new well, purchase and placement of a smaller pump in an existing well, and relocation of 152 water meters from near the homes to the roadside. The project meets the district's objectives of providing an additional water source and a means to accurately measure water usage at homes.

The analysis of alternatives in the PER, however, is insufficient. The option of a 3-mile connection to the City of Great Falls was not evaluated because of high cost and the reluctance to annex. The only way to adequately consider this option is to develop a 20-year present worth analysis and to provide some input from the City of Great Falls on costs and feasibility. Apparently, the city has adequate capacity in both its public water and wastewater systems. The O&M costs may easily be cheaper with connection to the city. (It is expected that the district would still be responsible for its collection system after connection, but this is unclear.) Homeowners should be presented with the facts regarding connection to the City of Great Falls water system. The county sanitarian indicates that tight clay soils in the area make it challenging to install adequate drainfield systems. Annexation to the city would open up the option for connection to the public wastewater system. No present worth analysis was provided in the PER because the engineer felt that it was not applicable for the project. However, a properly prepared present worth analysis is justifiable for this project, not only to compare the no-action alternative so the homeowners can see the benefits of the improvements, but also so the improvements can be compared to connection to the city. The PER indicates that the total number of delineated lots in the district is 490, with 184 of them developed. The potential to develop these lots should be enhanced with connection to the city systems.

The options with regard to looped line extensions, level control, and pressure reducing valve relocation are not concretely laid out. The WaterCAD analysis, with the hydraulics of the water system, was completed using elevations taken from a 7.5 minute U.S. Geological Survey map. Because both high and low pressure problems are present in the district, the use of surveyed elevations, at least a reasonable number, is warranted. The PER spends more time discussing the problems of high-pressure rather than discussing low-pressure problems. Low pressures, combined with leaks in the system, pose a health threat due to contamination entering the system. The PER does not provide a clear understanding of the existing distribution system problems and possible solution alternatives. DEQ records indicate that the system has been treated with chlorination, phosphate addition, and aeration. This is never explained in the PER.

Project Management

The project management plan indicates that the district board of directors will manage the project. The district board was recently elected and members do not appear to have the necessary experience to take charge of the project. Management of the project could be contracted out. Contrary to the application, the construction contractor should report to the project engineer, not the district board.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$5,599	**$5,599**
Professional & Technical	$23,836	$0	$34,795	**$58,631**
Construction	$76,164	$0	$157,005	**$233,169**
Total	**$100,000**	**$0**	**$197,399**	**$297,399**

The proposed project is to be funded with grants and district funds. Costs for grant administration and engineer design seem low.

The county health department and DEQ staff say that the new operator and the board are capable of bringing the water system up to standards. The PER indicates that the existing water rate is 1.74 times the target rate of $24.89. The average residence in Homestead Acres now pays $43.49 for water service each month, a high rate, likely the result of years of neglect. No rate increase for debt repayment is proposed at this time, since TSEP and DNRC grant funds and district reserves are to be used for project funding.

If the TSEP grant request is reduced, the district can apply for Drinking Water State Revolving Fund (DWSRF) funding, although it is not clear whether the district would apply.

Benefit Assessment

The proposed project has some significant renewable resource benefits in management. The relocation of water meters to the roadside (out from under homes) will improve the efficiency of water use and management in the district. Homeowners will be more willing to conserve to keep their water bills lower. Installing water meters will allow the district to collect revenues for the water and compare water use data with pumped water data. This will help identify the amount of leakage in the system. Construction of the new well will provide an adequate amount of water for the public water supply, thus providing development benefits to the district.

Environmental Evaluation

Construction activities will be limited to small areas within the immediate area of Homestead Acres. As a result, there will be no impacts to wildlife or waterways. Adverse environmental impacts will be short-term and related to construction activities, which can be mitigated. Construction of a new well is included in the scope of this project. Water pumped from the well during drilling, development, and disinfection must be properly directed to prevent erosion.

Funding Recommendation

DNRC does not recommend grant funding for this project at this time. DNRC recommends reapplication after completing both a present worth analysis and a comprehensive alternatives analysis.

Applicant Name	Hysham Irrigation District	
Project Name	Water Conservation and Infrastructure Improvement	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 99,943	Applicant
Total Project Cost	$ 199,943	
Amount Recommended	$ 0	Grant

Project Abstract (Prepared and submitted by applicant)

The Hysham Irrigation District provides irrigation water to over 6,000 acres of prime irrigated farmland. At the request of the district, a structural inventory and hydraulic analysis was performed by Aquoneering of Billings. The primary goal was to identify methods to improve water use efficiency. Using the results and recommendations of Aquoneering, the district determined the following infrastructure renovations are critical for the continued operation of the district.

1. The 36-inch steel discharge pipe at the relift pumping station has been in place for over 50 years and has suffered considerable deterioration. It is necessary to excavate and replace the existing pipe with 36-inch HDPE pipe. Irrigation water is pumped from the lower ditch to the upper ditch, providing water to approximately 1,500 acres of prime farmland.

2. The removal of moss from the intake channel at the main pumping station is a very labor intensive and dangerous situation. The district has investigated many different ideas for moss removal. An irrigation project in an adjacent county had a local machine shop design a moss removal system. The district's most cost-effective moss removal strategy would be to hire Zelka Machine and Welding Works to design and build a moss removal system specific for the requirements of the district.

3. Accelerated erosion of the Yellowstone River bank upstream of the district headgate is a major concern. The failure of riprap on the north bank of the meander bend, and the resulting tight meander bend, forces bendway compression and direction of flows across the channel. The installation of bendway weirs is the most economical solution to bank stabilization on large rivers. Five weirs will be installed extending through the bend. Spacing of the bendway weirs will be approximately 200 feet, not exceeding 400 feet.

Technical Assessment

Project Background

The district is located near Hysham along the south side of the Yellowstone River. Water is diverted from the Yellowstone River at Myers. Initial construction of the facilities was completed in 1949.

Technical Approach

The project will entail:

- replacement of the 36-inch discharge pipe at the relift pumping station;
- installation of a moss catcher at the river diversion head gate; and
- installation of bank stabilization on the river bank near the river diversion.

The application states that accomplishing these objectives will allow the district to continue to operate the irrigation facilities.

No technical documentation of the design or alternatives is provided for the relift discharge pipe replacement. Technical documentation of the alternatives and design of the alternatives for the moss catcher is provided, but no design is provided for the selected alternative. No documentation of

alternatives was provided for the bank stabilization, although design of the selected alternative (bendway weirs) is provided. Technical reviewer comments indicated that an alternatives analysis should be conducted on the bank stabilization proposal to ensure that the best long-term alternative is selected. The application does not state whether an engineer will oversee the project. Because of these technical deficiencies it is difficult to determine if the project is technically feasible. The application indicates that construction will be done on selected parts of the project by contracted professionals. Other work will be done by district staff/members. Work is expected to begin in 2003.

Project Management

The application indicates that the district water superintendent and board of directors will be involved in the project. Although not specifically stated it is assumed they will manage the project. The application indicates that a consulting firm and the Natural Resources Conservation Service will also be involved in the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$0	**$0**
Professional & Technical	$2500	$0	$1,000	**$3,500**
Construction	$97,500	$0	$98,943	**$196,443**
Total	**$100,000**	**$0**	**$99,943**	**$199,943**

No administration costs are included in the budget, although it is likely the district will pay for these costs. Professional/technical costs are limited to $3,500 to pay for fusing of the relift pipe ($2,500) and acquiring permits ($1,000), none for engineering. The $96,400 ($50,800 grant and $45,600 match) to construct and install the moss catcher was inserted under construction costs as opposed to professional/technical costs as stated in the application. The material, labor, and equipment costs that were provided are well supported and appear reasonable and adequate. No costs for alternatives were provided.

The proposed funding package is a reasonable mix of state and local funds. Local funds will come from assessments and cash reserves.

The application indicates a total of 6,000 acres will be affected by the project. These acres will be assessed an additional $5/acre up to possibly $8/acre if necessary. At the $5/acre increase, total assessment would be $23/acre and at the $8/acre increase, it would be $26/acre. Of the current assessment, $4/acre up to $20,000 district cash reserves will be used toward project costs. The application indicates the increased assessments are justified based on the economic importance of the district to the area.

Benefit Assessment

The project could possibly protect renewable resources through elimination or reduction of riverbank erosion by bank stabilization if the correct alternative is selected. Other benefits include better resource management through elimination of moss for better pump operation and elimination of water leakage at the relift discharge pipe. Citizen benefits will be minimal. Quantification of water use improvement can be measured at existing measuring devices in the district system.

Environmental Evaluation

Little information is provided to determine if long-term adverse environmental impacts would occur using the selected alternatives. Potential impacts from bank stabilization could be negative or positive to the river depending on the alternative selected and installation. The moss catcher may potentially adversely impact fisheries and aquatic life in the river.

The district is responsible for obtaining all applicable permits.

Funding Recommendation

DNRC does not recommend grant funding at this time. DNRC recommends reapplication after completing a thorough technical and environmental analysis.

Applicant Name	Laurel, City of	
Project Name	Groundwater and Salinity Management Feasibility Analysis	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 9,420	Applicant
	$ 13,651	Montana Bureau of Mines and Geology (MBMG)
Total Project Cost	$ 123,071	
Amount Recommended	$ 0	Grant

Project Abstract (Prepared and submitted by applicant)

The City of Laurel has persistent problems with wet and unstable soils and saline-seep development. These problems cost the city and its residents in street, building foundation, and corrosion damages, higher water treatment costs; property devaluation; and lost development opportunities. Areas of saline seep development render soils devoid of vegetation and contain salts (nitrate, sulfate, selenium) that can be harmful to animal and human health.

There appear to be multiple perched water tables in the soils above the main sand and gravel aquifer. Excess water from a number of possible sources (such as ditches, agricultural practices, stormwater, and drainage problems) is trapped in the perched system. The underlying aquifer is the sole source of water for residents outside city limits.

Any attempt to remedy the problem must be carefully designed to prevent impacts to the underlying aquifer. This project will collect the information necessary to better delineate the causes of the problems and to identify and test the feasibility of appropriate corrective measures. This will lead to better resource conservation and management in the area.

The project will consist of inventorying area wells, drains, sewers, irrigation canals, and land use. The city proposes to complete soil borings, install monitor wells, and measure groundwater and surface water levels. Groundwater and soil samples will be collected for chemical analyses. Soils and aquifer media will be tested for physical and hydraulic properties. The above data will be used to identify and test the feasibility of appropriate corrective measures for the city.

Technical Assessment

Project Background

The project would be located near the City of Laurel, within the Yellowstone River Valley. The city overlies the Yellowstone alluvial aquifer. Past irrigation practices on cropland and pastures surrounding Laurel, and the presence of three irrigation canals in the vicinity, are believed to have resulted in perched groundwater and saline soil. Excess irrigation water is returned to the Yellowstone River through a network of drainage ditches. However, many of these drains have fallen into disrepair over the years, have been clogged by vegetation, and have silted-in. Groundwater may also be drained or recharged by city storm drains and sanitary sewer line leaks. Problems resulting from the high groundwater table include:

- Groundwater discharging to basement drainage and sewer line infiltration increases the volume of water sent to Laurel's wastewater treatment plant.
- Saline-seep and saline-soil development have resulted in loss of vegetation and corrosion of metal pipes, tanks, and concrete.

Technical Approach

The goals of the project are to collect and evaluate soil and hydrogeologic data in the Laurel area and to use this information to test the feasibility of various groundwater and salinity control measures. Objectives are to (1) characterize the hydrogeology of the soil-water and groundwater systems, (2) evaluate existing surface water and stormwater drainage systems, (3) assess effects of irrigation canals and irrigation practices on groundwater level and flow, (4) identify sources and migration pathways of soil salinity, and (5) evaluate the feasibility of groundwater and salinity management alternatives.

The applicant proposes to inventory existing wells, plot city storm and sanitary sewer system on GIS; monitor flow in drainage ditches; compile crop and climate data for irrigation use estimates; collect and analyze groundwater samples; age-date groundwater; analyze well-bore soil samples for soil chemistry; and evaluate collected information to determine the most effective and practical mitigation measures.

The applicant presents the following alternative solutions: (1) no action, and (2) implement drainage solutions without the benefit of first collecting soil and hydrologic data. The cost for no action is continued repair costs for infrastructure in the city estimated to be $25,000 a year and a recent road and sidewalk repair estimate of $157,000. The applicant submits that the second alternative may result in no improvement or make matters worse. The project schedule is reasonable and adequate technical documentation is provided.

No information is provided in the application regarding the number of soil borings or monitoring wells the applicant expects to receive for the budgeted amount of money. The technical narrative does not specify if the soil borings will precede monitoring wells in the same location or if they are separate tasks, in separate locations. The narrative states that groundwater elevations will be monitored at "selected locations" but offers no details. Objective 5 is vague in that does not state the objective of the feasibility evaluation. It is assumed the "remedial solutions" would be designed to reduce perched groundwater levels and saline seep within the city of Laurel. No reference to compliance with applicable regulations and permitting requirements is provided in the application. It is highly likely that the most effective mitigation measure options presented in the grant application could be implemented without benefit of the soil/water study without detriment to existing groundwater users.

Some of the information to be obtained in the scope of work already exists and that the grant proposal does not conclusively define or describe how the data will lead to "better management and conservation of resources" or how "appropriate measures will improve soil stability and drainage." There is no concrete remedy presented in the proposal that will result from the data collection. Reasonable alternatives to this proposed project, as described by the applicant, already exist. The city can implement drainage solutions without the benefit of new data. This probably means that the city should consider not only rehabilitating many of these drains that have fallen into disrepair over the years and have become clogged by vegetation or silt deposits, but also lining the bottoms of irrigation canals and ditches to prevent seepage to the shallow alluvium.

Project Management

The public works director will provide management for the project. He will perform oversight and serve as public liaison. Technical activities would be conducted by MBMG staff members. Project administration, management, and coordination are adequate.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$9,420	**$9,420**
Professional & Technical	$100,000	$0	$13,651	**$13,651**
Construction	$0	$0	$0	**$0**
Total	**$100,000**	**$0**	**$23,071**	**$123,071**

The applicant provides conflicting funding information in the grant application. It is assumed that there were addition errors, but page two of the application indicates a $23,071 match and the financial presentation section indicates $23,731 match funding.

The applicant proposes reasonable unit costs for materials, labor, and equipment.

Benefit Assessment

The primary benefit of the proposed project is to resource management. If recommendations generated by the proposed project were implemented, the project would likely measurably improve soils and groundwater through better stewardship of surface water resources. Other secondary benefits would be improved irrigation efficiencies and utilization practices, and resource protection of soils and groundwater potentially impaired by saline seep. These benefits would be quantified through monitoring changes in water quality and extent of seep-impacted areas.

Environmental Evaluation

The environmental assessment provided by the applicant is inadequate. No information or references were given to support conclusions reached. However, the proposed project is unlikely to adversely affect resources of the human and physical environment.

Funding Recommendation

DNRC recommends no funding for this project. It is DNRC's position that reasonable alternatives to this proposed project, as described by the applicant, already exist and the city can implement drainage solutions without the benefit of new data.

Applicant Name	Lincoln Conservation District	
Project Name	Bobtail Creek Water Quality and Channel Enhancement	
Amount Requested	$ 84,500	Grant
Other Funding Sources	$ 3,000	Bobtail Watershed Group
	$ 4,000	Plum Creek Timber Company
	$ 4,000	U.S. Fish and Wildlife Service (USFWS)
	$ 4,000	U.S. Forest Service (USFS)
Total Project Cost	$ 99,500	
Amount Recommended	$ 0	Grant

Project Abstract (Prepared and submitted by applicant)

The Bobtail Watershed Group was formed in 1996 of various stakeholders both in and out of the watershed. The group contains the majority of the landowners, including USFS; Plum Creek Timber Company; private landowners; Montana Department of Fish, Wildlife and Parks; Natural Resources Conservation Service; USFWS; Trout Unlimited; County Commissioners; and the Lincoln County

Conservation District. Because Bobtail Creek is an important spawning tributary to the Kootenai River, and is on the State 303(d) list of impaired streams, all stakeholders have been actively working to improve the water quality and stream stability to allow removal from the list.

The group has always taken the stance that a total watershed restoration plan was needed to achieve the desired goal. Analyses of the historic and existing conditions in the watershed have been completed. Priority restoration areas in the watershed have been reviewed, and work was begun to obtain grants to fix sites with the most immediate need. A 319 grant was received in 2000, which will develop a watershed management plan, create a Total Daily Maximum Load (TMDL) for the watershed, and allow for the repair of the two most critical unstable stream reaches.

Additional surveys of other reaches in the watershed have demonstrated the need for more channel stabilization efforts to further improve water quality, fisheries habitat, and channel stability. Both the draft of the TMDL and the contractor surveys highlight the need for this additional work. This phase of the watershed restoration will focus on restoring fisheries access, improving riparian vegetation conditions, increasing bank stability, and reducing sediment inputs to the stream.

The group feels it has passed the first hurdle in its quest for watershed restoration and recovery. Past experience working with contractors and stakeholders puts the group in a good position to realize its goal.

Technical Assessment

Project Background

Bobtail Creek flows southward from its headwaters in the Purcell Mountains and empties into the Kootenai River four miles west of Libby. The Bobtail watershed has been degraded by siltation, bank erosion, and turbidity. In 1996, the Bobtail Watershed Group was formed to help address declining water quality and diminished fish populations in the watershed. The group has implemented some stream bank and fish habitat restoration efforts and is seeking funds to expand its efforts.

Technical Approach

The project goals are to improve water quality, restore riparian zones, and enhance fisheries in the watershed. Grant funding would allow hiring of a contractor to identify, design, and implement projects to achieve these goals. Unfortunately, lack of sufficient detail in the proposal makes it difficult to evaluate the technical feasibility of the project. Alternatives are discussed only briefly, and there is no detailed implementation schedule.

Project Management

The project relies partially on volunteer members of the watershed group to monitor and administer its implementation. Given the technical nature of habitat restoration, they may not have the expertise to adequately manage the project. Regular meetings of the watershed group are advertised and provide opportunity for public input.

The contract would be managed by Montana Watershed, Inc., a nonprofit organization formed by area conservation districts to administer watershed grants.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$8,500	$0	$1,000	**$9,500**
Professional & Technical	$15,000	$0	$0	**$15,000**
Construction	$61,000	$0	$14,000	**$75,000**
Total	**$84,500**	**$0**	**$15,000**	**$99,500**

Because implementation tasks have not been specifically determined or budgeted, the proposed budget is incomplete. Although lack of detail makes it difficult to evaluate affordability, it appears operation and maintenance costs are understated.

The project applicant requests $84,500 in RRGL funds to be matched by $15,000 in labor, materials, and equipment from Plum Creek Timber Company, USFS, and USFWS. These matching funds are confirmed.

Benefit Assessment

The lack of detail in the proposal and absence of a project implementation plan make it difficult to evaluate benefits. However, trout habitat improvement and bank stabilization in general are potential positive benefits. Bull trout and rainbow trout live in Bobtail Creek and any improvement in habitat and water quality would have a positive impact on these species.

Successful project implementation could conserve soil by reducing sediment input to Bobcat Creek, improve water quality, and protect a variety of riparian values. By enhancing fish habitat, the project could improve recreational fishing opportunities.

The project is supported by the local community, adjoining landowners, and the conservation district.

Environmental Evaluation

While the project would likely have short-term water quality impacts during construction activities, long-term impacts would be positive.

Funding Recommendation

Funding is not recommended at this time. DNRC recommends the conservation district and the watershed group further investigate and analyze alternatives for the restoration of Bobtail Creek, including an adequate cost estimate and details of construction. Reapplication for future funding is recommended at this time.

Applicant Name	Milk River Joint Board of Control	
Project Name	Milk River Irrigation Districts Management	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 67,762	Applicant
Total Project Cost	$ 167,762	
Amount Recommended	$ 0	Grant

Project Abstract (Prepared and submitted by applicant)

The proposal area covers 97,771 acres of irrigated land contained within the Milk River Irrigation Project located in north-central Montana.

The Milk River Project has three primary goals, which will be met through the hiring of a manager. They are rehabilitation of infrastructures, fair and equitable distribution of water to each district's head gate, and to provide a single point of communications contact for the districts.

The hiring of a manager will allow the districts to have project-wide concerns uniformly addressed. The establishment of the Milk River Joint Board of Control (board) was the first step in the process of addressing project-wide problems. The second step is to hire a manager to carry out the board's work plan, the subject of this proposal.

Project life will be two years from the time the funds are available, approximately August 2003 through August 2005. This structured management will benefit the Milk River's 666 farms and the economic viability of the drainage. The communities of Havre, Chinook, and Harlem depend upon the Milk River for a portion of their domestic water supply. Fresno and Nelson reservoirs support recreation and wildlife habitat.

A request of $100,000 is being made through the RRGLP for the bulk of the cost to fund a full-time manager for the board. The districts will fund an additional $67,762.

Technical Assessment

Project Background

The Milk River Project is located in north-central Montana. It extends through Glacier, Blaine, Phillips, and Valley counties. The Milk River Project was constructed between 1906 and 1946 as a U.S. Bureau of Reclamation (USBR) project and is in a deteriorating condition.

USBR retains ownership of the project, but the irrigation districts pay a pro-rated share to USBR for operation and maintenance of the system. A 1987 USBR economic analysis of the Milk River Project indicated that the irrigators' ability to repay is zero, making it necessary to seek non-reimbursable funding assistance.

The Milk River Project delivers water to 666 farms on about 110,306 acres. It also supplies water to Bowdoin National Wildlife Refuge and numerous highline communities, including Chinook, Havre, and Harlem. The water is essential to fish and wildlife, including the threatened piping plover. Almost 22,000 Montanans living along the river benefit from the project.

Technical Approach

In 1999, the eight irrigation districts along the Milk River formed the Milk River Joint Board of Control. The board was formed to foster communication between the districts and improve water management throughout the Milk River Basin.

Currently the board has no staff. The board is seeking this grant to hire a project manager to implement work plans approved by the board. The project manager would identify infrastructure in need of repair; ensure that water is fairly and equitably distributed; identify the most cost-effective methods of increasing irrigation efficiencies; and facilitate communication between state agencies, federal agencies, congressional and legislative entities, and the board.

An explanation of the process that would take place to advertise for and to hire a project manager was not provided. Alternatives were not provided if a manager could not be hired at the projected salary.

Project Management

The project manager would manage the grant, with Malta Irrigation District providing fiscal support. There was no provision for administrative support for the project manager in the application.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$67,762	**$67,762**
Professional & Technical	$100,000	$0	$0	**$100,000**
Construction	$0	$0	$0	**$0**
Total	**$100,000**	**$0**	**$67,762**	**$167,762**

It was stated in the application that matching funds from the irrigation districts would fund benefits and travel expenses for the project manager. The board has not yet committed to the needed assessment of $0.35/acre for the first two years to provide a match. Instead, the board is seeking financial assistance from USBR in the form of conservation funds or from the operation and maintenance funds that are assessed and paid annually by the water users to pay the match. USBR will not release any funds until the board demonstrated adequate structure, organization, and competency. There was no indication as to who will determine when these criteria are met. At the end of the two-year grant project, it will be necessary for the board to either raise the assessment $0.50/acre to pay the project manager's salary, pursue other funding sources or terminate the manager.

Benefit Assessment

This project could provide benefits in all four of the resource categories. The full potential of resource benefits cannot be realized until the scope of the project manager's authority is defined.

The main resource benefit of this project is management. A project manager will improve and promote the beneficial management of water by implementation of the objectives established in this application. The project manager would ensure the conservation of water by implementing on-farm efficiencies and identifying and prioritizing infrastructure that needs repair.

This position would potentially identify and evaluate new infrastructure projects. These projects would expand and enhance the use of water in the basin. The project manager will also potentially act as a liaison between the board and all other entities with a vested interest. The project manager would be responsible for the preservation of the infrastructure of the Milk River System. Maintained and functioning infrastructure would preserve the irrigation, municipal, recreational, and fish and wildlife benefits now in existence.

Environmental Evaluation

A coordinated watershed approach to managing the Milk River System would have overall long-term positive environmental impacts. The project manager could implement programs to enhance environmental resources. With no project manager, there could possibly be adverse environmental effects from lack of preventative maintenance. A failed dam could potentially destroy not only human life, but also entire ecosystems.

The Milk River System is a USBR project and therefore must comply with the National Environmental Policy Act.

Funding Recommendation

DNRC recommends no grant funding for the proposed project at this time. The application failed to document the scope of authority and corresponding duties of the project manager. Adequate funding for the position was also not documented.

Applicant Name	Richland County Valley View Water District	
Project Name	Point-of-Use Reverse Osmosis Water Treatment Systems	
Amount Requested	$ 85,212	Grant
Other Funding Sources	$ 2,633	Applicant
Total Project Cost	$ 87,845	
Amount Recommended	$ 0	Grant

Project Abstract (Prepared and submitted by applicant)

The Richland County Valley View Water District is located 10 miles south and east of the City of Sidney. The Yellowstone River is the physical barrier between the city and this rural subdivision. The district has a central water distribution system with two deep wells pumping into a pressure storage tank and then into waterlines that serve 30 households. The current water wells have extremely high fluoride levels, which have caused the district to be served with an Administrative Order by the Montana Department of Environmental Quality (DEQ). The district looked into finding a new source of water lower in fluoride, in treating the existing well water, or outlining point-of-use treatment units. According to Boyce Drilling, no better water source has been found in 25 years of drilling wells in that area.

The overall treatment option yielded two problems: the operational cost per user was too expensive (present worth 20 years = $17,730 per user), and the amount of reject water wasted would be significant (20% of the annual usage, or 1,460,000 gallons). There is no lagoon serving this subdivision. All homes have on-site disposal, so disposing of this volume of water will be difficult.

The second option to address the fluoride problem is to install a point-of-use treatment system at each user. The district would be responsible for checking the units and monitoring the fluoride levels. The advantage of the point-of-use devices is that only the water being consumed would be treated, dramatically cutting down on the volume of reject water. The average person will use 15 gallons per day for drinking and cooking. This will result in annual consumption of 356,000 gallons with 88,850 gallons wasted. This volume represents savings of 1,371,150 gallons of water annually, compared to the overall treatment option.

The district also needs to update existing water meters, install meters on all the users, and install a master meter to monitor the total water pumped. The individual meter readings when compared to the master meter will give an indication of how much water is being lost.

Technical Assessment

Project Background

The Richland County Valley View Water District is located on a high bluff 10 miles south and east of Sidney, across the Yellowstone River. The district serves 30 homes in a subdivision that was created during the late 1970s. The community public water system (PWS) has two deep wells as its source of supply. These wells each extend over 1,300 feet into the Fox Hills Sandstone formation. The water from each well has a fluoride level over the maximum contaminant level (MCL) of 4.0 milligrams per liter (mg/l). Exposure to drinking water with fluoride levels above the MCL for many years may result in cases of crippling skeletal fluorosis. Fluoride levels since 1993 have ranged from 4.71 to 9.96 mg/l. In December 2000, the DEQ issued an Administrative Order to the district for the following violations of Montana's PWS laws: (1) exceeding the fluoride MCL; (2) operating a PWS supply that exceeds an MCL; (3) failing to monitor quarterly for fluoride; and (4) failing to report to DEQ, to notify the public, and to send proof of the public notification to DEQ, for the above violations. Even after the lawsuit from the DEQ, the district continued to fail to monitor and conduct public notification. After more letters from DEQ's legal staff, the district is now finally willing to comply with DEQ requirements and remedy its fluoride problem.

Technical Approach

The main goal of this project is to comply with DEQ's Administrative Order by providing safe drinking water at the 30 homes in the district. The objectives are to remove fluoride to a level below the MCL of 4.0 mg/l and to meter the water system at the pumphouse and at the individual homes.

Various alternatives for compliance with the Administrative Order were considered by the district to some degree. The no-action alternative was eliminated because of the need to comply with the Administrative Order. The location of a new well with a lower fluoride level for blending with the existing water source was lightly investigated. A local driller indicated that no shallower, higher-quality water exists within two miles of the subdivision. Installation of a central reverse osmosis unit at the pumphouse and crossing of

the Yellowstone River for connection to the Sidney Public Water System were briefly mentioned and dismissed as cost-prohibitive. Only the installation of point-of-use reverse osmosis (RO) units and bottled water were considered further in the PER as possible alternatives. However, bottled water is not allowed by DEQ as a permanent solution to the high fluoride levels. The installation of meters was included with both alternatives. A master meter would to be provided at the pumphouse, and will help the district in managing and assessing its PWS. The individual meters are to be read by the homeowner each month and by the district twice a year. This may create some problems, such as:

- Guaranteeing that honest user fees are paid as water is used,
- Having meter problems go undetected for a six-month period, and
- Realization of the need for water conservation as summer water usage and monthly water bills increase.

Water quality data for secondary contaminants, such as iron, manganese, total dissolved solids, sodium, and sulfate, was not provided in the PER. These data were also not available in the DEQ public water supply files. If iron and manganese are present in significant amounts in the source water, they need to be removed before installing the RO units because they can clog and significantly shorten the life of the filters. The other secondary water quality parameters also place more of a burden on the RO units and contribute to a more objectionable reject water. The estimated water usage by each home through the RO units is 15 gallons per day. With 20% reject water, there will be about 4 gallons of concentrated wastewater going to each homeowner's individual septic tank/drainfield system each day. No adverse effects from disposal of the reject water to the drainfields are anticipated by the engineer.

Point-of-use (POU) treatment is authorized under the Safe Drinking Water Act. DEQ will approve their use if the following stipulations are met:

1. Plans and specifications, and an operation and maintenance plan, must be approved by DEQ;
2. The district must own the individual systems;
3. The district must control the individual systems;
4. The district must maintain the individual systems;
5. The homeowners must grant access to the POU units;
6. Adequate fees for installation, operation, and maintenance of the systems must be assessed; and
7. The homeowners must be educated about the operation and maintenance requirements of the RO units.

Project Management

The district clerk, the water operator, and engineering consultant will manage the project. DEQ has documented past problems in dealing with the district. If the engineering consultant takes the master role in management of this project, it should succeed. The DEQ Administrative Order requires an educational program for the water users to familiarize themselves with the affects of high fluoride. The district proposed monthly meetings, at which the engineering consultant would outline the work accomplished on the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$1,500	**$1,500**
Professional & Technical	$10,500	$0	$0	**$10,500**
Construction	$74,712	$0	$1,133	**$75,845**
Total	**$85,212**	**$0**	**$2,633**	**$87,845**

The district will provide $2,633 in in-kind services, and is requesting the balance of $85,212 as a grant from DNRC. If a DNRC grant is not awarded, the district will need to obtain a loan to fund the project, since it must meet the requirements of the DEQ's Administrative Order as soon as possible. The budget

appears to be complete. The budget costs for contract administration, professional and technical services, and construction are realistic.

The proposed project is affordable for the 30 homes in the district, if the increased user fees are imposed and collected on a timely basis. Meter reading by the district would increase O&M costs by about $3.00 per month per user. Currently the user rate is a flat fee of $30.00 per month per hookup, set up through a recently passed resolution. It is unclear how much residences were paying in the past. User rates will increase by $4.75 per month with the proposed new rate structure. The target water rate listed for the City of Sidney in the latest Community Development Block Grant application guidelines is $24.28. The homeowners are paying a high water rate when compared to the target rate, but this is hard to avoid with such a small number of homes to share the costs.

Benefit Assessment

The installation of the proposed point-of use RO units to remove excessive fluoride will specifically benefit the families of the Richland County Valley View Water District with children under the age of 13. Exposure to drinking water with fluoride levels above the federal MCL of 4.0 mg/l for many years may result in some cases of crippling skeletal fluorosis. Fluoride levels above 2.0 mg/l might affect children under nine years of age by causing dental fluorosis, a brown staining and pitting of the permanent teeth.

The main renewable resource benefits pertain to water management and conservation due to the installation of water meters, but are unrelated to the installation of the RO units. The installation of a master meter at the pumphouse and individual water meters at each of the 30 homes will provide renewable resource benefits. There will be less water use with the installation of the individual meters, resulting in lower system pumping costs. There will also be better management of the water source, water storage tanks, and distribution system. By comparing the total water pumped from the two PWS wells, as measured on the pumphouse meter, to the total read on the house meters, water system leaks can be better identified. Water conservation will help ensure that adequate water quantity remains in the aquifer to serve the subdivision homes and other nearby users of the deep aquifer, especially with recent drought conditions.

Environmental Evaluation

The proposed project consists of the installation of curb stops, meters, and meter pits outside each of the 30 homes and the installation of a Culligan AC30 RO unit with booster pump under the kitchen sink at each home for drinking and cooking water. This construction will cause no appreciable effects on the environment. There will only be temporary adverse impacts such as dust and noise at each home.

Funding Recommendation

The DNRC does not recommend grant funding for this project. DNRC recommends reapplication after completing a project management plan and a thorough technical analysis.

Applicant Name	St. Ignatius, Town of	
Project Name	Wastewater Facilities Improvements	
Amount Requested	$ 100,000	Grant
Other Funding Sources	$ 35,000	Applicant
	$ 284,200	Community Development Block Grant (CDBG)
	$ 293,300	Pollution Control State Revolving Fund (PCSRF) Loan
	$ 500,000	Treasure State Endowment Program (TSEP) Grant
Total Project Cost	$ 1,182,500	
Amount Recommended	$ 0	Grant

Project Abstract (Prepared and submitted by applicant)

This project rehabilitates an aging wastewater treatment system in the Town of St. Ignatius. The single-cell lagoon, built in 1956, with minor modifications to the aeration system in 1987, chronically exceeds permit limits for biological oxygen demand (BOD) and total suspended solids with several deficiency notices per year. The new Environmental Protection Agency (EPA) permit sets the coliform discharge requirements of 200 per 100 ml. The current effluent coliform levels range from 4,500 to 45,000. The 2001 Facilities Plan further outlines wastewater deficiencies as follows:

- The existing aerators provide approximately 1.5 lbs oxygen per pound of BOD removed vs. design criteria of 2.5 5 lbs oxygen per pound of BOD removed.
- Flexibility in operation is limited with only one cell; the depths of the cell and outlet structure limit the operational options.
- The shallow depth of the cell and the accumulation of sludge have seriously reduced the effectiveness of the aerators. The average depth of water was measured at 3.9 feet with an estimated 1.5 feet of sludge. The shallow depths render aerating ineffective and increase suspended solids in the discharge.

The 2001 Facilities Plan recommended, and the town adopted, the following preferred alternative, which carries a construction budget of $1,182,500.

- Remove and dispose of accumulated sludge in the existing lagoon.
- Increase depth of treatment area.
- Construct a new aerated complete mix cell #1 ahead of the existing lagoon.
- Divide the existing lagoon into 3 cells. Cells #2 and #3 will be partial mix lagoons. Cell #4 will be a polishing pond. The existing quiescent zone and outfall structure will remain.
- Install a UV disinfection system before discharge to existing natural wetlands.

Technical Assessment

Project Background

The Town of St. Ignatius is located in Lake County of western Montana, within the confines of the Flathead Indian Reservation. The proposed project involves a complete upgrade of the existing lagoon system, which serves the community. The existing lagoon is a 5.2-acre, single-cell lagoon system, with supplemental aeration added. The lagoon has had chronic violations of state and federally issued discharge permits. The lagoon is not properly lined, and half of the estimated flow going into the system leaks out of the bottom of the cell. Future permit requirements may impose more stringent standards, requiring a degree of treatment the current system cannot provide. The lagoon services approximately 950 people, and the town has experienced an annual growth rate of 23% in the last decade. New hookups to the system are not being allowed.

Technical Approach

The project goal is to provide the community with a new wastewater lagoon system that will provide service for a 20-year period. The preliminary engineering report (PER) considered three alternatives; each was a type of aerated lagoon system. The preferred alternative was the second highest capital cost. While the basis of selection was not clear, this option was supported by the review engineer at the Montana Department of Environmental Quality (DEQ). The other options would not clearly meet all current design standards. DEQ staff indicated concern about future effluent standards, which may include ammonia removal, requiring a level of treatment that cannot be consistently met by a lagoon system. The EPA expressed a similar concern over future ammonia limits. While the non-degradation provisions of the Montana Water Quality Act were considered in the report, the basis for the analysis used textbook flow data rather than actual flow. If actual flow is greater than estimated, the system may not be able to meet the non-degradation standards as the community grows, requiring further system improvements. The method of aeration provided for the proposed system is not appropriately sized for the lagoons and will

likely result in excess energy usage. A more efficient aeration system should be investigated. Sludge disposal options were not adequately developed.

Project Management

A grant administrator will manage the financial and administrative aspects of the project. The project manager will be selected in the future after a procurement process has been completed to select the administrative consultant. The town mayor, the town council, and the town clerk/treasurer will all have defined roles in project management. The project engineer will administer the technical aspects of the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$55,500	**$55,500**
Professional & Technical	$0	$0	$155,700	**$155,700**
Construction	$100,000	$0	$871,300	**$971,300**
Total	**$100,000**	**$0**	**$1,082,500**	**$1,182,500**

The budget strategy provided in the application is not clear and contains incorrect information regarding debt funding. Debt reserves were not shown in the budget. Aside from the problems in the budget, it does appear that the proposed funding package is viable. The project relies on several grant programs, which have not yet committed to the project. The applicant is a local government and has the ability to collect charges for debt and operation. Current charges for sewer service are approximately $11.00 per month, and the new costs will add approximately $11.50 per month in user charges for debt and O&M. The project costs will affect an estimated 250 households.

A detailed unit price cost breakdown was provided for the recommended alternative. In general, the costs were reasonable, although some of the electrical costs and estimates for disinfection equipment may be low. There were discrepancies between unit price costs for the three alternatives considered. A present worth cost comparison of alternatives was not provided.

The town has applied for a TSEP grant, and will seek a CDBG grant in the future. PCSRF loan funds will also be used to finance the project, and an application will be submitted to this program in the future.

Benefit Assessment

The project will provide natural resource conservation benefits by reducing pollutants being discharged to surface waters and ground waters in the Matt Creek and Mission Creek drainage basin. St. Ignatius currently limits new sewer connections, resulting in development outside of the town on the surrounding agricultural lands. A lined sewage lagoon will limit leakage of partially treated effluent into the groundwater, increasing flows in the receiving stream. Indirectly, good infrastructure in the town will help preserve undeveloped lands outside of the community. Downstream water quality and supported habitat in and near the receiving streams, while not discussed extensively in the grant application, will be improved through the reduction of pollutants and disinfection. This project will provide long-term benefit to the local economy through the lifting of the sewer moratorium, resulting in commercial and residential growth. Accordingly, the project enjoys good citizen support given these economic benefits.

Environmental Evaluation

The technical documentation, environmental checklist, and letters from agencies with oversight authority did not indicate any adverse environmental issues. An exception is the concern of DEQ and EPA for future changes in the discharge permit that might result in ammonia limits. These limits are intended to prevent toxic conditions to aquatic organisms downstream of the discharge point. In addition, springs are noted throughout the area, which has been identified as the headwaters of Matt Creek. Springs and high

groundwater will complicate construction and mitigative measures should be taken to prevent impacts to these water resources during project construction. As stated earlier, the proposed aeration system is oversized and should be reconfigured to save energy.

Funding Recommendation

DNRC does not recommend funding at this time. DNRC recommends reapplication after completing a thorough financial and technical analysis.

Applicant Name	Stillwater County	
Project Name	Assessing the Development of Multi-User Groundwater Resources in the Lake Basin of South-Central Montana	
Amount Requested	$ 99,989	Grant
Other Funding Sources	$ 5,000	Applicant
	$ 27,977	Montana Bureau of Mines and Geology (MBMG)
	$ 20,000	U.S. Bureau of Reclamation (USBR)
Total Project Cost	$ 152,966	
Amount Recommended	$ 0	Grant

Project Abstract (Prepared and submitted by applicant)

Developing new multi-user water supplies for livestock producers in the Lake Basin of south-central Montana is the goal of this proposed work. Since the 1950s, serious saline seep conditions have developed in the Lake Basin area. With the extensive loss of land productivity and the advent of the Conservation Reserve Program (CRP), much of the salinized land is now being returned to rangeland. Land use in this area is dominated by small-grain crop and livestock production. Most producers in the area require a mixture of grain and livestock production to remain economically viable.

Traditional water supplies have been degraded by the saline seep process that mobilizes salts containing high concentrations of selenium, nitrates, and sulfates. These constituents can build up in aquifers, lakes, springs, seeps, sediment, and forage to concentrations that are toxic to livestock and wildlife. Other antagonistic minerals can block the uptake of required trace metals necessary for healthy livestock and wildlife. Much of the land in the region underlies a closed drainage basin generally characterized by poor-quality groundwater that ranks among the worst quality water for livestock in the state. The project will build on an existing project under which potential sites for developing groundwater resources have been identified.

The basin margins appear to have geologic conditions favorable for developing better quality and higher quantity water supplies than the more central area of the closed basin. This project will site and construct test wells and assess two to four to locations for long-term water development. The assessment will include detailed measurements of groundwater quality and long-term aquifer testing to identify optimum pumping rates and impacts to nearby water resources. In addition, groundwater flow, recharge areas, and discharge areas will be mapped to help producers understand the long-term viability of these water supplies.

Technical Assessment

Project Background

Lake Basin is located in eastern Stillwater County. The project area is located near the drainage divide between Lake Basin, Painted Robe Creek, and Comanche Basin. Most of the area is privately owned with the exception of state lands. The project area contains extensive salinized areas that have led to degradation of surface water and shallow groundwater sources. The proposed project will document the

feasibility of developing deeper groundwater supplies capable of providing water for livestock producers over a large part of the Lake Basin area. In addition, the project will be used to verify that water quality is acceptable for livestock use and that water is available in adequate quantities. Potential impacts for water development will also be documented.

Technical Approach

The Stillwater County Commission, with support from MBMG, proposes the following goals for the assessment project:

- Identify target area(s) that show good potential for water-resource development;
- Verify potential for adequate water quality and quantity in the target area(s); and
- Test the feasibility of developing water supplies in the target area(s).

The initial goals will be met by compiling existing hydrogeologic data and completing an inventory of existing water supply wells and springs in the target area(s). The inventory will confirm the location of wells and other hydrogeologic data including depth of the well, aquifer information, static water levels, and pumping water levels, and identify any available existing water quality data. All well locations will be compiled into a global information system database. Based on the information obtained during the inventory, test holes will be drilled in suitable locations and completed as water wells, groundwater samples for water quality evaluation will be collected, and aquifer tests will be completed to evaluate aquifer hydrogeologic conditions. A comprehensive feasibility analysis will be completed documenting the results of the project and the potential for developing regional livestock water supplies in the project area.

Project Management

The proposed project will be managed and administered by Stillwater County under the direction of the county commissioners. Technical work will be completed by MBMG staff. A technical advisory committee composed of Lake Basin producers and other interested Stillwater County residents will be formed to advise and interact with MBMG staff. Currently, a group of producers has been actively meeting to discuss the need for this work. A well drilling company will be contracted with to complete the water supply wells. Either the MBMG laboratory or a private laboratory will be contracted to complete water quality analysis.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$5,000	0	$5,000	**$10,000**
Professional & Technical	$94.989	$0	$47,977	**$142,966**
Construction	$0	$0	$0	$0
Total	**$99,989**	**$0**	**$52,977**	**$152,966**

The budget appears to be sufficient to fund the proposed project. Material, labor, and equipment costs used to develop the budget appear to be reasonable and adequate. However, detailed alternatives and alternatives costs are not provided. Approximately 250,000 acres in Lake Basin are included in this project.

The proposed funding package appears to be a reasonable mix of state and local funds. In addition to the requested DNRC grant, Stillwater County has committed $5,000 for project oversight and direction responsibilities, MBMG has committed $27,977 for technical staff salaries and benefits, and USBR has committed $20,000 (although supporting documentation of this commitment was not included in the grant application).

Benefit Assessment

The project will provide direct, quantifiable benefits and would directly contribute to the development and management of the natural ground water resource in the Lake Basin area. Forty farmers and ranchers have been actively involved in addressing water quality issues in the basin and will directly benefit from the study. In addition, other property owners and businesses will benefit from improvement of the water supply in the 250,000-acre project area. Wildlife will also benefit from an improvement in the surface water quality that may result from changes to the agricultural practices if a regional deep groundwater supply is located.

The proposed project would provide a resource for access to the hydrogeologic data necessary to evaluate and develop deep groundwater supplies in the Lake Basin area. Technical information provided through the project will help landowners to effectively manage the groundwater resource in the area. Water rights issues will be supported by this additional information.

Environmental Evaluation

This project does not have any long-term environmental impacts or any potential adverse impacts. However, the potential for water rights issues resulting from additional withdrawals in the aquifer will need to be monitored and addressed. The impact on surface water from high-yield groundwater irrigation supply wells will need to be assessed during a well development project in an identified target area.

Funding Recommendation

DNRC recommends no funding for this project. The applicant currently has a Renewable Resource grant that proposes to search for potential locations of regional stockwater supplies in the Lake Basin area. The test results from the current grant project have so far indicated the most promising area for a regional water supply is the northern flank of Lake Basin. It is DNRC's position that instead of completing the current grant and studying wells that have been proven to have poor water quality, that the remaining grant money be used to test drill and sample in the area already indicating the best potential for a regional water supply for livestock.

Applicant Name	West Crane Irrigation District	
Project Name	Feasibility Study of Storage Alternatives	
Amount Requested	$ 95,350	Grant
Other Funding Sources	$ 0	
Total Project Cost	$ 95,350	
Amount Recommended	$ 0	Grant

Project Abstract (Prepared and submitted by the applicant)

This is the second proposal for Renewable Resource Grant and Loan Program funding for the development of the West Crane Sprinkler Irrigation Project. The 1999 Montana Legislature approved the first grant for the preliminary engineering design. This proposal is a continuation of that project.

The West Crane Irrigation District is progressing toward constructing an 8,000-acre center pivot sprinkler irrigation project. The district has secured the water for this project by utilizing a water reservation from the Yellowstone River. A feasibility study has been completed and the majority of the preliminary permitting has been obtained. The district is presently refining the engineering plan to serve the irrigable lands. A basic goal is to investigate methods to bring costs to a more affordable level. One consideration was to develop storage within the project area so that water could be pumped from the Yellowstone River continuously over a six- to seven-month period. The peak irrigation can then be diverted from the storage that would be closer to the area to be irrigated. This reduces the length pipeline needed as well as the

number of pumps and the head against which they must pump. Preliminary cost estimates indicate savings in cost of about $2 million or about $250 per acre.

Two alternatives for storage are possible. The first would involve construction of a 55-foot high dam just below an existing small dam on a drainage between Fox Creek and Crane Creek. The resulting reservoir would provide about 5,000 acre-feet of storage, which would meet the peak irrigation needs of the project. The second alternative involves construction of five or more low head dams (10 feet high or less) on Crane Creek. Off-peak water would be introduced into these basins to recharge an extensive gravel aquifer, and to provide short-term surface storage. Water would be recovered utilizing wells producing up to 500 gpm each to a capacity of about 25,000 gpm (50+ wells). Since the recharge water source for this project would be pumped from the Yellowstone River, no additional surface or groundwater rights would need to be secured.

The feasibility of both of these alternatives hinges on underground characteristics, the foundation of the dam, and the characteristics and extent of the aquifer. Preliminary analysis indicates favorable conditions, but the area must be drilled, tested, and analyzed. This request for funds addresses the field, laboratory, and office expenditures.

Technical Assessment

Project Background

The district is located in Richland County and was developed by a group of 10 landowners as part of their effort to develop a new 8,000-acre sprinkler irrigation project using water from the Yellowstone River. The district has conducted two studies to determine if the irrigation project is feasible, and is currently using DNRC RRGL grant funding on engineering and design of the sprinkler system. The results of feasibility studies indicate that the project will cost $1,500 to $1,750 per acre, which is considered too expensive. The district is now investigating alternatives for reducing costs to below $1,000 per acre.

Technical Approach

The goal of the proposed project is to identify a feasible engineering, financial plan and cost for the proposed 8,000-acre irrigation project. The district proposes to investigate two alternatives for storing water to reduce system pumping and piping costs. Preliminary estimates indicate that storing water could reduce net costs of the overall irrigation project by $250 per acre. One storage alternative to be investigated is constructing a 55-foot dam on a tributary to Crane Creek to create a reservoir with about 5,000 acre-feet of active storage. The second alternative is constructing five small (10-foot) dams on Crane Creek that would impound water for inducing groundwater recharge and storage. Groundwater would then be available in the aquifer for pumping. The proposed investigation would involve drilling and sampling test holes to determine geotechnical suitability for dam construction, drilling and testing wells to determine aquifer properties, analyzing test results, and developing cost estimates for the two storage alternatives.

Storing water to reduce overall project costs is a reasonable alternative to investigate, but the preliminary cost estimates for the storage alternatives proposed appear to be low and based on very optimistic assumptions. For example, preliminary cost estimates were based on the assumptions that sufficient material sources are located nearby, that the reservoirs would be not be classified as high-hazard, and that potential environmental impacts will not significantly affect costs. It would be important to evaluate the validity of these assumptions and other key issues before conducting expensive test drilling. Numerous regulatory issues, including environmental impacts and dam safety, would have to be addressed before this project could be constructed. Reviewers suggested that a dam feasibility analysis including a hazard evaluation be done for each of the proposed dams.

Project Management

This project will be managed and administered by the district with the assistance of a facilitator. Extensive project management is not anticipated until future phases of this project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	$0	$0	$0	**$0**
Professional & Technical	$44,150	$0	$0	**$44,150**
Construction	$51,200	$0	$0	**$51,200**
Total	**$95,350**	**$0**	**$0**	**$95,350**

The unit and total costs of the proposed investigation appear to be reasonable. The requested grant funding would pay for the entire investigation. The district has had success in obtaining funding for developing the project to its present stage. Until this and perhaps other follow-up investigations are completed, however, insufficient information is available to assess the financial feasibility of the overall irrigation project. The district hopes that storage, combined with power subsidies, will lower costs to less than $1,000 per acre, but even at that cost the project may still be considered expensive based on an irrigation development cost of $400 per acre that the NRCS sometimes uses as a guideline. However, if successful, the proposed 8,000-acre sprinkler irrigation project has the potential to provide significant beneficial impacts to the economy of Richland County. The district estimates that the project could put $8 million a year into the local economy, create 80 new jobs, attract food processors to the region, and allow for alternative high-value rotational crop development.

Benefit Assessment

The primary renewable resource benefit of proposed investigation would be to provide information that is needed for the development of a new 8,000-acre sprinkler irrigation system using water from the Yellowstone River. The district has already secured the use of water for this project through a water reservation. Constructing a new large reservoir could also provide multiple recreational and fish and wildlife benefits.

Environmental Evaluation

The proposed investigation would have minimal short-term impacts to the local environment. If constructed, however, the storage project(s) would have significant impact to the environment. Potential positive impacts include the development of habitat for fish and wildlife. Potential negative impacts include permanent or seasonal flooding of large areas of land, shoreline erosion, inducing locally high groundwater levels and non-target flooding, and disruption of habitat used by the pallid sturgeon (an endangered species).

Funding Recommendation

DNRC does not recommend funding at this time. DNRC recommends reapplication after completing a thorough technical and environmental analysis.

CHAPTER III

Coal Severance Tax Loans to Public Entities

Application Administration and Project Review Procedures

Applications for public loans are accepted by DNRC's Resource Development Bureau until May 15 of each even-numbered year at the same time other applications are due from public applicants under this program. A $250 application fee is required with each application for a large public loan. These loans are provided with proceeds from the sale of coal severance tax secured bonds and frequently are offered at a subsidized interest rate. The subsidy is paid with coal tax revenues.

Project Solicitation

Applications for public loans are solicited through the same process DNRC uses to solicit other public grant and loan applications described in Chapter II. The availability of low-interest loan funds is widely advertised through direct mailings, press releases in association and commercial newspapers, and with contact made during promotional workshops conducted by DNRC, DOC, and DEQ at the local level. The same application form is used to solicit both grant and loan applications.

Application Review

All public loan applications received by the deadline are evaluated for completeness. Those missing documentation, application fees, or other basic requirements are notified and allowed time to submit additional material. After applications are reviewed for completeness, and any additional information needed is obtained from the sponsor, completed applications are given to the team of key reviewers for review and evaluation. **Figure 1**, in Chapter II, shows the flow of the application review process. Loans are reviewed to determine financial, economic, and technical feasibility.

Funding Recommendations

All feasible public loan applications eligible for funding receive a favorable funding recommendation if the applicant demonstrates the ability to repay the loan. DNRC's recommendation includes the amount of financing needed to meet project and financing expenses and the interest rate suggested. There is no maximum allowable funding level. Public loans are limited to the amount an applicant has the ability to repay under the standard repayment terms and by DNRC's bonding capacity.

Availability of Loan Funds

In 1981, the legislature adopted SB 409 to provide up to $250 million in Montana coal severance tax bonds. Coal severance tax bonds are issued for financing projects and activities in the state specifically authorized by the legislature. Statutes dictate that loans made from coal severance tax bond proceeds are to be administered by DNRC, and that DNRC is to review each project to determine its technical and financial feasibility.

Although the legislation was adopted in 1981, coal severance tax loans were not issued for the first few years because the constitutionality of the state's bonding authority under this program was initially challenged. In February 1984, the Montana Supreme Court ruled in the state's favor in *Grossman v. State of Montana*, and the first Montana coal severance tax bond was sold to finance loans during that same year.

In September 1985, the board of examiners adopted a general resolution pursuant to which all subsequent coal severance tax bonds have been issued. A copy of this resolution may be obtained from DNRC. The general resolution requires the bonds issued be secured on a parity basis. This means that all subsequent coal severance tax bond issues have the same right or ability on proceeds flowing into the trust fund to pay bondholders. However, to assure bondholders there always will be enough coal severance tax revenue to meet debt service payments, the general resolution restricts the cumulative

amount of bonds that can be issued. This restriction is more constraining than the $250 million statutory limit. The general resolution does not allow any additional coal severance tax bonds to be issued if annual debt payments exceed 50% of the coal severance tax revenue allocated to the trust, plus 50% of the loan repayments received from local government borrowers.

Loan Repayment

Coal severance tax revenue is used to pay the difference between payments received from local government borrowers and the state coal severance tax bond payments. Thus, coal severance tax bonds are paid with revenue from payments from local government borrowers along with coal severance tax proceeds.

To implement these repayment provisions, the statute established a fund structure within the permanent coal tax trust fund. Fifty percent of coal severance tax proceeds flowing to the permanent trust fund are first deposited in the coal severance tax bond fund. A portion of the proceeds deposited in the bond fund are transferred to the debt service account to pay for the interest rate subsidies. An amount equal to a year's debt service payment on all coal severance tax bonds is held in reserve in the bond fund.

Proceeds that exceed the subsidy payments and reserve requirement are transferred to the coal severance tax school bond contingency account. This fund was established to provide security to school bonds issued during the 1993 biennium. The remaining proceeds are then transferred into the Treasure State Endowment Fund and the Coal Severance Tax Permanent Fund, which retains the remaining 80% of this income.

With the exception of the Treasure State Endowment Fund, the interest earnings associated with all account balances are transferred to the coal severance tax income fund. These interest earnings are then transferred to the general funds.

Interest Rates

Loans may be provided at a rate less than the rate at which the state bond is sold, for all or part of the term. During the financial review of each loan application, DNRC prepares a funding recommendation that includes a recommended interest rate subsidy. This subsidy is available for loan applicants only. Applicants who receive grant funding in conjunction with a loan do not receive an interest subsidy. Recommendations are developed to be consistent with past direction provided by the Long Range Planning subcommittee of the legislature. In 1987, the legislature directed that the recommended subsidy for municipal projects typically be based on the user rate as a percentage of the "median household income." The schedule for subsidies with respect to municipal projects is presented below.

1. If less that 1% of the median household income is required to pay user rates, no subsidy is recommended;
2. If the user rate is at least 1% but less than 2%, a 1% interest rate subsidy for 5 years is recommended;
3. If the user rate is at least 2% but less than 4%, a 2% interest rate subsidy for 5 years is recommended; and
4. If the user rate is more than 4% of the median household income, a 3% interest rate subsidy for 5 years is recommended.

The basic interest rate on coal severance tax loans Is determined by the bond market at the time coal severance tax bonds are sold. The rate of interest on most loans from the program will vary in accordance with the rate on the state coal severance tax bonds. The basic rate of interest for each public loan financed from the proceeds of a single bond issue is the same. Subsidies vary, depending on legislative authorization.

Project Management

DNRC reviews each public loan application to determine whether the project is financially feasible. A project is considered financially feasible if sufficient funds can be made available to complete the project, and if sufficient revenue can be obtained to repay the loan and to operate, maintain, and replace the project. After a public loan is authorized by the legislature and the project sponsor is ready to secure financing, DNRC performs a more thorough review of the applicant's ability to repay the loan. At this time DNRC may require access to the applicant's most recent financial statement, budget document, and other documentation in order to assess whether the proposed project is truly financially feasible.

If the borrower provides documentation of the ability to repay a loan and all legal requirements to incur debt are met, a bond purchase agreement is prepared and executed to make specific requirements and covenants with respect to a project or improvements to a project being financed. Borrowers must acquire all property rights necessary for the project, including rights-of-way and interest in land needed for a project's construction, operation, and maintenance. As appropriate, these and other stipulations also are contained in a bond resolution. Unless otherwise authorized, each loan--including principal and interest--shall be payable over a term approved by DNRC not to exceed the term authorized by the legislature. The cost of issuing the state's bond also is paid by borrowers.

Each borrower must agree not to sell, transfer, lease, or otherwise encumber the project, any portion of the project, or interest in the project without DNRC's prior written consent, Further, the borrower must notify DNRC of any changes or modifications in a project either before or during construction. Borrowers are required to acquire and maintain, with respect to the project, property, casualty, and liability insurance. Insurance policies must name DNRC as a certificate holder for notification purposes.

For local government revenue bonds, borrowers must establish a system fund to segregate the revenue of the system or district. Within the system or district fund, the following accounts are generally established: construction account, operating account, revenue bond account, reserve account, replacement and renewal account, and surplus account. These accounts ensure that the system's revenue and other funds are properly applied in a manner reasonably satisfactory to DNRC.

Loans are disbursed by warrants drawn by the state auditor, or by wire transfers authorized by the state treasurer in accordance with the provisions of this rule and the bond resolution. No disbursement of any loan funds shall be made unless DNRC has received from the borrower (1) a duly adopted and executed bond resolution in a form acceptable to DNRC; (2) an executed bond in a principal amount equal to the loan amount, also in a form acceptable to DNRC; (3) a certificate from an official of the governmental unit stating that no litigation is threatened or pending that would challenge the governmental unit's authority to undertake the project, to incur the loan, to issue the bonds, and to collect revenue; (4) an opinion from the bond counsel that the bond is a valid and binding obligation of the borrower payable in accordance with its terms; and (5) any other closing certificates or documents that DNRC or the bond counsel may require.

Project Monitoring

Borrowers must maintain proper and adequate records of accounts that show the complete and correct entries of all receipts, disbursements, and other transactions related to the project and, if applicable, the monthly gross revenue derived from the projects operation. Any segregation and application of the gross revenue resolution also must be shown in such reasonable detail as may be determined by the borrower in accordance with generally accepted accounting practices and principles.

Loan agreements require quarterly progress reports, expenditure reports, a final report, and annual financial reports over the term of the loan. Projects are closely monitored each quarter when quarterly reports are submitted. Borrowers submit documentation for all expenditures and these are checked against the loan agreement.

Under the usual terms of DNRC's bond purchase agreement, each borrower must comply with reporting requirements during the construction period and continue to do so throughout the term of the loan. According to these requirements, within 180 days after the close of each fiscal year, the borrower must

prepare and supply to DNRC an appropriate financial report with respect to the project for such fiscal year. Where applicable, this report includes a statement that details the project's income and expenditures for the fiscal year; the identification of capital expenditures that separate them from operating expenditures; a balance sheet as of the end of the fiscal year; the number of premises connected to the project at the end of the fiscal year; and the amount of cash on-hand in each account of the fund at the end of the fiscal year. The borrower must also provide a list of the insurance policies and fidelity bonds in force at the end of the fiscal year, that shows the amount of coverage, the risks covered, the name of the insurer or surety, and the expiration date of the policy or bond.

Figure 4 Coal Severance Tax Loans / Resource Development Public Loans

Applicant	Balance Due	Applicant	Balance Due
Anaconda - Deer Lodge County	$ 153,682	Lakeside County Water and Sewer District	$ 165,518
Beaverhead County/Red Rock Water & Sewer District	1,906,301	Lockwood Irrigation District	92,716
Belgrade	181,740	Miles City	873,050
Bitterroot Irrigation District	681,190	Mill Creek Water and Sewer District	616,288
Bozeman	216,679	Neihart	119,080
Bozeman	368,951	Pondera County Canal and Reservoir Company	295,709
Broadwater Power Project	21,450,000	Pondera County Canal and Reservoir Company	237,446
Charlo Water District	9,596	Poplar	141,032
Conrad	63,354	Sage Creek Water District	466,107
Culbertson	154,831	Sanders County Water District at Noxon	84,454
Daly Ditches Irrigation District	358,281	Shelby	130,082
Denton	76,153	State Water Projects Bureau, DNRC -	-
Dutton	96,678	Bair Dam	988,772
Dutton	17,297	Broadwater-Missouri Pipespan	367,652
East Bench Irrigation District	466,684	Deadman's Basin	341,331
East Helena	191,685	East Fork Rock Creek Dam	750,000
Ekalaka	65,896	Petrolia Dam	295,570
Ennis	39,552	Shields Canal Water Users Association	12,468
Ennis	584,702	Upper Musselshell Water Users Association	62,051
Fairview	151,785	Yellowwater Water Users Association	8,321
Flathead County for Evergreen	2,614,645	Sun Prairie Water and Sewer District	327,013
Forsyth	241,993	Sun Prairie Water and Sewer District	141,893
Fort Benton	222,245	Three Forks	79,423
Fort Benton	441,370	Three Forks	54,777
Gardiner - Park County Water District	183,780	Tin Cup Water and Sewer District	248,049
Glasgow	1,263,839	West Yellowstone	192,186
Glendive	1,014,435	West Yellowstone	287,400
Harlem	184,186	White Sulphur Springs	150,118
Havre	765,753	Whitefish	342,342
Huntley Irrigation District	1,084,218	Wibaux	159,072
Huntley Irrigation District	167,482	Yellowstone County	49,530
Huntley Irrigation District	63,275	Yellowstone County	75,714
Hysham	$ 167,482		
		TOTAL	**$43,804,904**

Figure 5 Coal Severance Tax Loans / Water Development Public Loans

Applicant	Balance Due
Antelope County Water and Sewer District	$ 58,891
Culbertson	25,367
Cut Bank - North Glacier Water and Sewer District	49,747
Kevin	63,275
Park County	60,371
Winnett	17,206
TOTAL	**$ 274,857**

TOTAL OUTSTANDING PUBLIC LOANS **$44,079,761**

Figure 6 Public Loans Authorized in 2001 and Seeking Reauthorization

Applicant	Amount	Rate
Canyon Creek Irrigation District	$ 300,000	Market-not to exceed 4.5%
DNRC/Nevada Creek Dam	$ 494,041	2.25%
Hill County Water District	$ 400,000	2% Below first 5 Years Market for balance of term
Lockwood Water & Sewer District	$ 3,300,000	2% below market for first 5 years Market for balance of term
Lower Willow Creek Drainage District	$ 1,350,000	4.5% on first $250,000 2.25% on next $250,000 0% on balance of loan
Malta Irrigation District	$ 2,274,950	4.5% on first $250,000 2.25% on next $250,000 0% on balance of loan

CHAPTER IV

Renewable Resource Grants and Loans to Private Entities

Grant Application Administration and Project Review Procedures

As discussed in Chapter I, applications for water-related projects from any individual, association, for-profit corporation, or not-for-profit corporation, may be considered for funding. Only water-related projects may be funded. They must have quantifiable benefits that will exceed costs. Projects must also provide public benefits in addition to any private benefits.

Grant Project Solicitation

To solicit applications from private entities that provide significant public benefits, DNRC has chosen to target public water systems operated by private water user associations and small agricultural projects that need help. The agricultural projects have included inspection on private high-hazard dams, and water measuring devices on chronically dewatered streams. To this end DNRC has contracted with Montana Rural Water Systems, Inc. (MRWS) to solicit projects from private drinking water systems, review projects and advise DNRC on their validity, feasibility, and performance. Dam and water measuring projects were solicited by the Dam Safety Bureau and the Water Management Bureau of the Water Resources Division of DNRC. In addition to the projects solicited by the above-mentioned organizations, DNRC also accepts applications at any time from any water system. Grantees are given one year to complete the project.

Information requested in the application includes:

- name, address, and telephone number of applicant;
- description of the problem, including the history and alternative methods of rectifying the problem;
- complete budget information including funding sources and cost comparatives of the alternatives;
- description of the public and private benefits of the project and the need and urgency of the project;
- environmental impacts of the project, both positive and negative; and
- technical information and approval, if necessary, by DEQ, EPA, or other responsible enforcement agency.

Grant Application Review

All applications received by MRWS were evaluated and ranked according to the extent each application represents a project that is critically needed, will protect public health, provides opportunities for resource conservation, and improves the environment. Applications received by Dam Safety and Water Management were reviewed by them, and submitted to Resource Development Bureau with a recommendation. Other applications are also evaluated by DNRC staff. All applicants must hold or be able to acquire all necessary lands other than public lands and interests in the lands and water rights necessary for the construction, operation, and maintenance of the project.

Criteria for evaluating private grants is similar to the criteria outlined in Chapter II for public grants. As with public grants, private grants are also evaluated to determine the potential adverse environmental impacts. Projects that would result in significant impacts would not be recommended for funding by DNRC until an environmental assessment or environmental impact study has been completed. Recommendations are made to minimize impacts and to ensure that appropriate steps are taken to protect the environment. Any potable water system project must be approved by DEQ to ensure that it meets state standards.

Grant Funding Recommendations

According to Montana's Constitution, the legislature may not appropriate funds to private individuals. However, state entities have the authority to distribute public funds to private individuals. To provide for

private grants in 1993, the legislature appropriated $100,000 to DNRC to fund grants for private entities. Since then, the legislature has appropriated $100,000 to DNRC each biennium to fund grants to private entities.

DNRC's role is to review and screen grant requests to determine whether the proposed projects are technically and financially feasible. DNRC will evaluate MRWS, Dam Safety, and Water Management, recommendations based on criteria outlined in statute; within funding constraints the highest ranked projects will be recommended to DNRC's director for funding. Feasibility studies, research, and/or public information projects will not be recommended for funding. By law, grant funding for any project may not exceed 25 % of the total estimated cost of the project.

Grant Project Management

After DNRC's director has acted on the funding recommendations prepared by staff, DNRC notifies the applicants of their funded or not-funded status. DNRC does not reimburse any project cost incurred before a formal funding agreement is executed.

Grant Project Monitoring

Procedures for monitoring projects, to ensure the program's intent is met, are primarily driven by a project grant contract agreement between DNRC and the project sponsor. The equivalent of 1 full-time staff administers active private grants and all private loans. MRWS has agreed to provide technical support to private grant projects during design and construction phases. Budget and staffing constraints preclude DNRC's site involvement at all projects.

Project sponsors must: (1) pay all project costs, (2) submit a claim and obtain a reimbursement of allowable costs from DNRC, or (3) arrange for an advance of funds. Invoices may be submitted monthly, and all costs must be supported by invoices, receipts, or both.

Grant Project Evaluation

Grant agreements require expenditure reports and a final report. During a project's contract term, the project sponsor must submit quarterly reports to DNRC. These reports must reflect the percentage of the project completed, the project costs to date, any problems encountered, and the need for any amendment to the grant contract. In response to changes in project scope of work, time line, or budget, amendments to grant agreement are prepared and issued. Amendments will continue to be the technique used to modify projects to adjust for changes in scope, budget, or timeliness.

Private Loan Application and Project Review Procedures

Loans to private individuals also must promote and advance the beneficial use of water and allow Montana's citizens to fully use the state's water. Loan funding became available in 1981 when the legislature earmarked $350,000 under the former Renewable Resource Development program to finance loans to private individuals. At the same time, DNRC was given the authority to issue general obligation bonds to finance private loans.

Loan Project Solicitation

Projects are solicited through press releases, public meetings, and word of mouth. When a bond is sold, a press release is sent to all newspapers in the state. Promotion by irrigation equipment dealers who are aware of the program, encouragement from local NRCS offices and Conservation Districts, and presentations by staff at various industry functions also serve to solicit applications for loan funding.

FIGURE 7 Private Grant Applications Since October 2000

PROJECT SPONSOR	AMOUNT
Breise Brothers	$ 875.00
Camas Creek Cattle and Sheep Company	5,000.00
Cayuse Livestock Company	1,865.00
Chico Hot Springs	5,000.00
Cummings, Tom	1,130.00
Demaio, Victor	260.50
Douglas Shaw Ranch	2,000.00
Estler Lake Dam	286.84
Grant Creek Water Users Assn	1,800.00
Jackson, Ronald	356.25
Kilby Butte Colony	700.00
Mager, Frank	162.50
Moore, Stephen	1,394.00
Munson, Russ	5,000.00
Nance Cattle Company	363.00
Pipestone Water Users Assn	641.50
Powell, William	5,000.00
Schuman, Philip	660.00
Smith Lake Vista County Water District	5,000.00
Sweet Grass Canal and Reservoir	178.13
Whisonant, Joe	1,266.00
Zeier Ranch, LLC	512.50
TOTAL	**$ 39,451.22**

Loan Application Review

Loan applications are submitted at any time. DNRC staff reviews the application for completeness and requests additional information when needed. Technical aspects of the project are usually completed by NRCS or a private engineer. If the project is not designed by a qualified professional, DNRC will closely review the project design and specifications. Financial review is completed by DNRC and includes an evaluation of the applicants financial strengths, weaknesses, and risk-taking ability. This also includes an evaluation of the security offered and a determination of the relative security position DNRC will have. All of the these factors are considered in the recommendation to the loan committee.

Loan Funding Recommendations

Applications that meet feasibility and eligibility criteria are funded if the applicant demonstrates the ability to repay the loan. Projects must be technically and economically feasible, and must pay for themselves over the life of the installation through water savings, increased crop production, or other measurable benefits.

For private individuals, $200,000 is the maximum loan amount allowable under the Renewable Resource Grant and Loan Program. The 1997 legislature amended the statute to allow the DNRC to accept applications and loan funds to water user associations. These loans are limited to $300,000 rather than the $200,000 for private individuals. Loans are for a term not longer than 30 years or the estimated useful life of the equipment purchased or materials installed. For new irrigation equipment, 15 years is the allowable term; for used irrigation equipment, the term usually is 10 years or less.

Availability of Loan Funds

DNRC has the authority to issue general obligation Renewable Resource bonds totaling up to $20 million to finance private loans. Changes made by the 1995 Legislature allow DNRC to have up to $20 million of general obligation Renewable Resource bonds outstanding. Since the program's inception, bonds totaling about $26.9 million have been issued to finance private loans. $16.6 million in bonds is presently outstanding. To finance loans, DNRC sells bonds on the open market.

Interest Rates

The rate of interest on the state's general obligation bond determines the interest rate for private loans. The basic rate for private loans has varied from 4.3 to 9.5 percent. Tax law has also contributed to increased interest rates. Before 1986, state bonds sold to finance DNRC projects were tax-exempt. The tax law of 1986 thereafter prohibited financing private ventures with tax-free bonds. Therefore, bond sales to finance private projects after 1986 have been taxable (federal taxable, state tax-exempt). Because investors demand a higher interest rate on investments when their investments are subject to federal income tax, sale of these taxable bonds resulted in higher interest rates than those of the earlier, tax-exempt bonds.

In addition to interest costs, borrowers also pay a share of bond issuance costs proportionate to the percentage of the bond used to finance their loan. Higher interest rates and issuance cost charges have made private loans less attractive than those offered when the program first started. Although less attractive, private loans remain competitive with conventional financing because the rate on taxable bonds is still slightly lower than interest rates obtainable from conventional financing. DNRC loans also provide financing at a fixed interest rate for a period longer than that available to borrowers through their local financial institutions.

Longer terms and competitive fixed interest rates, in most cases, continue to make these loans attractive to borrowers interested in long-term financing for major equipment or system purchases. The exception are loans for less than $10,000. For small loans, closing costs will outweigh the benefit of DNRC's lower interest rate. DNRC recommends that projects needing less than $10,000 seek funding from other sources. Closing costs include a $150 non-refundable application fee and title insurance.

Loan Project Management

Borrowers must acquire all property rights necessary for the project including rights-of-way and interest in land needed for the construction, operation, and maintenance of the project. Title insurance, a title opinion or other documents showing the ownership of the land, mortgages, encumbrances, or other liens must be provided to DNRC.

Loans must be secured with real property valued higher than the loan amount requested. According to statute, security equal to at least 125% of the loan's value is required. Loans may be secured with a first or second real estate mortgage, an assignment of accounts receivable, certificates of deposit, or similar securities, or other security as accepted by DNRC. To adequately secure the state's interest, DNRC requires a security equal in value to at least 150% of the loan. For example, a loan application for $100,000 would require real estate security of $150,000. DNRC will accept a second mortgage on property if the state's interest can be adequately secured. DNRC may require an appraisal of real property used for securing a loan. Cost of the appraisal must be paid by the applicant.

After an application is approved for financing, interim financing may be secured by the applicant, with interest costs included in the DNRC's loan financing. The Renewable Resource Grant and Loan Program does not refinance existing loans; only new ventures are eligible.

Loans to private entities are disbursed by warrants drawn by the state auditor or wire transfers authorized by the state treasurer. Before disbursement can occur, all loan documents must be properly signed, security documents must be filed with the county clerk and recorder, the final title insurance policy must be in force, and an invoice must be submitted by the borrower to document the use of funds.

Loan Project Monitoring

Project construction is monitored by NRCS if there is cost-share money involved, by the borrower as he has a vested interest in the successful completion of the project, and by bureau staff through field visits when possible.

Borrowers must maintain proper and adequate records of accounts that show the complete and correct entries of all receipts, disbursements, and other transactions related to the project and, if applicable, the monthly gross revenue derived from the project's operation. Any segregation and application of the gross revenue resolution also must be shown in such reasonable detail as may be determined by the borrower in accordance with generally accepted accounting practices and principles.

Loan Project Evaluation

Through its monitoring efforts, DNRC conducts an ongoing effort to evaluate the projects funded under the Renewable Resource Grant and Loan Program. DNRC will continue to review each final report as has been done in the past. This review will be documented to indicate whether the project successfully completed the objectives outlined in the original application as specified in the loan agreement.

Private Loan Projects Previously Funded

As of September 30, 2002, 296 private loans had been approved under the Renewable Resource Grant and Loan Program. A total of $24,549,897 has been advanced, and $505,048 is committed to projects that have not requested disbursements. **Figure 8** lists the status of private loans that have been approved since October 2000. Loans have been used to finance projects involving new and refurbished irrigation systems, riprap, irrigation wells, and refurbishing private drinking water systems.

FIGURE 8 Private Loan Applications Approved Since October 2000

Contract Number	Loan Amount	Contract Number	Loan Amount
02-3355	$ 121,890	02-3384	44,750
02-3356	117,075	02-3385	33,790
02-3357	50,175	02-3386	92,355
02-3358	12,190	02-3387	35,560
02-3359	64,678	02-3389	30,480
02-3360	160,060	02-3390	38,610
02-3361	72,120	02-3391	106,680
02-3362	49,955	02-3392	48,120
02-3363	114,088	02-3393	62,790
02-3364	105,640	02-3394	103,755
02-3366	85,870	02-3395	77,250
02-3367	51,295	02-3396	81,370
02-3369	115,540	02-3398	108,475
02-3370	41,090	02-3399	200,000
02-3371	68,055	02-3400	184,915
02-3372	92,635	02-3401	48,615
02-3376	185,880	02-3402	39,115
02-3377	35,550	02-3403	120,665
02-3379	200,000	02-3405	38,100
02-3380	89,630	02-3406	53,915
02-3381	55,865	03-3411	62,395
02-3381	55,865	03-3412	29,465
02-3382	40,125		
02-3383	50,790	**TOTAL**	**$ 3,677,231**

CHAPTER V

Emergency Grants And Loans

Application Administration and Project Review Procedures

In addition to the regular funding available during each Renewable Resource Grant and Loan Program funding cycle, limited funds are also available for immediate projects necessary to address qualified emergencies. These funds are reserved to help finance emergency projects otherwise eligible for grant or loan funding, which, if delayed until legislative approval could be obtained, would result in substantial damages or legal liability for the project sponsor.

Applications for emergency grants and loans are accepted by DNRC from public entities when an emergency occurs. No application fee is required.

Project Solicitation

No formal solicitation for applications is conducted. Engineering firms and other consultants likely to be involved with eligible emergency projects have been informed that emergency funds exist. During presentations to provide information relative to public grant and loan programs, the availability of emergency funding is also discussed.

To request funds, applicants are required to submit a letter containing:

- a description of the problem;
- a statement of when the problem occurred;
- the proposed solution;
- cost estimates with documentation; and
- documentation of the community's financial condition and ability to otherwise pay for the proposed repairs.

Application Review

As with funding for other renewable resource projects, emergency funds must be used for projects that enhance renewable resources in the state through conservation, development, management, or preservation; for assessing feasibility or planning; for implementing renewable resource projects; or for similar purposes approved by the legislature. All applications submitted are evaluated for completeness. Sponsors for those applications needing more documentation are notified and asked to submit additional material immediately.

Requests for emergency funds are reviewed by DNRC staff. DNRC's engineer investigates the problem to determine feasible alternatives. The project is evaluated to determine its eligibility for funding under the Renewable Resource Grant and Loan Program. Projects must meet the statutory requirements of 85-1-605 (4), MCA as a minimum to merit further consideration. Engineers and technical experts from other state agencies may be solicited for technical opinions, guidance, and information.

Funding Recommendations

As discussed in Chapter I, statute allows DNRC to request up to 10% of the grant funds available each biennium to fund emergency projects. DNRC typically requests $125,000 for emergency grants. DNRC will request an additional $125,000 during the 2003 legislative session to fund emergency grants for the 2005 biennium.

Funding recommendations are made on a case-by-case basis within the constraint of available funding. As information is gathered and documented, a staff report with funding recommendations is written and presented to DNRC's director for an official decision as to whether the project should receive emergency grant or loan funding. A maximum of $30,000 in emergency grant funding is typically placed on an

individual project; the limited total amount of funding available each biennium dictates close management of funding limits for each emergency project.

Project Management

Based on the decision of DNRC's director, the sponsor is notified of the status of its emergency grant or loan request. If successful, the applicant and DNRC enter into a formal agreement, and the project is managed in the same manner as other grant and loan projects funded by the Renewable Resource Grant and Loan Program.

Emergency Grant and Loan Applications in Calendar Years 2001 and 2002

Each emergency grant request submitted during 2001 and 2002 was reviewed by DNRC staff and, based on staff recommendation, was approved or denied for funding by DNRC's director. Total funding for all emergency grants may not exceed the legislative biennial appropriation for emergency projects under the Renewable Resource Grant and Loan Program. A total of $10,000,000 per biennium is available for emergency loans. No emergency grant may be funded in excess of the biennial appropriation less the total of all emergency grants funded previously during the biennium.

Authorized Emergency Loan Projects

There were no emergency loan applications received during 2001 and 2002.

Authorized Emergency Grant Projects

In 2001, the legislature authorized $125,000 for emergency grants. During the 2003 biennium (to October 1, 2002), funded emergency grant applications have included the following:

Mill Creek Irrigation District
RRG-02-1175
$30,000 Emergency Grant
Mill Creek Irrigation District is located in Ravalli County. The district owns Mill Lake Dam, a high-hazard dam constructed in the early 1900s on Mill Lake in the Bitterroot-Selway Wilderness Area to provide storage for late-season irrigation in the valley below. Access is via helicopter or a 12-mile pack trail. In the fall of 2001, a seepage problem was identified near the outlet of the dam. Required by Bitterroot National Forest to make repairs before being allowed to refill the reservoir in the spring, the district applied for and was awarded an emergency grant to seal the upstream face of the dam. Completed in December of 2001, the reservoir filled without incident in the spring of 2002.

Roy Water and Sewer District
RRG-02-1176
$2,500 Emergency Grant
The municipal water system for the community of Roy consists of a shallow well and collector system, distribution piping, and a storage reservoir. Approximately 20 feet deep, the well collects water from a shallow aquifer that is seriously depleted due to extended drought conditions in central Montana. Emergency work done to improve the efficiency of the well included the installation of perforated collector pipes and the replacement of the submersible pump with a low-head suction pump to allow the intake to be located near the bottom of the well. Collectors were installed by the district at an approximate cost of $10,000; emergency grant funds were used to replace the pump.

Jackson Water and Sewer District
RRG-02-1180
$25,000 Emergency Grant
The wastewater treatment system for the community of Jackson consists of a large septic tank that provides primary treatment in a manner similar to a residential system. From the septic tank, effluent is pumped approximately 5,000 feet to a drainfield. During the summer of 2001, the system was unable to handle flows that were infiltrating the system from excessive groundwater. It was determined that the septic tank had failed, causing raw sewage to surface in the area around the tank. Due to its proximity adjacent to the Jackson school, it was critical that the problem be corrected immediately. In the fall of 2001, the failed tank was abandoned and replaced with a new 10,000-gallon fiberglass tank and associated pumping facilities. Besides this grant, funding included another $25,000 grant from the Treasure State Endowment Program and a $75,000 INTERCAP loan from the Montana Board of Investments.

Zurich Irrigation District
RRG-02-1181
$20,000 Emergency Grant
In October 2001, Zurich Irrigation District requested emergency grant assistance for 50% of the $40,000 project, or $20,000. Located in north-central Montana about 10 miles east of Chinook, the district provides irrigation to over 10,000 acres as part of the Milk River system. A critical component of the district's system, the Zurich siphon, failed during the 2001 irrigation season. In the spring of 2002, a contractor was hired and the siphon was replaced with 160 feet of 72-inch galvanized and coated steel pipe.

Park Conservation District
223-02-2627
$5,000 Emergency Grant
In the fall of 2001, the Park Conservation District requested emergency assistance to reseed grazing land damaged by the Fridley Fire during the summer of 2001. The land is located on five ranches. Completed in the fall of that year, funding consisted of this grant in addition to private contributions and a $10,000 grant obtained through the DNRC Conservation Districts Bureau's 223 Grant Program.

Sunburst, Town of
RRG-02-1186
$20,000 Emergency Grant
Drinking water for the Town of Sunburst is provided from wells located approximately 10 miles west of the community. Typically about 500 feet deep, the wells originally provided water for a refinery that was operated in Sunburst until the late 1940s. Spread over several sections of land, some of the wells produce soft water low in salts, and some produce hard water. It is necessary to blend the sources to provide a safe and usable product. In the fall of 2001, Well No. 15, a soft-water well, became contaminated with bacteria, presumably from shallow aquifers entering the well through the corroded steel casing. To alleviate the problem, it was determined that a second casing could be installed within the existing casing and isolated from the shallow aquifer, thus providing a well drawing water only from deep aquifers. Work was begun in the summer of 2002 and is underway at the time of this writing.

CHAPTER VI

Summary of Active Grants to Public Entities

The status of all projects authorized, October 1, 2000 through September 30, 2002, is reported here. Project status is reported in three categories: completed, active, and authorized but not executed.

Within each of these categories projects are listed alphabetically by the name of the grant recipient.

Grant Projects Completed Since October 1, 2000

Beaverhead County Board of Commissioners
Big Hole River Return Flow and Water Budget Study
RRG-98-1058
A $100,000 grant was authorized by the legislature in 1997. A grant agreement was executed in July 1997. The project was completed in June 2001. $99,580 in grant funds were disbursed. Funds were used to evaluate the role of groundwater and surface water interactions as they relate to river flow in the Big Hole River basin.

Boulder, Town of
Water System Improvements
RRG-00-1086
A $100,000 grant was authorized by the legislature in 1999 for improvements to the community's drinking water system. Consisting primarily of the replacement of the undersized and deteriorated distribution system, the project was bid and successfully constructed during the summer and fall of 2000.

Buffalo Rapids Project
Improving Pump Discharge Line Efficiency
RRG-00-1090
A $91,622 grant was authorized by the legislature in 1999 for the replacement of discharge lines at one of the pump stations to improve water use efficiency. The final report has been received. The project was completed in November 2000. The full $91,622 was disbursed.

Cascade County Conservation District
Muddy Creek Restoration & Water Quality Improvement
RRG-00-1091
A $77,000 grant was authorized by the legislature in 1999. A grant agreement was executed in August 1999. The project was completed in January 2002. All grant funds were disbursed. Funds were used to continue water quality monitoring and erosion reduction on Muddy Creek.

Cascade County Conservation District
Agrimet Irrigation Water Management Project
RRG-99-1081
An $80,000 grant was authorized by the legislature in 1997. A grant agreement was executed in December 1998. The project was completed in May 2001. All grant funds were disbursed. Funds were used to continue the development and expansion of the Agrimet Program in Montana.

Choteau, City of
Rehabilitation of Sewer System
RRG-98-1070
A $100,000 grant was authorized by the legislature in 1997 to identify and replace leaking and otherwise deteriorated sections of the wastewater collection system. The goal of the project was to eliminate infiltration and resulting excess flows to the wastewater treatment facility. The project was successfully completed in December 2000.

Choteau, City of
Water System Improvements Project
RRG-02-1160
A $100,000 grant was authorized by the legislature in 2001 for the installation of water meters at all service connections. The goals of the project were to promote water conservation and to provide a means to monitor leakage in the distribution system. The project was successfully completed in the spring of 2002.

Town of Circle
Municipal Well Repairs
RRG-02-1156
A $60,000 grant was authorized by the legislature in 2001. A grant agreement was executed in August 2001. The project entailed treatment of the towns wells to control a heterotrophic bacteria problem. The final report has been received. The project was completed in July 2002. The full $60,000 was disbursed.

Columbia Falls, City of
Wastewater Treatment Plant Improvements Project
RRG-00-1112
A $100,000 grant was authorized by the legislature in 1999 for the design and construction of improvements to its existing wastewater treatment facility. Grant funds were expended in the design of the project. Bid in 2000, the project was successfully completed in the fall of 2001.

Corvallis County Sewer District
Wastewater Treatment Plant Improvements Project
RRG-01-1105
A $100,000 grant was authorized by the legislature in 1999 to expand its wastewater collection and treatment system to accommodate community growth and comply with state non-degradation requirements. The project was completed in 2001.

Cut Bank, City of
Water System Improvements Project
RRG-00-1113
A $100,000 grant was authorized by the legislature in 1999 for the design and construction of improvements to its water treatment plant and the rehabilitation of a water storage reservoir. Work was successfully completed in 2001.

Daly Ditches Irrigation District
Republican Canal Diversion Dam Replacement Project
RRG-00-1121
A $100,000 grant was authorized by the legislature in 1999 for the design and replacement of the Republican Canal Diversion in the Bitterroot River south of Hamilton. The project was bid and completed successfully in February and March of 2002.

Denton, Town of
Wastewater Treatment Facility Replacement Project
RRG-00-1087
A $100,000 grant was authorized by the legislature in 1999 for the design and construction of a replacement wastewater treatment lagoon. Design work was completed in 1999, and construction began late in the year. Completed early in 2000, the project is now operational.

Drummond, Town of
Wastewater System Improvements Project
RRG-01-1129
A $100,000 grant was authorized by the legislature in 1999 for the design and construction of wastewater collection and treatment system improvements. Specific upgrades included lift station modifications, the replacement of approximately 10,000 feet of existing outfall line with a new gravity flow or force main, and minor improvements at the treatment facility. Construction was completed in the fall of 2001.

Elk Meadows Ranchettes-Missoula County Water District
Water System Improvements Project
RRG-02-1146
A $100,000 grant was authorized by the legislature in 2001 to fund the rehabilitation and relocation of a water storage reservoir and upgrade a boost pump station for the district's water system northwest of Frenchtown. Work was completed in early 2002.

Flathead Lake Biological Station
Monitoring Water Quality-Flathead lake
RRG-00-1094
A $100,000 grant was authorized by the legislature in 1999. A grant agreement was executed in August 1999. This project has been successfully completed.

Fort Shaw Irrigation District
Water Quality & Quantity Improvement
RRG-00-1096
A $50,000 grant was authorized by the legislature in 1999. A grant agreement was executed in September 1999. The project entails ditch lining, installation of flow monitoring stations and water quality monitoring. The final report has been received. The project was completed in July 2002. The full $50,000 was disbursed.

Gallatin Local Water Quality District
Ground Water Evaluation and Monitoring Project
RRG-98-1057
A $100,000 grant was authorized by the legislature in 1997. A grant agreement was executed in September 1997. The project was completed in March 2001. All grant funds were disbursed. Funds were used to develop preventative measures and guidelines were developed to provide a basis for protection and future groundwater resource management.

Garfield County Conservation District
Rehab of Irrigation Diversion Dam & Outlet Works
RRG-00-1095
A $100,000 grant was authorized by the legislature in 1999. A grant agreement was executed in August 1999. The project entailed rehabilitation of the Little Dry diversion dam and outlet structures. The final report was received. The project was completed in January 2001. A total of $99,151.43 was disbursed.

Geraldine, Town of
Wastewater Treatment Facility Improvements Project
RRG-01-1132
A $100,000 grant was authorized by the legislature in 1999 to modify and expand its existing wastewater treatment facility to increase capacity and extend its useful life. Construction was completed in the summer of 2002.

Geraldine, Town of
Drinking Water System Improvements Project
RRG-02-1159
A $100,000 grant was authorized by the legislature in 2001 for improvements to the town's water system. The specific scope of work included a new chlorination facility and the installation of water meters. The project was successfully completed in the summer of 2002.

Glasgow Irrigation District
Saint Mary River Siphon Repair Phase I
RRG-00-1109
A $100,000 grant was authorized by the legislature in 1999 for the repair and rehabilitation of the Saint Mary River Siphons. This work was successfully completed in conjunction with the Phase II repair work in December of 2001.

Governor's Office - Flathead Basin Commission
Flathead Lake and Watershed Management Program
RRG-96-1043
A $100,000 grant was authorized by the legislature in 1995. A grant agreement was executed in January 1996. The project was completed in June 2002. All grant funds were disbursed. Grant funds were used to develop a Voluntary Nutrient Reduction Strategy for the Flathead Basin.

Helena Valley Irrigation District
Fixed Wheel Gate and Hydraulic Cylinder Repairs and Improvements Project
RRG-02-1142
A $100,000 grant was authorized by the legislature in 2001 for gate improvements at its facility at Canyon Ferry Dam. Work was completed under the direction of the U.S. Bureau of Reclamation in 2001.

Lake County Land Services
Evaluation of Level II Treatment for Individual Septic
RRG-98-1071
A $100,000 grant was authorized by the legislature in 1997. The project provided state and local regulators as well as property owners with information on the performance of individual on-site wastewater treatment and disposal systems. This project was successfully completed in the spring 2002.

Lake County Conservation District
Forestry Implementation Project
RRG-00-1093
A $100,000 grant was authorized by the legislature in 1999. This grant provided funding for the planting of trees and technical assistance to landowners in the development of a pilot carbon-offset forestry program. This grant has been successfully completed.

Lewis and Clark County
Helena Area Bedrock Aquifer Assessment
RRG-96-1033
A $100,000 grant was authorized by the legislature in 1995. A grant agreement was executed in August 1995. The project was completed in May 2001. All grant funds were disbursed. Funds were used to assess the bedrock aquifer systems that recharge 45% of the Helena Valley alluvial aquifer.

Madison County
Harrison Wastewater System Improvements Project
RRG-00-1111
A $100,000 grant was authorized by the legislature in 1999 for the design and construction of a new wastewater collection and treatment system for the community of Harrison. The project was designed in 1999 and completed in 2000.

Milk River Project Joint Board of Control
Saint Mary River Siphon Repair Phase II
RRG-02-1177
A $100,000 grant was authorized by the legislature in 2001 for phase II of the repair to the Saint Mary Siphons. Pipe was replaced in the left barrel where it had buckled and a new reinforced seal collar and sealing was added to the right barrel. Construction was successfully completed in conjunction with Phase I, in December 2001, and a final report was received in October 2002.

Missoula, City of
East Reserve Street Wastewater Collection System
RRG-01-1106
A $100,000 grant was authorized by the legislature in 1999 for the East Reserve Street Sewer Project, the second phase of improvements in a previously unsewered area of the city. Construction was completed in 2001.

Missoula, City of
Rattlesnake Stream Restoration and Flood Control Project
RRG-02-1155
A $100,000 grant was authorized by the legislature in 2001. A grant agreement was executed in August 2001. The project was completed in July 2002. All grant funds were disbursed. Funds were used for flood control activities that allowed for natural floodplain dynamics while ultimately providing some flood protection to nearby residents and city infrastructures.

Missoula, City of
South Reserve Street Wastewater Collection System
RRG-98-1068
A $100,000 grant was authorized by the legislature in 1997 for construction of the Reserve Street South Sewer Project. The project was completed in 1999.

Montana Department of Corrections
Prison Ranch Dams Rehabilitation Project
RRG-02-1145
A $100,000 grant was authorized by the legislature in 2001 to contract for the design and construction of improvements to Mud Lake Dam and Upper Taylor Dam, both located on the Prison Ranch (Correctional Enterprises Ranch) west of Deer Lodge. Improvements to Mud Lake Dam were completed in 2001, and an engineering report for improvements to Upper Taylor Dam was completed in 2002.

Montana Department of Environmental Quality
Direct Planning Grants to Small, Needy Communities
RRG-98-1063
A $100,000 grant was authorized by the legislature in 1997. A grant agreement was executed in December 1997. The project was completed in May 2001. All grant funds were disbursed. Funds were used by small, needy Montana communities to procure the services of consulting engineers to prepare facility plans for drinking water and wastewater projects.

Montana Department of Natural Resources and Conservation
Bair Dam Rehabilitation Project
RRG-02-1162
A $100,000 grant was authorized by the legislature in 2001 for the design and construction of improvements to Bair Dam in Meagher County. A $988,772 loan was also authorized. The loan was made in early 2002 and construction is currently in progress with completion scheduled for late fall, 2002. The grant funded the design of the project, completed early in 2002.

Montana Department of Natural Resources and Conservation
Deadman's Basin Water Quality Improvement
RRG-00-1116
A $100,000 grant was authorized by the legislature in 1999 for the construction of improvements to increase the capacity of the Barber Canal, a primary component of the Deadman's Basin Irrigation System. Design was completed in 2000, and the construction of improvements was completed in 2001.

Montana Department of Natural Resources and Conservation
Seepage Monitoring Program
RRG-00-1101
A $100,000 grant was authorized by the legislature in 1999. A grant agreement was executed in January 2000. The grant was completed in March 2001. $99,967 in grant funds were disbursed. Seepage-monitoring programs were established for high-hazard dams on several DNRC reservoirs.

Montana Reserved Water Rights Compact Commission
Chippewa-Cree Water Rights Settlement Implementation
RRG-00-1120
A $150,000 grant was authorized by the legislature in 1997. A grant agreement was executed in March 2000. The project was completed in December 2001. All grant funds were disbursed. Funds were used to mitigate the impact of development of the Chippewa Cree Tribal water right from Big Sandy and Beaver

creeks on downstream water rights holders by providing for more efficient coordination and use of stored water and more efficient diversion from natural flow.

Ruby Valley Conservation District
Ruby River Water Management and Conservation Project
RRG-98-1065
A $100,000 grant was authorized by the legislature in 1997. The project installed adjustable headgates and measuring devices on the Ruby River. Several grant extensions were given because land closures in the 2000 fire season prevented construction work from being completed. The project has now been successfully completed.

Sanders County
Floodplain Delineation of the Clark Fork River
RRG-00-1097
A $100,000 grant was authorized by the legislature in 1999. A grant agreement was executed in August 1999. The project was completed in March 2002. All grant funds were disbursed. Funds were used to generate accurate floodplain maps approved by the Federal Emergency Management Agency. These maps and accompanying hydrologic data are used to implement the county's floodplain ordinance in the newly mapped area.

Sheridan, Town of
Water System Improvements Project
RRG-00-1107
A $30,000 grant was authorized by the legislature in 1999 to construct a new water well to augment the community's sources of drinking water. A site was selected and the project bid in early 2000, but the bids exceeded the estimated cost for the project. The project was redesigned, bid, and completed in 2001.

Active Grant Projects

Ashland Water & Sewer District
Improvement of Wastewater Facilities
RRG-02-1182
A $100,000 grant was authorized by the legislature in 2001. A grant agreement was executed in February 2002. No grant funds have been disbursed. The purpose of the project is to improve the sewage lagoon system for the Town of Ashland. This project is approximately 10% complete.

Beaverhead County Board of Commissioners
Big Hole River Watershed Management Project
RRG-02-1166
A $75,000 grant was authorized by the legislature in 2001. A grant agreement was executed in September 2001. As of October 2002 no grant funds have been disbursed. The purpose of this project is to support community-based water management in the Big Hole Basin.

Bitter Root Irrigation District
Irrigation System Water Use & Water Quality Improvements
RRG-00-1103
A $99,650 grant was authorized by the legislature in 1999. A grant agreement was executed in May 2000. $33,150 in grant funds have been disbursed. Funds are being used to complete improvements to the Bitter Root Irrigation District facilities and install water conservation measures.

Brockton, Town of
Water & Wastewater System Improvements
RRG-00-1088
A $100,000 grant was authorized by the legislature in 1999 for the design and construction of water system improvements. The primary components of the project include a new concrete water storage reservoir and the replacement of undersized and deteriorated water distribution lines. The new storage

reservoir and distribution system were completed late in 1999, with minor work still in progress. $74,122.99 in grant funds have been expended.

Canyon Creek Irrigation District
Canyon Lake Dam Rehabilitation Project
RRG-02-1171
A $100,000 grant was authorized by the legislature in 2001 to make structural improvements necessary to bring Canyon Lake Dam, a high-hazard wilderness dam west of Hamilton, into compliance with dam safety standards. Located immediately downstream from Wyant Lake, the district is currently evaluating options that include both Canyon Lake Dam and Wyant Lake Dam. Currently being considered is the alternative of breaching Wyant Lake Dam and making more extensive improvements to Canyon Lake Dam, effectively increasing the basin storage capacity for the system. The project is still in the early planning stage.

Canyon Creek Irrigation District
Wyant Lake Dam Rehabilitation Project
RRG-02-1170
A $100,000 grant was authorized by the legislature in 2001 to be used in coordination with the Canyon Lake grant reported above to bring the district's facilities into compliance with dam safety standards and maintain a storage facility for the system. Wyant Lake Dam is located immediately upstream from Canyon Lake. Classified a high-hazard dam, the structure must either be rehabilitated or breached. The project is still in the early planning stage.

Carbon Conservation District
Whitehouse Canal Company Reorganization
RRG-02-1153
A $57,200 grant was authorized by the legislature in 2001. A grant agreement was executed in August 2001. $31,570.63 has been disbursed. The purpose of the project is to upgrade Whitehouse Canal Company irrigation system facilities. This project is approximately 50% complete.

Cascade County Conservation District
Sun River Valley Ditch Company Water Conservation & Water Quality Improvement
RRG-02-1154
A $99,230 grant was authorized by the legislature in 2001. A grant agreement was executed in August 2001. $53,715 in grant funds have been disbursed. Funds are being used to improve overall irrigation efficiency in the area served by the Sun River Ditch Company and to improve water quality and quantity in the Sun River and its tributaries . This project is approximately 50% complete.

Charlo Water District
New Water Well
RRG-02-1143
A $100,000 grant was authorized by the legislature in 2001. A grant agreement was executed in July 2001. $6,513 in grant funds have been disbursed. Grant funds are to be used for a new well to provide adequate water for the water users under all conditions. The Charlo Water District has been unable to proceed with this project because they cannot obtain a water right for the new well. Water rights are not being issued by the DNRC on the Flathead Reservation because of a water right jurisdiction dispute between the DNRC and the Confederated Salish and Kootenai Tribes.

Choteau, City of
Rehabilitation of Sewer System
RRG-98-1070
A $100,000 grant was authorized by the legislature in 1997 to identify and replace deteriorated sections of sewer line. The project has been ongoing since 1997, with $48,583.63 expended to date. It is anticipated that the remainder of the grant will be utilized this fall to pay costs associated with a recently awarded construction contract for the replacement or lining of deteriorated collection lines.

Clyde Park, Town of
Water System Improvement Project
RRG-02-1141
A $100,000 grant was authorized by the legislature in 2001. The project was contracted in July 2001. The project consists of the replacement of water distribution lines, a new water storage tank, installation of system-wide water meters, and the development of two new wells for the community's water supply. Work on this project will be completed by December 2002.

Deer Lodge, City of
Clark's Fork River Water Quality Protection Project
RRG-02-1163
A $100,000 grant was authorized by the legislature in 2001 to replace a deteriorated sewer main that crosses under the Clark's Fork River within the city limits. In addition to this funding, the community also received a $200,000 EPA grant to help fund the $400,000 project. The design has been submitted to DEQ for approval, and an environmental assessment is being drafted.

East Missoula Sewer District
Wastewater Collection System
RRG-00-1104
A $100,000 grant was authorized by the legislature in 1997 to design and construct a centralized wastewater collection and treatment system. Because land could not be obtained for the construction of a lagoon, an agreement was reached with the City of Missoula to connect to its system. Construction is currently in progress with completion scheduled for late fall of 2002.

Ekalaka, Town of
Ekalaka Water Source Improvement
RRG-00-1119
A $100,000 grant was authorized by the legislature in 1999. A grant agreement was executed in March 2000. Grant agreement administration is ongoing. The project entails upgrade and repair of two wells that supply water to the town. To date, $7,404.79, has been disbursed.

Eureka, Town of
Wastewater Collection, Treatment, and Disposal Improvements
RRG-01-1127
A $100,000 grant was authorized by the legislature in 1999 to replace and expand its wastewater collection system, and to modify its existing treatment system. The project was completed in phases beginning in 2001. Work has been completed for phase 1 and 2 improvements at the storage cell, including a new outfall, a separation dike, and an aeration system; and for phase 2 collection system improvements. A phase 3 collection system expansion is scheduled for construction in late fall of 2002 or spring of 2003.

Flathead Basin Commission/Governor's Office
Implementation of the Voluntary Nutrient Reduction Strategy
RRG-02-1165
A $100,000 grant was authorized by the legislature in 2001. A grant agreement was executed in September 2001. $30,413 in grant funds have been disbursed. Funds are being used to continue implementation of the Voluntary Nutrient Reduction Strategy and fund critical nutrient reduction projects that will help meet the long-term water quality needs of Flathead Lake. The TMDL action plan is complete, as well as oversight, development, and collection of the first round of data for the Groundwater Monitoring Plan. The project is 42% complete.

Fort Shaw Irrigation District
Water Quantity and Quality Improvement Project
RRG-98-1060
A $100,000 grant was authorized by the legislature in 1997. A grant agreement was executed in September 1997. $7,228.68 has been disbursed. The purpose of the project is to improve the district's facilities to conserve water. This project is approximately 80% complete.

Frenchtown Irrigation District
Irrigation System Water Use and Water Quality Improvements
RRG-00-1110
A $32,400 grant was authorized by the legislature in 1999. A grant agreement was executed in November 1999. The project is complete except for the final report. It is anticipated the final report will be submitted in October 2002. $27,500 in grant funds have been disbursed. Funds were used to complete improvements to the district facilities and install water conservation and water quality improvement measures.

Gallatin County Local Water Quality District
Ground Water Evaluation and Monitoring Project
RRG-98-1057
A $100,000 grant was authorized by the legislature in 1997. A grant agreement was executed in September 1997. $90,271 in grant funds have been disbursed. Funds are being used to protect, preserve, and improve the quality of groundwater and to provide the basis for understanding the groundwater resources of the district, and for development of preventative measures needed to ensure a continued supply of clean groundwater.

Glasgow Irrigation District
Vandalia Diversion Dam Rehabilitation
RRG-01-1125
A $56,000 grant was authorized by the legislature in 1999 for Phase I of the repair of Vandalia Diversion Dam. The grant agreement was executed in May 2002. This project is slated for completion in the fall of 2002.

Glasgow Irrigation District
Vandalia Diversion Dam Rehabilitation Phase II North Bridge Pier
RRG-02-1184
A $100,000 grant was authorized by the legislature in 2001 for phase 2 of the Vandalia Diversion Dam rehabilitation. The grant agreement was executed in May 2002. This grant is for the design and permitting, demolition and removal of corroded and/or deteriorated material, splicing of reinforcing steel, and preparation for and replacement of concrete on the north bridge pier. Phase I is currently being completed and phase 2 is expected to be completed in 2003. To date, no funds have been expended.

Glen Lake Irrigation District
Therriault Creek Point of Diversion Infrastructure and Fish Habitat Project
RRG-02-1185
A $100,000 grant was authorized by the legislature in 2001 for the design and construction of a replacement diversion in Therriault Creek to be completed with environmental improvements including stream restoration, wetlands restoration, and fishery and wildlife habitat benefits. The grant agreement was executed in May 2002. A total of $13,000 in grant funds have been expended in the design of the project. The project will begin construction in the fall of 2003.

Hebgen Basin/West Yellowstone Refuse District
Municipal Solid Waste Composting Facility
RRG-00-1122
A $100,000 grant was authorized by the legislature in 1999 for preliminary engineering associated with the design of a solid waste composting facility to be constructed near West Yellowstone. The $4.3 million project was bid in the summer of 2002 and is currently under construction.

Hill County
Beaver Creek Dam Rehabilitation Project
RRG-02-1147
A $75,000 grant was authorized by the legislature in 2001 for an engineering investigation to identify upgrades to Beaver Creek Dam necessary to bring it into dam safety compliance. In 2001, an engineering firm was selected to study the dam, and final recommendations were made in 2002. A grant application for the construction of improvements, including a new outlet works control valve, was submitted to this program in 2002 and has been recommended for funding.

Hill and Liberty County Conservation Districts
Water Resource Evaluation of the Sage Creek Watershed
RRG-98-1074
A $40,622 grant was authorized by the legislature in 1997. A grant agreement was executed in June 1998. $31,007 in funds have been disbursed. Funds are being used to collect baseline information in the Sage Creek Watershed for the purposes of watershed planning, water-resource assessment, and effecting change in land-use management practices. Information gathered through this effort will promote local efforts to protect the watershed through improved water quality. Final data analysis and report preparation are nearly complete.

Hobson, Town of
Community Water Well
RRG-02-1164
A $50,000 grant was authorized by the legislature in 2001 to help fund the construction of a 1,400-foot community well at the fire station. In addition to providing water to local residents, farmers, and ranchers, the well will be used to determine the availability of water for a community water system. The project was designed and approved in 2002, and is currently under construction.

Hot Springs, Town of
Hot Springs Water System Improvements
RRG-02-1149
A $100,000 grant was authorized by the legislature in 2001. A grant agreement was executed in July 2001. $33,342 in funds have been disbursed. Funds are being used to more efficiently utilize the water being pumped into the distribution system, and to reduce the public health and safety risks associated with an aged, inadequately-sized distribution system in dilapidated condition. Additional funding from Rural Utility Services was obtained for this project, eliminating the need for project phasing. About 30% of the project design work was completed by August 2002.

LaCasa Grande Water and Sewer District
Water Supply and Distribution System
RRG-02-1183
A $100,000 grant was authorized by the legislature in 2001 for the design and construction of a new water well, new water tank sustaining pump station, and the installation of water meters at water service connections. Grant funds will be used primarily for the installation of water meters. The grant agreement was executed in May 2002. No grant funds have been expended. Construction is expected to be completed in the spring of 2003.

Lewis and Clark Conservation District
Willow Creek Erosion/Water Quality Improvement Project
RRG-02-1157
A $100,000 grant was authorized by the legislature in 2001 for the stabilization of stream banks in the game range segment of the Willow Creek system, and the improvement of water quality. A grant agreement was executed in August 2001. $28,384 in grant funds have been expended. The project is expected to be completed in the spring of 2003.

Lewis and Clark Water Quality Protection District
Helena Area Groundwater Quality Monitoring Network
RRG-00-1114
A $100,000 grant was authorized by the legislature in 1999. A grant agreement was executed in January 2000. $88,165 in grant funds have been disbursed. Funds are being used to establish a groundwater quality- and quantity-monitoring network in the Helena valley. The well construction and data gathering is complete, and the final report is expected in October 2002.

Lower Willow Creek Drainage District
Lower Willow Creek Dam Assessment and Rehabilitation Project
RRG-02-1148
A $100,000 grant and a $1.35 million loan was authorized by the legislature in 2001 to determine and mitigate seepage problems occurring at Lower Willow Creek Dam in Granite County. A well-monitoring

program and associated remote monitoring equipment were installed in 2001, and seepage flows are being monitored to determine location and probable cause. To date, a positive fix has not been identified.

Madison County Alder Water and Sewer District
Wastewater Collection and Treatment System
RRG-02-1173
A $100,000 grant was authorized by the legislature in 2001 for the design and construction of a gravity collection system, sewage lift station, new two-cell lagoon system, and a treated wastewater disinfection and discharge irrigation system. The grant agreement was executed in October 2001, and project completion is anticipated to be in the fall of 2003. $60,500 in grant funds have been expended.

Malta Irrigation District
Dodson Diversion Dam Assessment and Rehabilitation Project
RRG-00-1099
A $100,000 grant was authorized by the legislature in 1999 to assess the condition of Dodson Diversion Dam, and to recommend and design improvements. The district contracted with a firm to perform an engineering evaluation of the aging structure. Recommendations for improvement have been made and are currently being reviewed by USBR. The district is proceeding with the loan process, and plans to borrow money through this program and begin construction in 2003.

Montana Bureau of Mines and Geology
Ground Water Protection and Education for Rural Montana Schools
RRG-98-1079
A $49,899 grant was authorized by the legislature in 1997. A grant agreement was executed in June 1998. Project work has been completed, and it is anticipated the final report will be submitted in October 2002. $48,821 in grant funds have been disbursed. Funds were used to protect groundwater supplies through an education approach in Montana's primary and secondary school systems. This was accomplished by having educators and students, in conjunction with MBMG personnel, develop a wellhead protection plan for their school well.

Montana Department of Natural Resources and Conservation
Nevada Creek Dam Rehabilitation Project
RRG-02-1161
A $100,000 grant was authorized by the legislature in 2001 for the design of improvements to Nevada Creek Dam in Powell County. An engineering firm was selected to design and prepare bid documents for improvements identified by the department's engineering staff. Work was begun in 2002 and is scheduled for completion in 2003.

Nashua, Town of
Wastewater System Improvements
RRG-02-1172
A $100,000 grant was authorized by the legislature in 2001 for the design and construction of a new 3-cell lagoon system, a non-discharging wastewater storage and irrigation system, and the design and rehabilitation of an existing lift station. A grant agreement was executed in October 2001. The project has just been bid, and construction is slated to be completed in the fall of 2003.

Park City/County Water and Sewer District
Wastewater System Improvements
RRG-02-1150
A $100,000 grant was authorized by the legislature in 2001 for the design and construction of a new lift station, a new three cell lagoon, and a treated wastewater disinfection and discharge system. A grant agreement was executed in July 2001. A total of $79,253 has been expended. Construction is expected to be completed by December 2002.

Petroleum County Conservation District
Musselshell River Assessment & Monitoring Plan
RRG-00-1117
A $47,050 grant was authorized by the legislature in 1999. A grant agreement was executed in February 2000. $42,345 in grant funds have been disbursed. Project work has been completed, and it is anticipated the final report will be submitted in October 2002. Funds were used to improve the water quantity, water quality, and health of riparian areas within the Lower Musselshell River Environmental Quality Incentives Program (EQIP) priority area. Also, landowners in the EQIP priority area were provided water quality and water measuring devices, and these landowners were educated on irrigation water management techniques and water quality improvement measures.

Rae Water and Sewer District
Wastewater System Improvements Project
RRG-01-1128
A $100,000 grant was authorized by the legislature in 1999 for the design and construction of a mechanical wastewater treatment plant to replace its lagoon. Designed in 2001, bids for the project exceeded available funding. Modifications to the initial design were made in 2001 and the project is currently being advertised for re-bid. Construction is scheduled for completion in 2003.

Richey, Town of
Water System Improvement
RRG-02-1158
A $100,000 grant was authorized by the legislature in 2001. A grant agreement was executed in August 2001. $52,117.19 has been disbursed. The purpose of the project is to drill a new municipal well for the town. This project is approximately 90% complete.

Roosevelt County Conservation District
Fort Peck Assiniboine and Sioux Rural Water Supply Project
RRG-00-1092
A $82,109 grant was authorized by the legislature in 1999. A grant agreement was executed in August 1999. Grant contract administration is ongoing. The project entails conducting an environmental assessment for the proposed water supply system. $73,837 in grant funds have been disbursed.

Ruby Valley Conservation District
Lower Ruby Valley Groundwater Management Plan
RRG-02-1152
A $73,764 grant was authorized by the legislature in 2001. A grant agreement was executed in August 2001. $13,374 in grant funds have been disbursed. Grant funds are being used to develop a planning tool to protect, preserve, and conserve groundwater and surface water resources in the lower Ruby Valley. The project involves three primary goals: 1) compile watershed data and conduct limited field testing/analysis, 2) develop a comprehensive data report and groundwater management plan, and 3) develop watershed scale recommendations for future water resource conservation and protection. The project is 28% complete.

Sheridan County Conservation District
Sheridan County Groundwater Mgmt Program
RRG-00-1102
A $99,700 grant was authorized by the legislature in 1999. A grant agreement was executed in June 2000. The project entails continuing review of reserved water use applications, monitoring aquifer and groundwater conditions, and estimating the amount of water that can be pumped from the aquifer without causing adverse affects. $66,878.40 in grant funds have been disbursed.

Stillwater County
Improving Soil Productivity and Water Quality Through Land-Use Changes
RRG-02-1140
A $74,153 grant was authorized by the legislature in 2001. A grant agreement was executed in July 2001. $19,094 in grant funds have been disbursed. Grant funds are being used to reduce the encroachment of saline seep in the Lake Basin of south-central Montana, near the communities of Molt and Rapelje.

Existing conditions are being documented, and recommendations developed for land-use to reclaim problem areas. The project will document the quality of existing groundwater resources and determine the best sources of potable water supplies for the livestock industry. The project is 50% complete. Test drilling and well construction is complete. The inventory of existing water wells and springs and compilation of existing hydrogeologic data is nearly complete.

Stanford, Town of
Wastewater System Improvements
RRG-02-1167
A $100,000 grant was authorized by the legislature in 2001 for design and construction of sewer pipe replacement, and the design and construction of an upgrade from a one-cell treatment lagoon to a three-cell lagoon system. $90,000 in the grant funds have been expended in the design of the project. The project is approximately 85% complete.

Sweet Grass Water and Sewer District
Wastewater System Improvements Project
RRG-01-1130
A $100,000 grant was authorized by the legislature in 1999 to improve and expand its wastewater treatment facility to comply with state and federal treatment standards. It obtained additional grant funding through the CDBG Program in 2000. Design was completed and the project was bid in 2001; a contract was awarded and construction begun. In early 2002, the construction contract was terminated due to ongoing construction conflicts, and a settlement was made with the contractor. The project re-bid in the summer of 2002, and construction is ongoing.

Teton County
Burton Bench Aquifer Study
RRG-02-1178
A $74,261 grant was authorized by the legislature in 2001. A grant agreement was executed in November 2001. $555 in grant funds have been disbursed. Funds are being used to improve and/or protect the quality and quantity of surface and groundwater in the Muddy Creek and Teton River watersheds by utilizing data acquired in previous studies (without duplication of effort), to fully understand current conditions and changes that are occurring, and develop a menu of water resource management planning options for the community. Work has begun on the hard data conversion and previous data evaluation.

Teton County Conservation District
Irrigation Methods & Pesticide Transport to Groundwater
RRG-00-1100
A $100,000 grant was authorized by the legislature in 1999. A grant agreement was executed in September 1999. $90,000 in grant funds have been disbursed. Project work has been completed, and it is anticipated the final report will be submitted in October 2002. Funds were used to develop recommendations for irrigation practices to minimize herbicide contamination of groundwater.

Tin Cup-Ravalli County Water and Sewer District
Tin Cup Lake Dam Improvements Project
RRG-00-1108
A $25,000 grant was authorized by the legislature in 1999 to monitor the spring 1999 filling of Tin Cup Reservoir, following extensive repairs by USFS, and to construct a floating manway from the dam to the outlet structure. Since that time, however, a study to determine the hazard classification of the dam has been in progress, and the walkway has not been constructed, since its design may be affected by the dam's hazard classification and desired modifications to raise the spillway and increase storage capacity. $8,556.95 has been disbursed.

Virginia City, Town of
Wastewater Treatment System
RRG-02-1177
A $100,000 grant was authorized by the legislature in 2001 for the design and construction of a new two-cell lagoon system for treatment and winter storage, the reclamation of the old ponds, and the design and

construction of a spray irrigation discharge system. The project was contracted in October 2001. It is anticipated that construction will begin next spring. No grant funds have yet been expended.

West Crane Irrigation District
West Crane Sprinkler Irrigation Project
RRG-01-1134
A $100,000 grant was authorized by the legislature in 1999. An agreement was executed in July 2001. $35,374 in grant funds have been disbursed. Funds are being used on engineering and design services for an 8,100-acre sprinkler irrigation project in Richland County. Fieldwork will be completed during the 2002 field season.

Whitefish County Water and Sewer District
Revisit to the Limnology of Whitefish Lake
RRG-02-1169
A $100,000 grant was authorized by the legislature in 2001. A grant agreement was executed in October 2001. $32,492 in grant funds have been disbursed. Funds are being used to provide a current analysis of the tropic status of Whitefish Lake, compare current limnology measures to data obtained in the baseline research conducted in 1982-1983, and elevate public awareness by dissemination of information regarding planning, methodology, execution, and analysis of data obtained during the project. About 90% of the current scientific data has been gathered. The project also has been providing support to the Whitefish High School Free Flow Program.

Whitefish, City of
Wastewater Aeration System Improvements & Lagoon Solids Removal Project
RRG-02-1144
A $100,000 grant was authorized by the legislature in 2001. A grant agreement was executed in July 2001. No grant funds have been disbursed. Funds are being used to improve effluent quality by making improvements to the wastewater treatment facility aeration system and through the removal and disposal of sludge, which currently takes up valuable volume in the lagoon cells. Sludge removal took place during fall of 2002.

Whitewater Water and Sewer District
Wastewater System Improvements
RRG-02-1179
A $100,000 grant was authorized by the legislature in 2001 for the design and construction of a new wastewater collection system, wastewater treatment facility, and the reclamation of the existing septic tank systems. A grant contract was completed in December 2001, and construction will begin in the spring of 2003.

Wisdom-Beaverhead County Sewer District
Wastewater Treatment Facility Replacement Project
RRG-02-1168
A $100,000 grant was authorized by the legislature in 2001 to address floodplain issues and begin preliminary design of a new sewer lagoon for the community of Wisdom. Additional funding is currently being applied for through TSEP and Rural Development; the district plans to apply to the CDBG Program in January 2003. Final design will begin when application results are known. No disbursements have been made.

Authorized Projects Not Yet Executed

Bitterroot Irrigation District
Water Use & Water Quality Improvements Project – Phase II
NC
A $100,000 grant was authorized by the legislature in 2001 to improve flow management throughout the extensive irrigation district system, reduce canal leakage in a high-hazard section, and evaluate projects

for Phase III. The district is waiting to begin Phase II of this project until Phase I is complete. Phase I took longer to complete than anticipated, mainly because of poor weather conditions. It is planned that Phase II will begin in spring of 2003.

Charlo Sewer District
Wastewater Treatment and Collection
NC

A $100,000 grant was authorized by the legislature in 2001 to build a new aerated lagoon system with storage and construct a wetlands system with a periodic discharge that uses the current cell for winter storage. The collection main from town to a new lift station will be replaced. No grant funds have been disbursed. There were delays in putting together the final project funding, however, Rural Development has furnished a loan/grant package that completes the funding required for the project. Also, delays were caused by a change in the discharge permit parameters, which required a change in the preliminary engineering review. The project is being proposed for summer 2003 construction.

Florence County Water & Sewer District
Wastewater System Improvements
NC

A $100,000 grant was authorized by the legislature in 2001 for a project that includes the construction of a centralized sewer system and lift stations, and discharge to the lagoon treatment system with wetlands for effluent polishing and nutrient removal. Final discharge will be to infiltration basins. Storage will be provided for adverse winter operating conditions and to improve process flexibility. No funds grant funds have been disbursed. The engineering RFP has been advertised, interviews held, and the contractor selected. The project has been delayed because the district has been unable to find a suitable site for purchase to locate the lagoons, infiltration beds, and wetlands. There is a lack of suitable sites because of the widespread high water table in the Bitterroot Valley. However, the district is continuing its search in order to begin construction in 2003.

Hinsdale Water and Sewer District
Wastewater System Improvements
NC

A $100,000 grant was authorized by the legislature in 2001 grant for wastewater system improvements. The grant agreement for this project is currently being processed at DNRC. Final design will begin in December 2002, with construction beginning in spring of 2004.

Manhattan, Town of
Wastewater System Improvements
NC

A $100,000 grant was authorized by the legislature in 2001 for wastewater system improvements. The grant agreement for this project is currently being processed at DNRC. The project will be completed in two phases. Phase I consists of monitoring the flow in the discharge ditch, removal of the sludge in the current lagoon, and the design and construction of collection main replacements. Phase II consists of a lagoon system upgrade, including spray irrigation. Construction is slated for completion in the fall of 2003.

CHAPTER VII

Renewable Resource Project Planning Grants

Application Administration and Project Review Procedures

In 2001, the legislature authorized $300,000 to facilitate the development of renewable resource projects. The intent of the program is to assist public entities in the completion of near-term project planning, including preliminary engineering reports and feasibility studies. Grants are provided to fund planning for renewable resource projects that conserve, manage, develop, or preserve Montana's renewable resources.

Applications for planning grants are accepted by DNRC from public entities on an "open-cycle" basis. No application fee is required. Grant awards are made on a first-come, first-served basis for qualified studies until funding is depleted. Each grant requires an equal cash match by the applicant, and grants are limited to $10,000 per project.

Project Solicitation

No formal solicitation for applications is conducted. Engineering firms and other consultants likely to be involved with eligible studies have been informed that planning grant funding exists. During presentations to solicit applications for the regular public grant and loan program, the availability of planning grants is discussed.

To request funds, applicants are required to submit an application that describes the project, identifies the sources and uses of funding, and discusses the implementation schedule for the study.

From July 1, 2001 through September 30, 2002, DNRC has awarded project planning grants to public entities for 28 public facility (water, wastewater, or solid waste) and 11 other renewable resource projects.

Application Review

As with funding for other renewable resource projects, planning grant funds must be used to plan projects that enhance renewable resources through conservation, development, management, or protection; for assessing feasibility or technical planning; or for similar purposes approved by the legislature. All applications submitted are evaluated for completeness and compliance with the intended purposes of the program.

Requests for planning grant funds are reviewed by DNRC staff. The scope of the project being considered is evaluated to determine its eligibility for funding under the Renewable Resource Grant and Loan Program. The proposed budget is analyzed to ensure compliance with required cash-match requirements of the program, and proposed costs are evaluated for feasibility.

Project Management

DNRC staff works closely with project sponsors and consultants during the planning stages of projects. For public facility studies, the applicant must contract with a registered professional engineer to prepare a Preliminary Engineering Report that satisfies the requirements of the Uniform Application Supplement for Montana Public Facility Projects. This application is accepted by all of the state agencies funding water, wastewater and solid waste projects in Montana, and also by the Montana Rural Development Rural Utilities Service, formerly known as Farmers Home Administration. For all projects, draft submittals of planning documents prepared under this program are submitted to DNRC or other agency professionals for review prior to interim payments; a final report is required for review and approval prior to final payment.

Authorized Projects

In 2001, the legislature authorized $300,000 for planning grants. Between July 1, 2001 and September 30, 2002, funded project planning grant applications included the following:

FIGURE 9 Project Planning Grants Approved During the 2003 Biennium

PROJECT SPONSOR	PROJECT TYPE	AMOUNT
Baker, City of	Wastewater System Improvements	$ 10,000.00
Beaverhead County/Wisdom Water & Sewer District	Wastewater System Improvements	3,250.00
Black Eagle Water & Sewer District	Water System Improvements	10,000.00
Cascade County Health Department	Wastewater System Improvements	10,000.00
Columbia Falls, City of	Water System Improvements	10,000.00
Columbus, Town of	Storm Sewer System	10,000.00
Dodson, Town of	Wastewater System Improvements	10,000.00
Fallon County	Water and Wastewater Systems Improvements	5,000.00
Fergus County Port Authority	Water, Wastewater, and Storm Systems Improvements	10,000.00
Fort Belknap Irrigation District	Irrigation Conservation Project	10,000.00
Geraldine, Town of	Water System Improvements	2,500.00
Glen Lake Irrigation District	Irrigation Canal Feasibility Study	2,425.00
Granite Conservation District	Feasibility Study	10,000.00
Granite County	Dam Improvements	4,850.00
Harlem Irrigation District	Irrigation System Improvements	5,420.00
Hinsdale County Water & Sewer District	Wastewater System Improvements	9,000.00
Homestead Acres Cascade County Water & Sewer District	Water System Improvements	10,000.00
Hungry Horse County Water & Sewer District	Water System Improvements	7,500.00
Joliet, Town of	Wastewater System Improvements	10,000.00
Kalispell, City of	Wastewater System Improvements	10,000.00
Lakeside Water & Sewer District	Wastewater System Improvements	10,000.00
Lewistown, City of	Creek Restoration and Feasibility Plan	7,500.00
Lewistown, City of	Wastewater System Improvements	10,000.00
Lima, Town of	Water System Improvements	6,152.00
Livingston, City of	Ditch Improvements	3,000.00
Meadowlark Water & Sewer District	Wastewater System Improvements	10,000.00
Milk River Board of Control	Irrigation System Report Review	10,000.00
Milk River Board of Control	Project Manager Feasibility Study	3,500.00
Mill Creek Irrigation District	Dam Rehabilitation Feasibility Study	10,000.00
Missoula, City of	Wastewater System Improvements	10,000.00
Pablo-Lake County Water & Sewer District	Water System Improvements	5,000.00
Pleasant View Homesites County Water & Sewer District	Water System Improvements	10,000.00
Rexford, Town of	Water System Improvements	6,325.00
Richl& County Water District	Water System Improvements	9,250.00
Somers County Water & Sewer District	Water System Improvements	9,250.00
Sun Prairie Village County Water & Sewer District	Wastewater System Improvements	10,000.00
Sun Prairie Village County Water & Sewer District	Water System Improvements	10,000.00
Thompson Falls , City of	Water Supply Study	10,000.00
Three Forks, City of	Water System Improvements	$ 10,000.00