

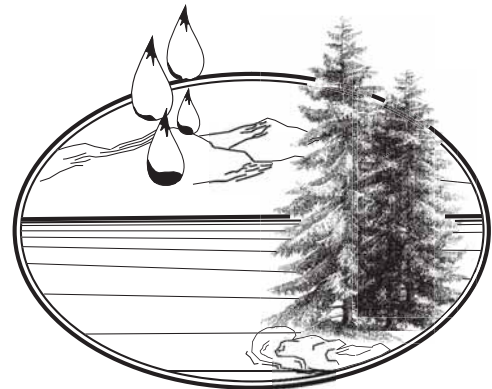
GOVERNOR
BRIAN SCHWEITZER
STATE OF MONTANA

Governor's Executive Budget
Fiscal Years 2010 – 2011

Renewable Resource Grant and
Loan Program

Department of Natural Resources
and Conservation

Conservation and Resource
Development Division



Volume 6

Renewable Resource Grant and Loan Program

Project Evaluations and Funding Recommendations
For the 2011 Biennium

and

2009 Biennium Status Report

Prepared by the

Montana
Department of Natural Resources
and Conservation

Conservation and Resource Development Division
Resource Development Bureau

Alice Stanley, Bureau Chief

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LIST OF ABBREVIATIONS

AC	asbestos cement
ARAR	Applicable or Relevant and Appropriate Requirement
AST	above-ground storage tank
BCD	Beaverhead Conservation District
BDNR	Beaverhead-Deerlodge National Forest
BHCD	Big Horn Conservation District
BHWC	Big Hole Watershed Committee
BIA	Bureau of Indian Affairs
BMPs	Best Management Practices
BNSF	Burlington Northern Santa Fe
BOD	biological oxygen demand
BRID	Bitter Root Irrigation District
BRPD2	Buffalo Rapids Project District 2
CA	cost analysis
CAES	compressed air energy storage
CARDD	Conservation and Resource Development Division, DNRC
CD	Conservation District
CCHD	City County Health Department
CDBG	Community Development Block Grant
cfs	cubic feet per second
CID	Clinton Irrigation District
CIPP	cured-in-place pipe
CSKT	Confederated Salish and Kootenai Tribes
CT	contact time
CWA	Clean Water Act
DDID	Daly Ditches Irrigation District
DEQ	Montana Department of Environmental Quality
DFWP	Montana Department of Fish, Wildlife & Parks
DMCWUA	Delphia Melstone Canal Water Users Association
DNRC	Montana Department of Natural Resources and Conservation
DOC	Montana Department of Commerce
DOT	Montana Department of Transportation
DPRWA	Dry Prairie Rural Water Authority
DW SRF	Drinking Water State Revolving Fund
EA	Environmental Assessment
EBID	East Bench Irrigation District
EDU	Equivalent Dwelling Unit
EEE	Expanded Engineering Examination
EPA	U.S. Environmental Protection Agency
EQC	Environmental Quality Council
EQIP	Environmental Quality Incentive Program
FBC	Flathead Basin Commission
FEMA	Federal Emergency Management Agency
FIIP	Flathead Indian Irrigation Project
FJBC	Flathead Joint Board of Control
FLBS	Flathead Lake Biological Station
FPIP	Fort Peck Irrigation Project
FRIMA	Fisheries Restoration and Irrigation Mitigation Act
FPWUA	Fort Peck Water Users Association
FRWMG	Flathead Regional Wastewater Management Group
FSID	Fort Shaw Irrigation District
FTE	Full Time Employee
GAC	granular activated carbon
GCCD	Garfield County Conservation District
GID	Greenfields Irrigation District

GIS Geographic Information System
 gpd gallons per day
 gpm gallons per minute
 GWIC..... Groundwater Information Center, MBMG
 HDPE high-density polyethylene
 HID Hysham Irrigation District
 HOA..... homeowner's association
 HVID..... Helena Valley Irrigation District
 ID..... Irrigation District
 I&I..... infiltration and inflow
 IFSAR..... Interferometric Synthetic Aperture Radar
 JBOC..... Joint Board of Control
 LiDAR..... light detection and ranging
 LMI low and moderate income
 LUST Leaking Underground Storage Tank
 MACO..... Montana Association of Counties
 MBMG Montana Bureau of Mines and Geology
 MBR membrane bio reactor
 MCA Montana Code Annotated
 mcl..... maximum contaminant level
 MEPA Montana Environmental Policy Act
 mg/l..... milligrams per liter
 MMWG Mosby Musselshell Watershed Group
 MOU Memorandum of Understanding
 MPDES..... Montana Pollutant Discharge Elimination System
 MSUEWQ..... Montana State University Extension Water Quality
 MTWC Montana Watercourse
 MWCC..... Montana Watershed Coordination Council
 NAPL..... nonaqueous phase liquid
 NCMRWA..... North Central Montana Regional Water Authority
 NCMRWS..... North Central Montana Regional Water System
 NEC..... National Electrical Code
 NFF needed fire flow
 NPL National Priorities List (Superfund)
 NRCS Natural Resources Conservation Service, U.S. Department of Agriculture
 NRIS..... Natural Resource Information System
 O&M operation and maintenance
 PCB..... polychlorinated biphenyl
 PKDC Post-Kellogg Ditch Company
 PER Preliminary Engineering Report
 ppb parts per billion
 PPCPs..... Pharmaceuticals and Personal Care Products
 PVC polyvinyl chloride
 RCCD..... Richland County Conservation District
 RD Rural Development
 RDB..... Resource Development Bureau
 RFP request for proposal
 RIT..... Resource Indemnity Trust
 RRGL Renewable Resource Grant and Loan program
 RRWUA..... Ruby River Water Users Association
 RSID..... Rural Special Improvement District
 RVS reduced voltage starter
 SC specific conductance
 SCCWD..... South Chester County Water District
 SDSS..... Spatial Decision Support System
 SDWA..... Safe Drinking Water Act
 SGCCD Sweet Grass County Conservation District
 SHPO State Historical Preservation Office
 Governor's Budget

SRF State Revolving Fund
 SSCL site-specific cleanup level
 SSO sanitary-sewer overflow
 SSRA State Special Revenue Accounts
 STAG State and Tribal Assistance Grant
 SWPB State Water Projects Bureau
 TDS total dissolved solids
 TLMD Trust Land Management Division
 TSEP Treasure State Endowment Program
 TSS total suspended-solids concentration
 ULRRWSD Upper Lower River Road Water and Sewer District
 UMWP Upper Musselshell Water Project
 UMWUA Upper Musselshell Water Users Association
 USBR U.S. Bureau of Reclamation, U.S. Department of the Interior
 USFS U.S. Forest Service, U.S. Department of Agriculture
 USGS U.S. Geological Survey
 USFWS U.S. Fish and Wildlife Service, P) Department of the Interior
 UV ultraviolet
 VCP vitrified clay pipe
 VCRA Voluntary Cleanup and Redevelopment Act
 VFD variable frequency drive
 WPA Work Project Administration
 WPC SRF Water Pollution Control State Revolving Fund
 WRD Water Resources Division, DNRC
 WRDA Water Resources Development Act, U.S. Department of Agriculture
 WSD Water and Sewer District
 WTP water treatment plant
 WUA water users association
 WWTF wastewater treatment facility
 WWTP wastewater treatment plant

ALPHABETICAL INDEX OF PROJECTS

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INTRODUCTION

The Renewable Resource Grant and Loan program provides funding for projects that conserve, manage, develop, or preserve renewable resources in Montana. 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 2009 legislative session and the status of current projects are contained in this report.

This biennium, grants of up to \$15,000 each were available to fund project planning for the development of renewable resource projects. Applications that satisfied project and applicant eligibility criteria were funded on a first come, first serve basis.

Irrigation Development Grants were also available this biennium. Both private and public entities are eligible to apply for grants of up to \$15,000 per irrigation project.

Private entities are also eligible for both grant and loan funding for water-related projects under the Renewable Resource 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. Currently, private grants for water resource development or improvements are limited to \$5,000 or 25% of the entire projects 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 Montana's renewable resources. Funds generated by the use of nonrenewable mineral resources were pledged toward the purchase, lease, planning, design, construction, or rehabilitation of projects that conserved, managed, developed, or preserved land, water, vegetation, fish, wildlife, recreation, and other renewable natural resources. Under the Renewable Resource Development program, only governmental entities are eligible to apply for funding.

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

The 2007 Legislature revised the funding structure of the RRGL program by establishing two Natural Resources State Special Revenue Accounts (SSRA): the Natural Resources Projects SSRA and the Natural Resources Operations SSRA. The Projects SSRA receives revenue to be used exclusively for grants for designated projects authorized in statute. Funds from this account are shared by the RRGL and the Reclamation and Development Grant program. The Natural Resources Operations SSRA funds expenses necessarily incurred in the administration of these two natural resource grant programs. Other related agency expenses are also charged to the operations account. This change in funding structure is designed to ensure that resource indemnity trust (RIT) funds are expended consistent with the original intent of the RIT.

Purpose

The purpose of the RRGL 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 preserve the economic and other benefits of the state's natural heritage for the citizens of Montana.

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, renewable energy, and solid waste projects have received past funding. 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 future management and protection of water sources (such as groundwater assessment studies) have received funding in the past. Chapter II of this report presents information on renewable resource grants to public entities. Chapter III presents coal severance tax to private entities. Chapter VII 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% of the total appropriation, 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 the DNRC director. The director has final authority over grants to private entities.

Irrigation system improvements, 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 not water related or 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 willing to enter into a contract for a loan repayment.

Irrigation Development Program

The irrigation development program was initiated to assist producers with projects that would grow high-value crops such as potatoes and sugar beets. Grants up to \$15,000 per irrigation project for both private and public applicants are available through this program. The 60th Legislature appropriated \$300,000 for irrigation development grants and an additional \$100,000 to the DNRC to contract an inventory of the condition of irrigation infrastructure in Montana. This inventory report will be completed and available to the public in early January 2009. Chapter V of this report provides more information about irrigation development grant projects funded in 2007 and 2008.

Emergency Grants

Statute allows DNRC to request up to 10% of the funds available for grants in a biennium to be used for emergency grants. DNRC may provide up to \$30,000 in a single emergency grant out of a total of \$100,000 to governmental entities to resolve water-related emergencies. Emergency funds may be granted for projects that, 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 the DNRC director. Chapter VI of this report provides information about applications for emergency assistance received in 2007 and 2008.

Planning Grants

Project planning grants provide funding to governmental entities for planning activities that lead to a better RRGL grant application. These grants are usually for \$15,000 or under with no match requirements.

Types of planning activities funded include: preliminary engineering reports, feasibility studies, capital improvements plans, and growth policies. The application requires applicants to explain how the project would contribute to the conservation, management, development, or preservation of renewable resources in Montana. The grants are given on an “open-cycle” basis. The 60th Legislature appropriated \$400,000 for planning grants for FY 2008 and 2009. Chapter VIII of this report provides information about grants awarded for these years.

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 are consistent with limits imposed by the Legislature in the past and are put in place 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 and 5% of the total appropriation. Loans to private entities may not exceed the lesser of \$400,000 or 80% of the fair market value of the security given for the project. Private loans to individuals must be secured with real property. Loans up to \$3 million are available to organizations such as water user associations and ditch companies.

Funding Authority

The 60th Legislature appropriated \$5 million for Renewable Resource grants for the 2009 biennium and authorized use of an additional \$2.2 million grant from the Treasure State Endowment Program for a total of \$7.2 million available for grant projects. An additional \$400,000 was appropriated for planning grants. The loan programs are 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 RRGL 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 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 the DNRC 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 under the RRGL 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 the DNRC 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 for private entities. 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 in administering the RRGL program is limited to a coordinating role. Limited by its authority to adopt rules, DNRC cannot expand or limit the mission of the RRGL 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 statute. 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 RRGL program are carried out through solicitation of applications; 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 administration of grants and loans to comply with 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 governmental entities most likely to sponsor projects eligible for funding. Information is provided through press releases, news articles, brochures mailed directly to potential applicants, presentations at conferences and other association events, and workshops conducted 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, 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 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 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 bonds.
7. Adequately secure loans to protect the investment of public funds.
8. Advise the Legislature concerning DNRC efforts to effectively administer the program according to statute and legislative intent.

CHAPTER II

Renewable Resource Grants to Public Entities

Application Administration and Project Review Procedures

DNRC's Resource Development Bureau (RDB) 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. 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 2008 application cycle began with press releases in February 2008. 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. In addition, DNRC staff routinely conduct workshops and presentations to publicize funding opportunities through the RRGL program.

The DNRC received 92 applications in May 2008. Funding requests totaled \$8.64 million. In the previous cycle, 80 applicants requested \$7.6 million in grant funding.

The RRGL application for this cycle requested the following information:

- A proposal abstract describing the project's merits.
- A technical narrative describing the project's purpose, history, and prior efforts; specific goals and objectives, as well as a discussion of project alternatives; and documentation supporting the technical narrative.
- A financial narrative and budget forms describing the project's funding structure.
- Affordability data, used to evaluate the local financial commitment for infrastructure projects including a description of the applicant's ability to pay such as 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 public and natural resource benefits achieved by the proposed project.
- An environmental assessment of 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.

DNRC assembled a technical review team to evaluate applications for the 2008 cycle. For the applications received in May 2008, the team included 26 key reviewers comprised of DNRC staff, and scientists and engineers from contracted private firms. Projects are assigned based on the reviewer's area of expertise. Key reviewers are given information about the program, application materials, and guidelines for reviewing applications.

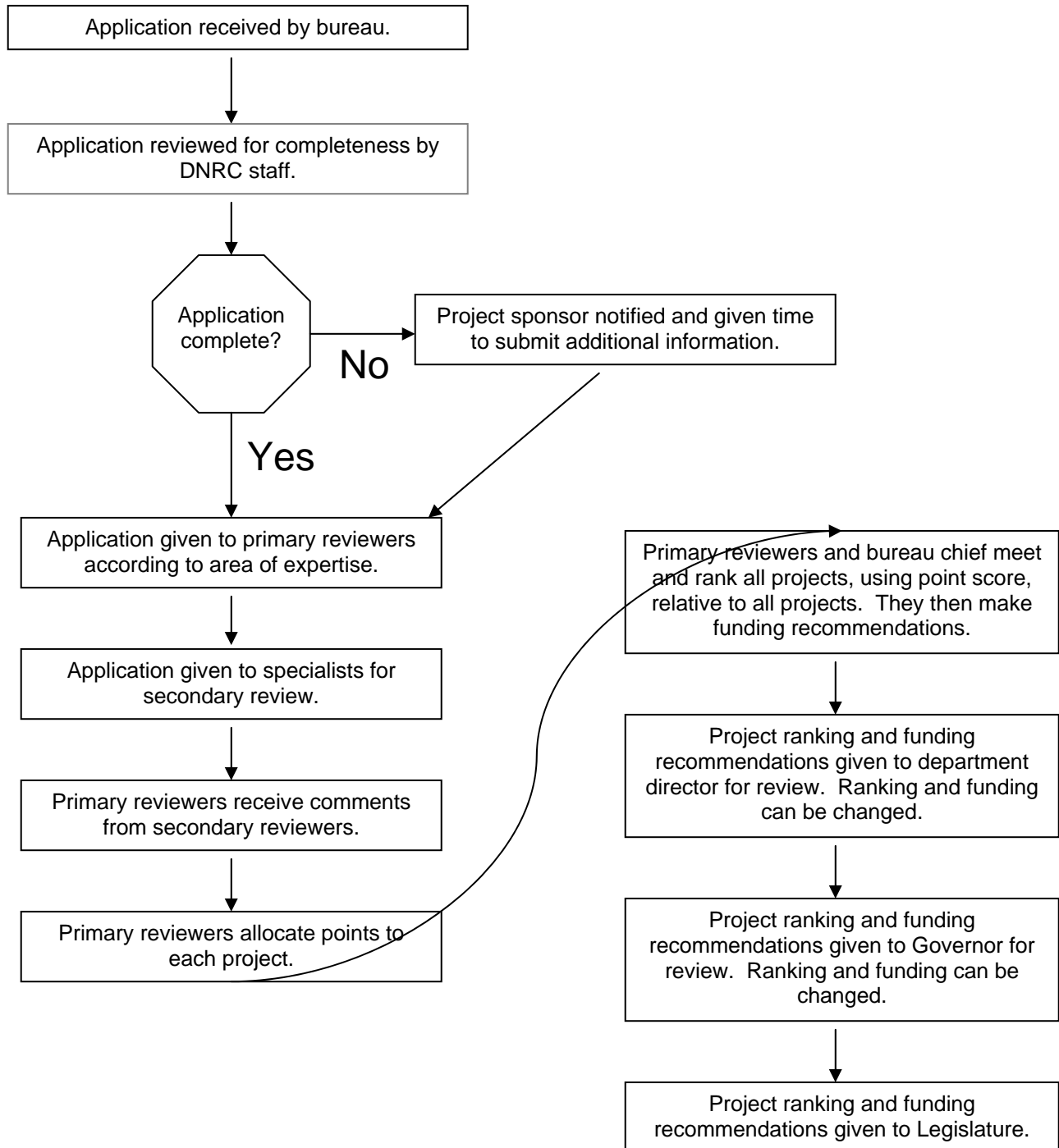
DNRC's technical review team evaluates each application to ensure that the proposal is technically and financially feasible. During project review, additional detailed technical and financial information may be requested. With the results of their own evaluations and comments from agencies and outside 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.

Application reviewers have raised concerns regarding project budgets containing uncommitted federal grants. DNRC recognizes these concerns and has addressed the problem in two ways: (1) DNRC will initiate a contract for projects that can be demonstrated to benefit or develop renewable resources as an isolated part of a phased project or as a stand-alone project; and (2) alternatively, DNRC will make provisions to initiate contracts with these projects within the biennium. If the project has not received the required matching funds by December 2010, DNRC will review the proposed budget. If it is determined that the match funding will not be available in the near future or a phased approach will not be workable, the grant will revert to the RRGL account and the next project on the ranked list will receive funding.

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 feasibility of the proposed funding scenario. Deficiencies in the financial plan are identified 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 (PER). 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 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 PER. To facilitate review of the Technical Narrative or PER, 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 alternatives 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, the PER provides DNRC with

information used to evaluate 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 RRGL 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. How the project would measurably enhance renewable resources in Montana through implementing one or more of the following management practices:
 - 1) Resource **conservation**. Will the project ensure measurable future renewable resource benefits through implementation of new or improved efficiencies and utilization practices? Will it improve water-use efficiency through 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 development of a renewable resource? For example, will the project support development of state, Tribal, or federal water projects including regional water systems? Will it develop off-stream or tributary water storage or develop hydropower?
 - 3) 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. How the project would contribute to economic development in Montana or help existing businesses.
- C. How the project increases understanding of how a renewable resource would benefit Montana citizens.
- D. How the project coordinates with ongoing or planned actions.
- E. How the project benefits multiple uses.
- F. Evidence of public support such as letters, records of comment at public meetings, and citizen group support.

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 provides a short presentation about each project reviewed and the score given. After all 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 entire review team increases ranking fairness by minimizing 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 rank them. Ranking scores are not binding. Either DNRC's director or the Governor may make adjustments to the

recommendations prepared by DNRC to reflect their assessment of natural resource and other policy priorities. An appropriations bill containing project ranking recommendations 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 authorizes funding for the projects in the order of priority and in the amounts 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 2008 grant applications recommended for funding during the 2011 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 limits 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 applicants of their funding status. Sponsors of funded projects are reminded that work on their projects may not begin before 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 governed by a project grant contract agreement between DNRC and the project sponsor. The equivalent of 3 full-time staff administer the active construction, planning, research, and public information grants. The RRGL program typically oversees 300 to 350 active projects at any given time.

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 contracts used for DNRC's other state and federal grant programs, require 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 keep copies of 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 RRGL 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 final projects results. Evaluation through a final project report enables DNRC to measure how well the projects implements 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 2008 Grant Applications by Order of Ranking Recommendation

Ranked Order	Project Sponsor / Project Name	Recommended Grant Funding	Cumulative Recommended	Recommended Loan Funding
1	Dutton, Town of Dutton WW System Improvements	\$100,000	\$100,000	
2	Philipsburg, Town of Philipsburg WW Treatment Improvements	\$100,000	\$200,000	
3	Upper Lower River Road WSD Water Distribution and Wastewater Collection, Phase 3	\$100,000	\$300,000	
4	Fork Peck Tribes Lateral L-56 Rehabilitation	\$100,000	\$400,000	
5	Bitter Root Irrigation District Bitter Root Irrigation District Siphon 1 Rehabilitation, Phase 1	\$100,000	\$500,000	\$473,000
6	Milk River Irrigation Project Milk River System-wide Geolrrigaton Mapping	\$65,004	\$565,004	
7	Big Sandy, Town of Big Sandy WW Improvement	\$100,000	\$665,004	
8	Beaverhead Conservation District Big Hole Spring Creek and Water Quality Enhancement	\$97,485	\$762,489	
9	DNRC- Water Resources Division Ruby Dam Rehabilitation	\$100,000	\$862,489	\$2,000,000
10	Nashua, Town of Nashua Water System Improvements	\$100,000	\$962,489	
11	Hysam Irrigation District Pump Station Electrical Improvements	\$100,000	\$1,062,489	
12	Yellowstone County West Billings Flood control and Groundwater Recharge Feasibility Study	\$100,000	\$1,162,489	
13	Clinton Irrigation District Clinton Irrigation District Main Canal Rehabilitation	\$99,610	\$1,262,099	
14	Hardin, City of Hardin WW System Improvements	\$100,000	\$1,362,099	
15	Lewistown, City of Lewistown WW Facilities Improvements	\$100,000	\$1,462,099	
16	Winifred, Town of Winifred WW Collection Improvements, Phase 1	\$100,000	\$1,562,099	
17	Gilford County WSD Gilford County WW System Improvements	\$100,000	\$1,662,099	
18	Melstone, Town of Melstone Water System Improvements	\$100,000	\$1,762,099	
19	Hysam Irrigation District SDSS Flow Monitoring and Data Transfer	\$100,000	\$1,862,099	
20	Choteau, City of Choteau WW System Improvements, Phase 1	\$100,000	\$1,962,099	
21	Wolf Creek County WSD New Wolf Creek Central WW System	\$100,000	\$2,062,099	
22	Lower Musselshell Conservation District Lost Horse Creek Siphon Pipeline Rehabilitation	\$100,000	\$2,162,099	
23	Whitefish, City of Whitefish WW System Improvements	\$100,000	\$2,262,099	
24	Gardiner-Park County WSD Gardiner-Park County WW System Improvements	\$100,000	\$2,362,099	
25	DNRC- Water Resources Division Twodot Canal Rehabilitation	\$100,000	\$2,462,099	

26	Cascade, Town of Cascade Water System Improvements	\$100,000	\$2,562,099	
27	Sweet Grass County Conservation District Post-Kellogg Diversion Structure Infrastructure Rehabilitation	\$100,000	\$2,662,099	
28	Wibaux, Town of Wibaux WW Improvements	\$100,000	\$2,762,099	
29	Ravalli County Environmental Health Bitterroot Valley Septic Systems Impact Evaluation Model	\$100,000	\$2,862,099	
30	Bynum Teton County WSD Bynum Water System Improvements	\$100,000	\$2,962,099	
31	Lake County Lake County LiDAR Mapping	\$100,000	\$3,062,099	
32	Ravalli County Water Resource Protection and Flood Hazard Identification Using LiDAR Mapping Technology for Ravalli County, Phase 2	\$100,000	\$3,162,099	
33	Judith Gap, Town of Judith Gap Water and WW System Improvements	\$100,000	\$3,262,099	
34	Crow Tribe of Indians Crow Agency WW System Improvements, Phase 3a	\$100,000	\$3,362,099	
35	Stevensville, Town of Stevensville WW Improvements, Phase 1	\$100,000	\$3,462,099	
36	Flathead County Bigfork Storm Water System Improvements	\$100,000	\$3,562,099	
37	Kevin, Town of Kevin Water System Improvements	\$100,000	\$3,662,099	
38	Em-Kayan Village WSD Water System Improvements	\$100,000	\$3,762,099	
39	Broadview, Town of Broadview Water System Improvements	\$100,000	\$3,862,099	
40	DNRC- Water Resources Div Deadman's Basin Terminal Outlet Replacement Project	\$100,000	\$3,962,099	\$400,000
41	Big Horn CD Water Reservations Efficiencies	\$33,706	\$3,995,805	
42	DNRC- Water Resources Div Martinsdale Reservoir Dam Drain Project	\$100,000	\$4,095,805	
43	Loma County WSD Loma Water System Improvements	\$100,000	\$4,195,805	
44	Woods Bay Homesites WSD Woods Bay Homesites WW Collection System, Phase 1c	\$100,000	\$4,295,805	
45	Sheaver's Creek WSD Sheaver's Creek WW Collection System, Phase 1b	\$100,000	\$4,395,805	
46	Bozeman, City of Hyalite Creek Source Water Protection Barrier	\$100,000	\$4,495,805	
47	Greater Woods Bay Sewer District Greater Woods Bay Area WW System Improvements	\$100,000	\$4,595,805	
48	Virginia City, Town of Virginia City WW System Improvements	\$100,000	\$4,695,805	
49	Helena Valley Irrigation District HVID Main Canal Lining	\$100,000	\$4,795,805	
50	Flathead County Flathead Regional Wastewater Management Group	\$89,993	\$4,885,798	
51	North Baker WSD North Baker WSD WW Improvements	\$100,000	\$4,985,798	

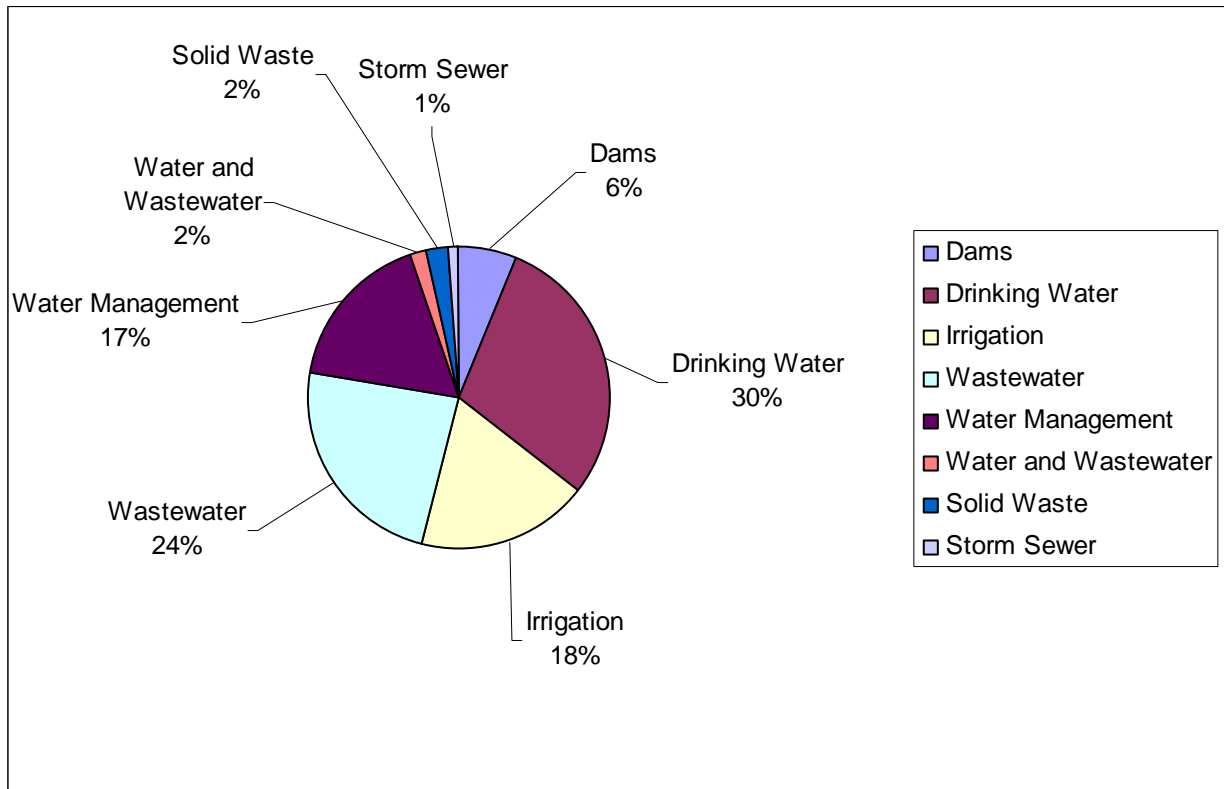
52	Valier, Town of Valier Water System Improvements	\$100,000	\$5,085,798
53	Flathead Joint Board of Control FJBC Jocko K Canal Lining	\$100,000	\$5,185,798
54	Sweet Grass County Yellowstone Greycliff Study	\$80,000	\$5,265,798
55	Cut Bank, City of Cut Bank Water System Improvements, Phase 4b	\$100,000	\$5,365,798
56	Confederated Salish and Kootenai Tribes Jocko Upper S Lining	\$100,000	\$5,465,798
57	St. Ignatius, Town of St. Ignatius Water System Improvements	\$100,000	\$5,565,798
58	Missoula County Lewis and Clark Subdivision RSID Water System Improvements	\$100,000	\$5,665,798
59	Bridger Pines County WSD Bridger Pines WW System Improvements	\$100,000	\$5,765,798
60	Ennis, Town of Ennis Water System Improvements	\$100,000	\$5,865,798
61	Laurel, City of Laurel Water System Improvements	\$100,000	\$5,965,798
62	Fort Smith WSD Fort Smith Water System Improvements	\$100,000	\$6,065,798
63	Troy, City of Troy Water Distribution Improvements	\$100,000	\$6,165,798
64	DNRC-Water Resources Division Nevada Creek Canal Design and Construction	\$100,000	\$6,265,798
65	Granite County Granite County Solid Waste Improvements	\$100,000	\$6,365,798
66	Harlowton, City of Harlowton Water System Improvements	\$100,000	\$6,465,798
67	Jette Meadows WSD Jette Meadows Water System Improvements	\$100,000	\$6,565,798
68	Homestead Acres County WSD Homestead Acres Water System Improvements	\$100,000	\$6,665,798
69	South Chester Water District South Chester County Water District Water System	\$100,000	\$6,765,798
70	Bigfork WSD Bigfork WW Treatment System Improvements, Phase 2A	\$100,000	\$6,865,798
71	Greenacres County WSD Greenacres County WSD Water System Improvements	\$100,000	\$6,965,798
72	Livingston, City of Livingston Anaerobic Digester Improvements and Composting Facility	\$100,000	\$7,065,798
73	Eureka, Town of Eureka Water System Improvements	\$100,000	\$7,165,798
74	Manhattan, Town of Booster Station Transmission Main Replacement	\$100,000	\$7,265,798
75	Stevensville, Town of Stevensville Water System Improvements, Phase 3	\$100,000	\$7,365,798
76	Buffalo Rapids Project District II Conversion of Laterals 2.9/7.6 to Pipeline	\$100,000	\$7,465,798
77	Flathead Basin Commission Mapping the Impacts of Septic Systems	\$100,000	\$7,565,798
78	Daly Ditches Irrigation District Hedge Canal Diversion Dam Replacement	\$100,000	\$7,665,798

79	Fort Shaw Irrigation District Water Quality and Quantity Improvement	\$100,000	\$7,765,798	
80	East Bench Irrigation District EBID-Sweetwater Seepage Area Canal Lining	\$100,000	\$7,865,798	
81	Montana Watercourse Watershed Education for Real Estate Agents: An Online Program	\$19,333	\$7,885,131	
82	Shelby, City of Shelby WW Improvements	\$100,000	\$7,985,131	
83	Buffalo Rapids Project District 2 Increasing Pump Discharge Line Efficiency, Phase 2	\$100,000	\$8,085,131	
84	Sweet Grass County WSD Sweet Grass Water System Improvements	\$100,000	\$8,185,131	
85	Gore Hill County Water District Gore Hill Water System Improvements	\$100,000	\$8,285,131	
86	Whitefish County WSD Investigation of Septic Leachate to Littoral Areas of Whitefish Lake	\$70,000	\$8,355,131	
87	Richland County Conservation District Lower Yellowstone Groundwater Reservation: Water Development Potential of Buried Channel Aquifers in Richland County	\$100,000	\$8,455,131	
88	MSU Montana Water Center Decisionmaker's Guide To Montana's Water	\$99,462	\$8,554,593	
89	Ronan, City of Ronan Water System Improvements	\$100,000	\$8,654,593	\$2,873,000
Total Funds Recommended		\$8,654,593		
Projects below this line were not recommended for funding				
90	Missoula, City of Fort Missoula/Bitterroot River Bank Stabilization Design	\$79,310		
91	Garfield County Mosby Musselshell Watershed Group Water Storage	\$100,000		
92	Greenfields Irrigation District Pishkun Enlargement Study	\$100,000		

Notes:

EBID – East Bench Irrigation District
 DNRC – Montana Department of Natural Resources and Conservation
 LiDAR – Light Detection and Ranging
 MSU – Montana State University
 RSID – Rural Special Improvement District
 SDSS – Spatial Decision Support System
 WSD – Water and Sewer District
 WW – wastewater

FIGURE 3 Requested Funding by Project Type



Project No. 1

Applicant Name Dutton, Town of
Project Name Dutton Wastewater System Improvements

Amount Requested \$ 100,000 Grant
Other Funding Sources \$ 450,000 CDBG Grant
\$ 500,000 TSEP Grant
\$ 159,000 RD Grant
\$ 573,000 RD Loan

Total Project Cost \$1,782,000

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Dutton desperately needs wastewater system improvements. Both the treatment lagoons and lift station are over 35 years old and have many deficiencies.

Deficiencies with the existing lagoons include dike erosion, inoperable valves, inadequate detention time for proper treatment, significant sludge build-up and lagoon leakage. To meet the current discharge permit limits, the lagoons are operated with minimal freeboard (one foot). Operating the facility in this manner is unsafe and could lead to catastrophic dike failure.

Dutton's treatment system also will not meet disinfection and ammonia limits that the DEQ proposes for the town's discharge permit. DEQ is updating the permit. Dutton received a warning letter from DEQ in 2003 directing the town to address existing deficiencies.

The lift station also has a number of deficiencies related primarily to the age of the equipment. The wet well piping, back-up generator, and electrical, mechanical, and control systems are all in poor condition. Extended failure of the lift station could result in backup of sewage into homes. The dry well which houses the lift station's pumps, controls, and valves is a safety risk to the operator due to the confined space.

The proposed solution is to construct a new lift station and wastewater treatment facility to serve current and future users in Dutton. The existing primary treatment lagoon will be rehabilitated to meet current standards, and a new storage lagoon will be constructed just north of the existing lagoon on adjacent property. The treated wastewater will be beneficially reused for spray irrigation of crops. The new lift station will meet current DEQ standards.

The project will solve serious health and safety problems with the current system for the residents.

Technical Assessment

Project Background

The wastewater collection system for Dutton was constructed in 1946. The treatment system, a two-cell facultative lagoon system and pump station, was constructed in 1972 and serves 148 households. Improvements to control erosion were made to the lagoons in 2002. Numerous deficiencies have been identified in the wastewater system. The pump station and stand-by generator have outlived their useful lives. The lagoon is substandard, leaking, has significant sludge build-up, and is operated in an unsafe manner (one-foot of freeboard) to meet current discharge permit limits. This manner of operation could lead to catastrophic dike failure. The treatment system also will not meet disinfection and ammonia limits

that DEQ is proposing for the discharge permit update. Alternatives evaluated included: no action, collection system evaluation including lift station replacement or rehabilitation, total retention facultative lagoon, facultative lagoon with spray irrigation, and aerated lagoon with continuous discharge.

Technical Approach

In 2007, the town completed a wastewater PER that further assessed needs evaluated alternatives, and recommended capital improvements to address those needs. The preferred alternative is to construct a new pump station, new facultative lagoons for wastewater treatment with spray irrigation disposal, and storage of wastewater during the nonirrigation season. The treated wastewater will be beneficially reused for spray irrigation of adjacent cropland. The existing primary lagoon will be rehabilitated to meet current standards. The new system will eliminate surface water discharge and need for a discharge permit. The new system will comply with current state design standards. This alternative was selected because of its minimal environmental impact, reliable treatment performance, low level of regulatory risk, long-term ability to meet regulatory requirements, and limited aesthetic impacts.

Construction is slated to begin in April 2010 and end in July of the same year.

Specific tasks to be accomplished:

- Replace existing lift station with a submersible pump lift station;
- Construct a storage pond;
- Rehab existing primary pond and install liner; and
- Install the spray irrigation system.

Project Management

The project engineer has been selected and has successfully provided grant administration, design plans, and construction management for numerous wastewater projects. The town clerk will be the fiscal contact. The clerk is capable of managing financial aspects of the project. The town council and mayor will have ultimate responsibility for management of project activities and expenditure of funds. The project management plan spells out clear duties for each member of the management team.

The PER has been completed; depending on funding, the project is ready to proceed with design in July 2009.

The town has used public awareness and input in developing the project. The project has been discussed at numerous public meetings, council meetings, and in several newspaper articles and newsletters. The town intends to continue using these venues to inform the public and solicit input during design and implementation. During construction, residents and business owners will be given notice before interruption of sewer service.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$76,500	\$76,500
Professional & Technical	\$0	\$0	\$260,000	\$260,000
Construction	\$100,000	\$0	\$1,345,500	\$1,445,500
Total	\$100,000	\$0	\$1,682,000	\$1,782,000

Due to project cost the town council determined that the town could not afford to pursue the project with its own revenue or with a general obligation bond. Combinations of grant and loan programs were investigated. Five different funding scenarios were considered. The chosen funding package consists of a CDBG grant, a TSEP grant, an RRGL grant, an RD grant, and an RD loan. The final funding strategy is somewhat different than those explored in the PER. The PER was completed in February 2007; agency

program changes since then impacted the funding strategy. Because of these changes the town switched to an RD loan so that it would be eligible for RD grant funding.

The budget is reasonable, complete, and includes detail to show the budget is sufficient for completion. The applicant is eligible for CDBG, TSEP, and RD funding. If any of the grants is not received or substantially reduced, project financing would have to be modified to include either an increase in the portion of loan funds or the applicant could elect to reapply to funding agencies in the next cycle. A larger loan would result in an even greater burden on the rate payers. As a contingency, the town applied for \$450,000 from STAG/WRDA through the congressional delegation.

The applicant is a local government and can collect charges for operation and debt. Current residence charge for wastewater service is \$6 per month. The projected residential rate is \$33 per month and will affect 148 households. The water rate is \$28.50 per month. The combined rate is \$61.50 per month, which exceeds the DOC target rate of \$60.22.

Benefit Assessment

The project will measurably conserve, develop, manage, preserve, and enhance a renewable natural resource.

Rehabilitation of the existing primary lagoon will eliminate leakage of untreated wastewater into the groundwater aquifer and help to preserve the aquifer. Construction of a storage lagoon and a spray irrigation system for disposal of treated wastewater will provide better management, result in measurable benefits, and develop and enhance agricultural use, a renewable resource. Irrigation of cropland with the treated wastewater will provide a new use of a renewable resource. Water is also conserved by beneficially reusing wastewater resources. The use of nutrient-rich effluent will reduce the need for chemical fertilizer. Preservation benefits include elimination of a discharge to groundwater and a surface discharge to Hunt Coulee, thus improving water quality in the receiving water. Elimination of the surface water discharge to Hunt Coulee will also help preserve the water quality within the Teton River, listed as impaired on the TMDL list, to which Hunt Coulee discharges. Wildlife habitat will be preserved by eliminating surface water discharge to Hunt Coulee.

Environmental Evaluation

Significant and beneficial environmental impacts are associated with the proposed wastewater improvement project. Surface and groundwater pollution from operation of the wastewater treatment lagoon and the surface water discharge to Hunt Coulee will be eliminated. Elimination of a surface water discharge to Hunt Coulee will remove a significant risk to public health and improve wildlife habitat in the area. Treated wastewater will be beneficially applied to adjacent cropland. Repair of the leaking lagoon will protect groundwater. Elimination of the public health and safety risk associated with surface water and groundwater pollution by the wastewater system will positively impact the community. Environmental impacts associated with this project were evaluated and no apparent adverse, long-term impacts are expected. Minimal short-term, construction-related impacts will be controlled through proper construction observation and control.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 2

Applicant Name Philipsburg, Town of
Project Name Philipsburg Wastewater Treatment Improvements, Phase 2

Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 750,000	TSEP Grant
	\$ 1,223,943	RD Grant
	\$ 3,882,951	RD Loan
	<u>\$ 96,928</u>	Town Cash
Total Project Cost	\$ 6,053,822	

Amount Requested \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Philipsburg's wastewater infrastructure serves 951 persons through 550 connections, and consists of gravity sewers and a two-cell facultative lagoon from the 1960s. Effluent discharges to Flint Creek. Permit renewal in 2007 added interim standards with which the town is not consistently complying, and the 2012 renewal will add stringent nitrogen, phosphorous, and fecal coliform removal requirements.

Lagoon deficiencies include severe leakage to groundwater, accumulated biosolids and pre-1990 storm water sediments, and capacity less than half of what is required, resulting in inadequate treatment. Lack of disinfection caused a fecal coliform discharge of 10,100 cfu/ml in February 2008; the permit interim limit is 630 cfu/ml. Biosolids removal and disinfection plans must be submitted to DEQ by December 2009.

These issues must be addressed and existing treatment lagoons replaced to reliably conserve and preserve both surface and groundwater resources. The 2006 PER and 2008 PER update recommended a new biological nutrient removal treatment process (Bio Lac) costing \$5.75 million. This process will meet current effluent limits, with flexibility to cost effectively adapt (using tertiary filters) to more stringent nutrient removal requirements from DEQ based on TMDLs and instream standards. Flint Creek will directly benefit as a 303(d)-listed stream, tributary to the Clark Fork River, and important recreational fishery.

As a collateral conservation measure, the town is installing system wide water metering (DNRC funded in 2007) as a Phase 1 improvement to reduce sewage flows and Phase 2 plant sizing. The town is seeking Phase 2 funding in 2008 from RRGL, TSEP, and Rural Development to meet 2012 compliance deadlines in the current MPDES Permit. Grant funding from DNRC is essential to keep sewer user rates affordable. Even with other grants requested from TSEP and Rural Development, Philipsburg faces post-project rates twice the DOC target rate.

Technical Assessment

Project Background

The 2008 PER amendment proposes three phases to provide solutions to the wastewater problems in Philipsburg. Phase 1 will be accomplished in 2008 and involves system-wide water metering to encourage water conservation and reduce sewage flows. The proposed Phase 2 project, the basis of this grant request, is construction of a new wastewater treatment facility with an outfall line rehabilitation. The project proposes to remedy the existing sewage lagoon deficiencies and allow compliance with current effluent nutrient limits, while retaining flexibility to address even more stringent 2012 standards. Phase 3 improvements include collection system improvements and the second phase of treatment system improvements (tertiary) treatment.

Several alternatives were considered for Phase 2, including no action, aerated and covered aerated systems with tertiary treatment, storage/treatment lagoon and land application, and various treatment plants with tertiary treatment. The selected treatment alternative is a *Bio-Lac* nutrient removal treatment facility including disinfection and lagoon sludge removal.

Technical Approach

The preferred alternative is construction of a new *Bio-Lac* treatment system, a UV disinfection system, slip lining the lagoon transmission line, and lagoon decommissioning, removal, and disposal of sludge from the lagoons. The *Bio-Lac* system will be capable of secondary treatment and significant nitrogen and phosphorus removal, thus meeting current discharge permit limits. Tertiary treatment up-flow filters will have to be constructed in Phase 3 to fully comply with the 2012 permit limits. The town is hopeful it can negotiate with DEQ to eliminate the Phase 3 tertiary treatment system due to economic hardship and because Phase 2 treatment improvements will provide significant nutrient removal capability.

Construction of the new treatment system will have positive long-term environmental impacts. Effluent quality will be significantly improved. The overall stream quality of Flint Creek will improve, and health risks to recreational users of the creek will be eliminated. Lining the sewage outfall line to the treatment site will reduce groundwater infiltration in the summer and unnecessary treatment of extraneous water, as well as eliminating the potential for exfiltration of raw sewage to the groundwater. Removal of the lagoons will eliminate excessive wastewater leakage (over six times the allowable rate) which will preserve groundwater resources.

Construction is slated to begin in July 2010 and end in August 2011.

Specific tasks to be accomplished:

- Construct new wastewater treatment facility;
- Rehabilitate outfall sewer pipe; and
- Remove sludge and decommission the old lagoons.

Project Management

The town council and mayor will have contractual responsibility and ultimate authority for project. The clerk-treasurer will be responsible for management and record keeping, assisted by the funding administration consultant. The town will hire a funding administration consultant to assist with compliance monitoring, fiscal tracking, and reporting. The project engineer has been selected and has successfully provided design plans and construction monitoring for numerous wastewater system projects. The project management plan designates the duties for each member of the management team.

The PER has been completed and, depending on funding, the project is ready to proceed with design in July 2009.

An ad hoc citizen engineering advisory committee, formed specifically for this project, will remain involved during implementation. Philipsburg established excellent dialogue with the public throughout planning stages. Coordination with local residents and businesses will continue through public forums and council meetings. Public input and coordination will be particularly emphasized as new water/sewer rates are developed and when construction disruption becomes imminent.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$378,925	\$378,925
Professional & Technical	\$50,000	\$0	\$728,888	\$778,888
Construction	\$50,000	\$0	\$4,846,009	\$4,896,009
Total	\$100,000	\$0	\$5,953,822	\$6,053,822

Four funding scenarios were considered. The funding package, in this application consists of a TSEP grant, RRGL grant, RD grant and loan, and local cash. The budget is reasonable, complete, and includes detail to show it is sufficient to complete the project. The town has committed funds to the project. The town has also applied for STAG and WRDA grants. A \$25/month per connection rate increase, enacted in 2006, will be available to the project in 2010. Rates will be analyzed in 2010 after the water meter project is complete and operating, and will be based on water consumption. If TSEP and RRGL grants are not awarded, the town's first alternative would be to renegotiate with RD to request an increased grant share. If this were unsuccessful or if RD grant funds were denied altogether, the town would have no choice but to delay the project, possibly reapplying to the same funding agencies in the 2010 cycle. Doing so would compromise current and future discharge permit compliance.

The applicant is a local government and can collect charges for operation and debt. The current residential charge for wastewater service is \$37.50 per connection. The projected residential rate is \$62.53 per month and will affect 465 households. The water rate is \$31.36 per month. The current combined rate is \$68.86 per month, 147% of the target rate. The proposed rate increase makes the rate 199% of the DOC target rate. Both services will be converted to meters by 2010.

Benefit Assessment

The proposed project will measurably enhance resource conservation and preservation in multiple ways. The new wastewater treatment facility will provide reliable treatment unattainable with the existing lagoon facility. Rehabilitation of the sewage outfall line to the treatment site will reduce groundwater infiltration and the unnecessary treatment and discharge of extraneous water, as well as eliminating the potential for exfiltration of raw sewage to the groundwater. Both aspects conserve water resources by minimizing volumes of water conveyed and treated, and reducing overall discharge of pollutants to Flint Creek.

The preservation benefits are significant to both groundwater and surface water and in particular to Flint Creek. Lining the outfall line will prevent sewage from contaminating underlying groundwater. The project will eliminate excessive leakage from the existing lagoons (over six times the allowable rate) thereby preserving groundwater resources. The project will promote surface water preservation by treatment to levels DEQ has determined adequate to meet forthcoming TMDLs and in-stream standards for Flint Creek and the Clark Fork watershed. Current discharge permit violations will cease and risks will be eliminated with better treatment and disinfection prior to discharge.

Flint Creek preservation will benefit a variety of downstream entities, including the Clark Fork River. In addition to livestock watering and irrigation, Flint Creek is a significant and increasingly used recreation corridor.

Environmental Evaluation

Environmental effects associated with the proposed wastewater treatment project are mainly beneficial. Outfall sewer rehabilitation will have a positive impact by reducing groundwater infiltration and improving treatment plant performance as well as protecting groundwater from exfiltration during certain times of the year. The treatment facility construction will have a positive, long-term environmental impact. Effluent quality will be significantly improved. The overall quality of Flint Creek will improve, and health risks to recreational users of the creek will be eliminated. No apparent adverse, long-term environmental impacts would occur. Minimal short-term, construction-related impacts would be controlled through proper construction observation and control.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 3

Applicant Name Upper & Lower River Road Water & Sewer District (ULRRWSD)
Project Name Water Distribution and Wastewater Collection, Phase 3

Amount Requested	\$ 100,000	DNRC Grant
Other Funding sources	\$ 500,000	TSEP Grant
	\$ 332,000	City CDBG
	\$ 450,000	MDOC CDBG
	<u>\$ 285,600</u>	SRF Loan
Total Project Cost	\$ 1,667,600	

Amount Recommended \$ 100,000

Project Abstract (Prepared and submitted by applicant)

The water and sewer district began in 1917 with the first subdivision plat. The district now comprises eight subdivisions and five mobile home parks with on-site water and wastewater systems. The DEQ and City County Health Department (CCHD) groundwater study in 1997-98 found high levels of nitrate and ammonia in drinking water wells.

Drinking water from area wells requires treatment for aesthetic and sanitary reasons. Drinking water quality complaints have come from small public system users and private well owners. Several boil orders have been issued. On-site wastewater systems are degrading area wells and groundwater. A number of local drainfields have failed recently. Groundwater degradation has resulted in a moratorium on new on-site wastewater disposal systems. DEQ and CCHD require correction of this situation as soon as possible.

Phase 1 and 2 projects completed utility extensions to approximately 245 homes. The recommended Phase 3 service area includes a small row of parcels in Grandview Tracts, north of Service District #2, and the majority of Southvale from the south end of Service District #2 to the alley south of 32nd Avenue South. Two parcels west of Upper River Road in McLean Garden Tracts are also included due to their proximity to new utilities. The area includes approximately 50 EDUs and a few vacant parcels.

Final unit quantities for the preferred alternative are: 3,910 lineal feet of eight-inch water main, 630 lineal feet of 12-inch water main, 11 fire hydrants, 1,985 lineal feet of eight-inch sewer main, 700 lineal feet of 10-inch sewer main, nine manholes, and 50 water and sewer services.

Technical Assessment

Project Background

The Upper & Lower River Road Water & Sewer District is immediately southwest of Great Falls adjacent to the Missouri River. The district was formed in the late 1990s to address a number of public health and safety issues associated with failing wastewater systems and poor drinking water quality in the area. The district prepared a PER in 2002 which evaluated several alternatives to address deficiencies with the wastewater and drinking water systems within the district. The preferred alternative selected in the PER involved construction of a centralized wastewater collection and water distribution system connected to the Great Falls infrastructure. The district has phased the project in order to make it affordable for residents. Two phases of the project have been successfully completed, extending service to 245 households. The Phase 3 project in this application will serve an additional 50 households within the district.

Technical Approach

The preferred alternative for the district's water and wastewater systems, connection to Great Falls, was selected in the 2002 PER. The district prepared a supplement to the PER in May 2008 which evaluated different service area alternatives for a Phase 3 project considering technical feasibility, public health and safety, environmental impacts, public acceptance, and financial feasibility. The proposed project is financially feasible and addresses the most significant remaining public health and safety issues. The PER supplement recommends construction of a Phase 3 project to extend water and sewer to 50 households within the district. The PER supplement adequately addresses potential environmental impacts of the project. No significant environmental impacts were discovered in the analysis and the project will have a net positive impact on the environment through elimination of failing on-site wastewater systems within the proposed project area. The implementation schedule is reasonable and includes finalization of financing in October 2009, design in late 2009, and construction during summer 2010. The project will require a debt election, but the debt election process and timeline are not shown on the implementation schedule, nor are they discussed in the application. This process will require significant time and may impact the project schedule in the application.

Specific tasks to be accomplished:

- Construct approximately 4,500 feet of water main and accessories for extension of water service to 50 households; and
- Construct approximately 2,800 feet of sewer main and accessories for extension of sewer service to 50 households.

Project Management

The proposed project involves four funding agencies and will require significant grant administration effort. The district proposes a coordinated effort on the grant administration between the district secretary, engineer, and the Cascade County grant administrator. The engineer will keep each funding agency informed of project progress. The county will administer the CDBG grant. The project management plan outlines the duties for the district secretary, engineer, attorney, bond counsel, clerk-treasurer, and district board. This provides for an adequate staff of specialists to perform duties important to the project within their areas of expertise. The district will continue to keep the public informed through regularly scheduled board meetings and newsletters.

The project management plan provides for contract management with regulatory and funding agencies, consultants, contractors, and other involved parties. Roles of the project manager are not clearly defined in the grant application; however, the overall grant administration team has the capability to manage the proposed project. The district has allocated an adequate budget for grant administration. The project budget allows for funding to support the financial and administrative aspects.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$112,100	\$112,100
Professional & Technical	\$50,000	\$0	\$183,500	\$233,500
Construction	\$50,000	\$0	\$1,272,000	\$1,322,000
Total	\$100,000	\$0	\$1,567,600	\$1,667,600

The project budget is complete and includes adequate detail to show that the proposed budget is sufficient to complete the proposed project. The district and the proposed project are eligible for all of the funding sources listed. If the district is successful with its funding applications, the entire funding package will be in place and the project will be ready to proceed.

The applicant is a local government and has the ability to collect charges for debt and operation. The projected residential water and sewer rate is \$73.37 per month which includes the debt service for this

project plus the operation and maintenance costs. The new rate will affect 50 households. This will result in a residential utility bill (water and sewer) of \$73.37, 106% of the DOC target rate.

Cost estimates were considered for each of the project options and were used to help determine preferred alternatives. Engineering costs are within the typical range for a project of this magnitude.

Material, labor, and equipment costs used to develop the budget appear reasonable and adequate.

Benefit Assessment

The project has quantifiable resource conservation and preservation benefits. The project includes the installation of water meters which will result in overall conservation of water. Connection to the Great Falls water system will have energy conservation benefits. The project results in a new, efficient water system. Elimination of several dozen failing on-site wastewater systems will help preserve the water quality within the local groundwater and the Missouri River. The project is consistent with the county's growth policy and well supported through multiple letters from residents in the district. Failing on-site wastewater systems and poor water quality have effectively placed a moratorium on the construction of new residential units within the district. Connection to Great Falls water and sewer should spur more residential construction within the district.

The project will have some multiple-use benefits: It will help improve water quality within the Missouri River which has significant recreational value.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse, long-term impacts will result. Minimal, short-term construction-related impacts will be controlled through permitting and proper construction methodology.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 4

Applicant Name	Fort Peck Tribes	
Project Name	Lateral L-56 Rehabilitation	
Amount Requested	\$ 100,000	Grant
Other Funding sources	\$ 7,255	Applicant, In-Kind
	\$ 139,253	Fort Peck Water Users Association, In-Kind
	\$ 2,160	Fort Peck Irrigation Project, In-Kind
Total Project Cost	\$ 248,668	
Amount Recommended	\$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The Fort Peck Tribes are applying for funds from the RRGL program for design and construction of a rehabilitation project within the Fort Peck Irrigation Project (FPIP) Wiota Unit's Lateral L-56. The proposed project will address water conservation, soil quality preservation, irrigation management, and production improvement within FPIP.

In 2003, an FPIP assessment report detailed problems with irrigation infrastructure. Rehabilitation of the beginning section of Lateral L-56 was listed as a priority. In 2006, the Fort Peck Water Users Association (WUA) installed a geomembrane liner through quarter-mile section of L-56 to minimize seepage and

eliminate soil salinity caused by seepage in adjacent acres. The project has been extremely successful which led to the proposal to continue the lining through the next one-mile section on which an engineering study was conducted. The primary recommendation of the study is to rehabilitate one mile of L-56 and install Pond-Gard liner throughout this section. These rehabilitation measures will help the Fort Peck Tribes and Fort Peck WUA minimize seepage loss, improve soil quality, improve water management, and increase crop yields. Using soils information, shallow groundwater monitor well data, and canal geometry, L-56 loses and estimated 2 cfs (160 million gallons per year) through the proposed one-mile improvement area.

The proposed project is a vital step toward the conservation, management, development, and preservation of land and water resources within the FPIP. Due to the severity of seepage, 240 acres could be lost to seepage-related soil salinity. Water losses could amount to a revenue reduction of \$222,500 per year which would substantially impact the local economy. Implementation of the proposed rehabilitation measures will result in improved irrigation efficiency and increased yields, with the potential to stimulate the local economy.

Technical Assessment

Project Background

The FPIP is west of Wolf Point. Constructed in the early 1930s, the system is over 70 years old. Several components of the irrigation system require repair or replacement. The source of water is the Missouri River.

In 2003, an investigation and subsequent assessment report identified a one-mile section of the FPIP lateral canal L-56 as one of the most critical problems. Excessive water loss through seepage in this section of canal has caused a shortage of water at the end of the lateral system as well as many acres of saline soils adjacent to the canal.

A 2008 investigation and PER identified alternatives. Three types of liners, as well as a no action alternative, were addressed in the application.

Technical Approach

The preferred alternative in the PER is to install a Pond-Gard geomembrane liner in the one-mile section of canal. This alternative was the most favorable from the standpoint of effective seepage control, water conservation, water management, and overall cost. Environmental impacts include water conservation because water will remain in the Missouri River, and saline-affected soils will be reduced. Project construction will take place in fall 2009.

Specific tasks to be accomplished:

- Design the lining installation;
- Perform canal shaping;
- Install 5,000 feet of liner; and
- Construction closeout.

Project Management

The director of the Fort Peck Tribes Water Resources Department will have final authority over payments, reports, and contracts. The Fort Peck WUA business administrator will act as grant administrator and provide coordination with the engineering consultant and the Fort Peck WUA construction crew. The engineer will provide final design and assist the FPIP staff in construction oversight. Public input will be sought at monthly Fort Peck WUA meetings and other public meetings.

If this grant is awarded, site-specific survey data will be collected and final design performed. Preliminary engineering has already been performed. When final design is complete, the project will be ready to proceed.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$9,415	\$9,415
Professional & Technical	\$20,000	\$0	\$5,450	\$25,450
Construction	\$80,000	\$0	\$133,803	\$213,803
Total	\$100,000	\$0	\$148,668	\$248,668

Based on the cost estimate provided in the application, the budget is sufficient to fund the proposed project. Unit costs used to develop the estimated cost of construction are reasonable and based on historic data for similar work. Specific, reasonable costs were provided for each alternative considered. The application provides justification for the proposed action as the most cost-effective approach.

Water users purchase water from the FPIP at \$17.50 per acre. In total 18,328 acres are under irrigation. This project will not result in an assessment increase.

Matching funds for this project are secure; the only outstanding budget component is the RRGL grant. If awarded, the project will be in a position to start implementation in fall 2009.

Benefit Assessment

The primary renewable resource benefit associated with this project is resource management. Lining the one-mile section of lateral canal will allow improved operational head at the end of the system and provide more efficient water management and use. An estimated 500 acre-feet of water per year will be conserved and remain in the Missouri River.

Environmental Evaluation

Short-term construction impacts include noise and soil and vegetation disturbance. Long-term impacts should all be beneficial including positive impacts to surface water and agricultural lands.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 5

Applicant Name	Bitter Root Irrigation District (BRID)
Project Name	Bitter Root Irrigation District Siphon 1 Rehabilitation, Phase 1
Amount Requested	\$ 100,000 Grant \$ 508,370 RRGL Loan
Other Funding Sources	\$ 11,000 Applicant
Total Project Cost	\$ 619,370
Amount Recommended	\$ 100,000 Grant \$ 508,370 Loan

Project Abstract (Prepared and submitted by applicant)

The BRID, Ravalli County, provides irrigation water to approximately 1,350 irrigators on 16,665 acres along a canal system approximately 72 miles long. The proposed project addresses repair of 812 linear feet of Siphon 1, constructed in 1909 and used to transport almost all of BRID's irrigation water. The proposal also includes final design and construction for repair or replacement of the entire 5,654 foot siphon.

The Preliminary Engineering Report identified the following problems:

- Deterioration and pitting inside the pipe;
- Deterioration of the concrete inlet and outlet structures;
- Structural problems with the river crossing;
- Rivet failures in the pipe;
- Near failure of the expansion joints along the pipe; and
- Deterioration of support elements of the pipeline including thrust blocks, turnouts, and drains.

Failure of any major element could result in loss of water to the majority of the 16,665 irrigated acres supplied by the BRID system and damage the river system, wetland, and other environmentally sensitive areas. With the highway in the path of a potential failure, disruption of traffic or even injury to people could occur. Phase 1, the insertion of an HDPE liner in the first 812 linear-foot section of pipe, eliminates the most critical of these problems and is the first step in the overall rehabilitation of the siphon.

Improved Resource Management

- Water conservation;
- River channel protection;
- Fish resources protection;
- Preservation of the BRID system;
- Less diversion possible;
- Better water management;
- Protection of wetland resources; and
- Infrastructure improvement.

Citizen Benefits

- Protection of the economic base;
- Water conservation;
- Improved services and infrastructure;
- Public safety; and
- Benefits to agriculturalists, fisheries, and recreationists.

Technical Assessment

Project Background

The BRID is in Hamilton in Ravalli County. The BRID was formed as a public corporation in 1920. In the early 1900s, the irrigation system was constructed to provide water to the east side of the Bitterroot Valley. Siphon 1 was constructed in 1909. The canal is approximately 72 miles long and serves approximately 16,665 acres with about 1,000 farms or ranches. The Siphon 1 rehabilitation project will rehabilitate the first of many siphons on the project. The loss of this siphon would result in loss of water for the entire project.

Technical Approach

The preferred alternative is to line 812 feet of Siphon 1 with an HDPE pipe, install two new expansion joints, and reconstruct one thrust block. The lining of the siphon will significantly increase the life of the siphon and reduce the chance of the siphon failing. The lining project would also protect the Bitterroot River channel and prevent potential fisheries loss. Three other alternatives were considered, including no action, replacing the siphon section with welded steel pipe, or replacing the section with reinforced concrete pipe. These alternatives were rejected because of cost and potential construction related problems.

Past maintenance of the project has been on an as-needed and preventative basis, with many emergency repairs. Overall the siphon is in fair condition, but has nearly reached the end of its useful life. In 2007 an engineering firm completed an inventory of the entire project and made recommendations to BRID for rehabilitation of the river crossing, which includes siphon 1. The report prioritized sections of the

river crossing for rehabilitation, with Siphon 1 the highest priority. This is the first phase of the rehabilitation of the entire river crossing system.

Construction is slated to begin in July 2009 and end in May 2010.

Specific tasks to be accomplished:

- Hire a consulting engineer to design the project;
- Final project design;
- Prepare construction bid package and advertise for bids;
- Obtain necessary permits;
- Award construction contract;
- Construct project (line 812 feet of Siphon 1 with an HDPE pipe, install two new expansion joints, and reconstruct one thrust block);
- Construction closeout;
- Grant closeout; and
- Project completion.

Project Management

BRID has some experience in managing construction projects, but does not have the proper engineering staff to design and provide for the construction inspection. BRID will administer the grant. The BRID grant administrator will keep grant records. The BRID manager will be project manager and assure all elements of the project are in place. The district board will have final authority on all aspects of the project. An engineering firm will advise the BRID project manager and district board on issues related to project completion, provide final project design, and perform day-to-day construction management. The application does not discuss procurement procedures.

Water users and county officials provided a number of letters in support of this project. A public involvement plan was included.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$11,000	\$11,000
Professional & Technical	\$80,000	\$0	\$0	\$80,000
Construction	\$20,000	\$508,370	\$0	\$528,370
Total	\$100,000	\$508,370	\$11,000	\$619,370

A complete cost estimate was made for all four alternatives. The preferred alternative has the smallest construction cost, and will cause the least amount of land disturbance. Should the cost of the materials or construction increase, the BRID would increase the amount of its contribution to the project. The construction estimate used a 10% contingency and a 7% inflation factor to help with potential cost increases. The project needs both the grant and the loan to proceed. The costs for replacing the inlet structure are in the estimate. This is the first phase of the rehabilitation of the river crossing system. This project is a stand-alone project and the other phases of the project do not need to be completed for this part of the project to succeed. This project will be completed within one construction season.

The BRID will raise the current annual assessment from \$20 per acre to \$25 per acre to help finance this project and repay the loan. The \$5 increase will generate about \$83,325 per year in additional revenue. No additional O & M costs are expected because of the lining project, and maintenance in the lined section will probably decrease.

Benefit Assessment

The major resource benefit of this project is preservation. If the siphon were to fail, it would result in loss of irrigation water to about 16,665 acres of land served by the project and would have a severe impact on the local economy. If the siphon were to fail, it would also cause environmental harm to the Bitterroot River, destroying fisheries and habitat that would take years to recover. This stretch of river was identified as bull trout (a threatened species) habitat. Siphon failure also has the potential to destroy a portion of U.S. Highway 93 with a potential for loss of life and damage a section of the MRL railroad line.

Environmental Evaluation

The proposed siphon lining project will reduce the chance of the siphon failing. Bull trout inhabit the river near the construction site, but no construction would occur in the river so this would not need mitigation. Impacts to a wetland at the base of the hill near the termination point of the project will be mitigated. The lining project will require the least amount of ground disturbance of alternatives evaluated.

Using best management practices can avert short-term negative environmental concerns associated with construction, e.g., noise and dust.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 and a loan of \$508,370 with an interest rate of 4.5% for up to 20 years upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 6

Applicant Name Milk River Irrigation Project Joint Board of Control
Project Title Milk River System-wide Geolrrigation Mapping

Amount Requested \$ 65,004 Grant
Other Funding Sources \$ 15,213 Applicant, In-Kind
\$ 6,680 District Contributions
Total Project Cost \$ 86,897

Amount Recommended \$ 65,004 Grant

Project Abstract (Prepared and submitted by applicant)

The Milk River Irrigation Project Joint Board of Control (JBOC) is requesting a Renewable Resource grant of \$65,004 to establish a real-time GIS (Geographic Information System) mapping system to assist planners, water users, resource managers, and area residents in the conservation, management, development, and preservation of the limited water resource. The JBOC has recognized a lack of central data collection and mapping ability for the irrigation network throughout the Milk River Basin.

The lack of central data collection and mapping ability has hindered a basinwide collaborative effort of efficient mapping of the Milk River. Future water supply, water quality, data integrity, water conservation, flow depletion, and irrigation district urbanization in the Milk River Basin establishes the need for a modern approach to information gathering, management, and access. The proposed system would allow the JBOC to coordinate current and future conservation efforts through tracking of operational and maintenance activities. Enhanced tracking abilities would result in more effective water user communication, allow for generation of real-time reporting, forecast water demands and track usage, track benefits of water conservation measures, protect valuable water rights, compare project data against agencies' data, and provide standardized information. Information provided by the proposed system will be critical to planners, water users, resource managers, and area residents. This Geolrrigation project will enhance conservation, management, development, and preservation of our

limited water resources. Precise planning for the uses of the Milk River is vital to conserving its water supply and preserving the agricultural-based economy of Montana's Hi-Line.

Technical Assessment

The purpose of this project is to establish a web-based GIS mapping system database of the irrigation network within the Milk River basin from Fresno Dam to Vandalia Dam. This database would serve as a management tool to allow irrigators, managers, support staff, and stakeholders the ability to identify and plan for future conservation and preservation efforts in the basin.

Project Background

The Milk River Irrigation Project JBOC was established in 1999 with the assistance of the State of Montana. The JBOC encompasses eight irrigation districts from Fresno Dam near Havre to Vandalia Dam, near Glasgow. The JBOC comprises 10 board members representing Alfalfa, Fort Belknap, Zurich, Paradise, Harlem, Dodson, Malta, and Glasgow. The JBOC, along with the State of Montana, U.S. Bureau of Reclamation (USBR) and city municipalities, account for the majority of water used throughout the basin. Total registered irrigated acreage throughout the basin is over 110,000 acres and stretches over 300 miles. Lack of central data collection and mapping ability has hindered basinwide collaborative efforts to map Milk River water use efficiently. Future water supply, water quality, data integrity, water conservation, flow depletion, and irrigation district urbanization in the Milk River basin establishes the need for a modern approach to information gathering, management, and access.

Over the years DNRC, NRCS, USBR, Fish Wildlife & Parks, and individual districts have created maps to establish certain features and boundaries within each area. Progress in implementing a basinwide GIS system has been very slow due to the lack of GIS expertise. In the past, the irrigation districts have hired someone to work on GIS maps. Without expensive software, hard-copy maps were the only kind available to districts.

Technical Approach

This project will use a full-service GIS web-based software provider for the development, implementation, and hosting of the Geolrrigation GIS service. The selected firm will build, deploy, and maintain the web-based GIS service. Specific tasks include evaluation and acquisition of existing spatial and tabular data from local, state, and federal sources. The data will be standardized for consistent database structure. Existing district boundaries will be evaluated for accuracy and completeness, and boundaries refined as needed with assistance and input of JBOC. Standardized GIS data will then be loaded into a Geolrrigation conveyance system data model. Upon request, the GIS firm will provide additional system changes, district updates, and on-site training to the JBOC. The web-enabled GIS application will be implemented and deployed with one year of GIS application licensing. Annual renewal shall be available and the responsibility of JBOC.

Specific tasks to be accomplished:

- Prepare project;
- Evaluate data available;
- Acquire data needed;
- Standardize GIS database;
- Assess and modify applications;
- Create web mapping services;
- Test application;
- Roll out and deploy project, including on-site training; and
- Provide user support and track activity.

Project Management

The JBOC project manager will coordinate and implement the proposed project. The JBOC will review and approve all project-related expenditures. The GIS firm will update the JBOC on project progress through written monthly reports. The JBOC has established by-laws which govern its fiscal operations. The JBOC's project manager, sworn and bonded, is responsible for disbursements, accounts, record-keeping, and grant reporting.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$6,180	\$0	\$21,893	\$28,073
Professional & Technical	\$58,824	\$0	\$0	\$58,824
Construction	\$0	\$0	\$0	\$0
Total	\$65,004	\$0	\$21,893	\$86,897

Based on the cost estimate provided in the application, the budget is sufficient to fund the proposed project. Unit costs used to develop the estimated cost for administration and professional/technical services have been sufficiently detailed and are reasonable.

The cash contribution from the applicant is generated through yearly user fees; accordingly, the project does not require a loan, and the yearly user fees should not increase as a result of this project.

Benefit Assessment

The primary renewable resource benefit associated with this project is water resource and irrigation management. By establishing a centralized and user-friendly irrigation database for the Milk River Basin, planners, water users, resource managers, and area residents will have enhanced tracking abilities. These enhanced abilities will result in more effective water user communication, allow for generation of real-time reporting, forecast water demands and track usage, track benefits of water conservation measures, protect valuable water rights, compare project data against agencies' data, and provide standardized information.

The project is supported by local citizens, regional irrigation districts, St. Mary Rehabilitation Working Group, the DNRC, the U.S. Department of the Interior, and USBR as evidenced by letters of support submitted with the application.

Environmental Evaluation

Environmental impacts were evaluated and no apparent adverse short- or long-term impacts will occur as a result of the proposed mapping system. Both short- and long-term environmental impacts may prove beneficial and include maintaining stream flows and providing adequate irrigation flows to sustain agriculture, recreation, and habitat for fish and wildlife on the Milk River.

Funding Recommendation

The DNRC recommends grant funding of \$65,004 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 7

Applicant Name: Big Sandy, Town of
Project Name: Big Sandy Wastewater Improvements

Amount Requested	\$ 100,000
Other Funding sources	\$ 500,000 TSEP Grant
	\$ 450,000 CDBG Grant
	\$ 1,218,157 RD Grant
	\$ 416,858 RD Loan
	\$ 22,000 Local contribution
Total Project Cost	\$ 2,707,015
Amount Recommended	\$ 100,000

Project Abstract (Prepared and submitted by applicant)

The town's current wastewater treatment system is an aerated three-cell facultative system, constructed in 1984. The system discharges into a ditch, which runs a quarter-mile to Big Sandy Creek. The town has had four BOD violations since 1999. The residual chlorine limit was exceeded in June 2004 and the TSS permit limit was exceeded in May 2007.

The new discharge permit was issued in 2005. This permit expires in five years (2010). DEQ indicated that Big Sandy will likely have permit limits for ammonia and phosphorous within its 2010 permit. Although the permit limits are unknown at this time, the removal of nutrients, such as nitrogen (ammonia) and phosphorous, requires a more advanced level of treatment through controlled biological and chemical processes typically achieved by more costly and complicated plants. Aerated lagoons, such as Big Sandy's, will not be adequate for nutrient removal. In addition, due to the low flows in Big Sandy Creek, a mixing zone within the creek to allow for dilution will likely not be accepted by DEQ.

To address the problem, the town proposes to construct a new storage cell with utilization of spray irrigation. The project involves installation of wind-powered aerators. The reuse of wastewater effluent will supplement the IX Ranch's existing irrigation source (Big Sandy Creek) and provide additional water later in the irrigation season when the existing source is often depleted. Removal of existing lagoons will eliminate the potential for groundwater contamination at the treatment site. Elimination of discharge to Big Sandy Creek will benefit the water quality of the creek and reduce concerns with ammonia toxicity and nutrient contamination.

Technical Assessment

Project Background

Big Sandy operates and maintains a centralized wastewater collection/treatment system serving approximately 656 people. The original system was constructed in the 1920s. The collection system experiences several problems:

- Significant amounts of groundwater infiltrate into the existing system;
- The existing lift station is aging and unsafe;
- The collection system has inadequate slopes that do not meet current standards leading to significant accumulations of sludge;
- The existing lift station back-up generator must be turned on manually; and
- Portions of the collection system piping are constructed of inadequate materials that do not meet current standards and may contribute to the infiltration problem.

The treatment system has no provisions for addressing future nutrient permit limits. The large storage cell does not contain a synthetic liner and may be leaking and contaminating groundwater. The facility has had four permit violations since 1999. Current effluent discharges to Big Sandy Creek. Alternatives

considered include construction of a total retention system, effluent disposal through spray irrigation, and rehabilitation of the existing aerated lagoon system.

Technical Approach

The proposed project is the second of a three-phased improvements plan. Phase 1 will replace existing lift station and collection pipes that have inadequate slopes and infiltration problems. This phase is in construction and should be complete by summer 2009. Phase 2 includes construction of new wastewater treatment and storage lagoons that will use spray irrigation for disposal. Completion of Phase 2 is anticipated by December 2011. Construction of the new treatment and storage lagoons would eliminate the current problem of groundwater contamination from existing lagoons. Discharge to Big Sandy Creek would be stopped and environmental impacts to the creek would then be eliminated. Use of the wastewater for spray irrigation will provide benefits for crop growth. Phase 3 will be addressed under future projects.

Specific tasks to be accomplished:

- Construction of new treatment and storage lagoons with effluent reutilized for crop irrigation; and
- Accumulated sludge removed from existing cells and land-applied.

Project Management

The project management plan provides for a staff of specialists to perform important project duties within their areas of expertise. The plan provides for thorough and well-organized contract management with regulatory and funding agencies, consultants, contractors, and other involved parties. The plan outlines the duties for the project manager, engineer, attorney, bond counsel, clerk-treasurer, town council, and mayor. Town and contracted professional staff will administer and manage the proposed project from design through completion. The project manager will keep each funding agency informed of project progress. The town council will be responsible for ultimate management of the project including final authority on expenditure of funds.

The project budget allows for funding to support project management as well as financial and administrative aspects of the project. Big Sandy has used newsletters, public meetings, and print media to involve and inform residents of the project goals and ultimate user costs.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$62,313	\$62,313
Professional & Technical	\$0	\$0	\$377,654	\$377,654
Construction	\$100,000	\$0	\$2,167,048	\$2,267,048
Total	\$100,000	\$0	\$2,607,015	\$2,707,015

The budget appears sufficient and reasonable to fund the proposed project. The budget includes funds for possible inflation by the project start-up date of 2010. The projected average monthly rate surpasses the DOC target rate for Big Sandy. The funding strategy appears reasonable with use of TSEP, CDBG, RRGL, RD, and local funds.

Benefit Assessment

The proposed project involves installation of wind-powered aerators which will reduce power consumption by 25% to 50% vs. electrically powered aerators. The wastewater effluent will provide benefits for crop growth and additional water later in the irrigation season allowing for one additional alfalfa cutting which benefits livestock in the area. Removal of the existing lagoons will eliminate the potential for groundwater contamination. The elimination of discharge to Big Sandy Creek will benefit the water quality of the creek.

Environmental Evaluation

The applicant performed an environmental assessment of the beneficial and adverse impacts that might occur as a result of the project. The solitary adverse effect noted was the 15 to 20 acres of agricultural land removed from production to construct the new treatment lagoons. The applicant contacted agencies with applicable environmental authority.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 8

Applicant Name	Beaverhead Conservation District	
Project Name	Big Hole Spring Creek and Water Quality Enhancement	
Amount Requested	\$ 97,485	Grant
Other Funding Sources	\$ 25,000	Montana Department of Fish, Wildlife & Parks Grant
	\$ 5,000	Big Hole Watershed Committee – Cash
	\$ 12,250	Landowner – Cash and In-Kind
	<u>\$ 29,600</u>	Environmental Protection Agency Grant
Total Project Cost	\$ 169,335	
Amount Recommended	\$ 97,485	Grant

Project Abstract (Prepared and submitted by applicant)

The goal of this project is to improve water quality, benefit the Big Hole Drought Management Plan, and create trout spawning, rearing, and thermal-refuge habitat in the Big Hole River near Glen. Anticipated secondary benefits include enhancing habitat for imperiled fluvial Arctic grayling and reducing potential for whirling disease. These goals will be achieved by restoring a spring creek, reclaiming a spring-fed pond/wetland, and reconnecting spring flows to the river.

Low flow and thermal stress negatively impact the trout fishery in the project area. In 1997, the Big Hole Watershed Committee (BHWC), along with DFWP, implemented a drought management plan. Its purpose is to mitigate effects of low streamflows and lethal water temperatures for fisheries. In 2006, DEQ confirmed that the lower Big Hole is an area of concern with respect to water temperature.

Kalsta Spring Creek is one of the few locations in a 44-mile reach of the Big Hole River that contributes cool spring water flow to the river during the hot, dry season, thus offering thermal refuge and trout spawning habitat. This project is anticipated to benefit both brown and rainbow trout populations.

Historic causes of habitat degradation to the spring creeks and associated slough have been addressed including construction of riparian fencing, off-stream stock water development, and implementation of a grazing management plan.

Technical Assessment

Project Background

Kalsta Spring Creek is on the Kalsta Ranch on the Big Hole River in Madison County, approximately four miles north of Glen. For 11 of the last 13 years, late summer streamflows in the Big Hole Basin have averaged about 33% of normal due to drought. In 1997, the BHWC, in cooperation with DFWP, implemented a drought management plan. The purpose of the plan is to mitigate the effects of low

streamflows and high water temperatures lethal to trout. The success of the drought management plan depends on cooperation between irrigators and other stakeholders whose interests lie in the fishery and overall health of the Big Hole River and watershed.

Kalsta Spring Creek is between Melrose and Glen, a reach of the Big Hole that suffers extreme streamflow losses during the irrigation season. This reach of the river has also been identified by DFWP as an area of concern with respect to thermal loading. Few tributaries on the lower 44 miles of the Big Hole provide habitat for thermal refuge or spawning. The restoration of Kalsta Spring Creek will provide one opportunity for this necessary habitat as well as a cold-water tributary that will help manage late-season thermal loading.

Technical Approach

The project area contains three branches of Kalsta Spring Creek originating on or near the floodplain in an historic channel of the Big Hole River. The landowner uses the springs to sub-irrigate pasture land along the river bottom. During the irrigation season, the entire width of the floodplain inundates with shallow water from its mouth to an area upstream about 1,650 feet. As the area drains following the irrigation season, a significant amount of fine sediment remains across the width of the floodplain. During the irrigation season, the shallow water is warmed to temperatures lethal to trout before discharging into the Big Hole River.

This project proposes to rehabilitate the three spring creek sources and direct them into a new channel. The new channel, which follows an historic channel, will flow into the Big Hole River year-round at temperatures between 45 and 52 degrees Fahrenheit. The existing slough will be dredged and isolated from the spring creek with an earthen berm, allowing for the water level in the wetland to be raised each summer to provide sub-irrigation to adjacent pastures along the river bottom without the damaging effects of thermal loading to the Big Hole River that now exist.

Specific tasks to be accomplished:

- Construct a new spring creek channel that will convey water from three springs approximately one-third of a mile to the Big Hole River, bypassing an existing wetland and slough;
- Import gravel and other materials necessary to create a suitable spawning environment for trout;
- Create and maintain vegetated pond areas suitable for juvenile fish rearing. Fluvial connections will be constructed between these refuge areas and the spring-fed channels; and
- Drain, dredge, and reconfigure the existing slough into smaller inter-connected pond areas that provide adequate depth for fish over-wintering, improved sediment control, waterfowl habitat, and sub-irrigation.

Project Management

This project will be a collaborative effort by the Beaverhead Conservation District and the BHWC. The mission of the BHWC is to seek understanding of the river and agreement among individuals and groups with diverse viewpoints on water use and management within the watershed. The Beaverhead Conservation District will administer the Renewable Resource Grant if this application is successful. The BHWC will serve as project coordinator, managing contracts with a design consultant and interacting with DFWP in development and construction of the project. Project management will be performed by DFWP's regional fisheries biologist whose responsibilities will include construction oversight and quality control.

An environmental assessment will be conducted as part of the permitting process for the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$14,300	\$0	\$0	\$14,300
Professional & Technical	\$0	\$0	\$8,000	\$8,000
Construction	\$83,185	\$0	\$63,850	\$147,035
Total	\$97,485	\$0	\$71,850	\$169,335

The funding package for this project consists of an RRGL grant, \$12,250 in landowner expenses including riparian fencing, a \$5,000 cash contribution from BHWC, a \$25,000 DFWP Future Fisheries Improvement grant, and a \$29,600 Environmental Protection Agency Section 319 grant.

Benefit Assessment

The Kalsta Spring Creek Enhancement Project is a priority project for the BHWC. Significant community and agency support exists for the project as evidenced by the letters of support submitted with the application.

This project will help lower lethally high water temperatures that the Big Hole River experiences nearly every summer. It will provide cold-water spawning habitat for both brown and rainbow trout. Of particular concern from the fisheries aspect is the plight of the fluvial Arctic grayling. The Big Hole River is the last remaining stronghold of this species in the lower 48 states, representing only 5% of the grayling's original habitat. Restoring this native species to the Big Hole River in significant numbers is important to Montana and the larger Big Hole community. The stream created by this project is expected to flow from four to 10 cubic feet of water per second year-round at temperatures between 45 and 52 degrees Fahrenheit. The project will preserve and enhance an existing wetland and waterfowl nesting area. It will also enhance bottomland along the Big Hole River by preserving the groundwater aquifer and providing natural sub-irrigation.

Environmental Evaluation

Environmental impacts associated with this project were evaluated, and no apparent adverse long-term impacts will result. Beneficial results are preservation and development of wetlands, fish and wildlife habitat, and irrigated pasture land. Temporary construction impacts will be controlled through permitting and proper construction techniques monitored by DFWP.

Funding Recommendation

The DNRC recommends grant funding of \$97,485 upon the development and approval of the final scope of work, administration, budget and funding package.

Project No. 9

Applicant Name	Montana Department of Natural Resources and Conservation (DNRC) Water Resources Division (WRD) State Water Projects Bureau (SWPB)
Project Name	Ruby Dam Rehabilitation
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 2,000,000 RRGL Loan \$ 1,850,000 DNRC Water Storage Account \$ 8,044,560 DNRC Hydropower Earnings Account \$ 132,190 DNRC, In-Kind
Total Project Cost	\$ 12,126,750
Amount Recommended	\$ 100,000 Grant \$ 2,000,000 Loan

Project Abstract (Prepared and submitted by applicant)

The purpose of this application is to bring Ruby Dam into compliance with National Dam Safety standards by replacing the spillway and rehabilitating the outlet works. A dam raise is also planned to recover lost storage capacity from sedimentation. Ruby Dam is six miles south of Alder. The dam was completed in 1938, with no major renovation or rehabilitation projects since. Annual inspections required by the National Dam Safety Program have identified deficiencies. The spillway walls would likely overtop if a flood occurred that met the design flood required by current standards and the condition of the spillway foundation is unknown. The outlet works is not capable of passing the required flow for emergency reservoir drawdown standards without sustaining damage. The outlet capacity should be 1,100 cfs or higher but the present outlet system experiences detrimental vibration/cavitation when discharging 500 to 600 cfs.

The reservoir has lost significant storage capacity due to sedimentation. The lost storage needs to be replaced for the WUA to meet its contracts and keep a conservation pool of 2,600 acre-feet to protect the reservoir and downstream fishery. The project includes replacing the spillway, rehabilitation of the outlet works, and a dam raise to re-acquire lost storage capacity and provide additional storage for future consumptive and/or nonconsumptive use. Proposal funding would help pay for rehabilitation construction costs. The department is requesting a Renewable Resource grant of \$100,000 and a loan of \$2 million. Other funding sources include \$1,850,000 from the Water Storage Account, \$8,044,560 from the Hydropower Earnings Account, and \$132,190 from DNRC in-kind contributions. Total project cost is estimated at \$12,126,750. If needed, additional funds will be derived from the Hydropower Earnings account during the later stages of the project or other state sources, as determined by the 2009 Legislature.

Technical Assessment

Project Background

Ruby Dam is on the Ruby River about six miles south of Alder, in Madison County. Constructed between 1936 and 1938, the earthfill structure is 111 feet high and 846 feet long. The dam and system of conveyance canals associated with it are owned by the DNRC and operated and maintained by the Ruby River Water Users Association (RRWUA) by agreement with the DNRC. The dam is classified "high-hazard" by state and federal regulatory criteria due to the effects it would have on downstream life and property were it to breach. This project would increase the storage capacity of Ruby Reservoir from 41,450 acre-feet to 45,155 acre-feet, an increase of 8.9%.

No significant improvements have been made to Ruby Dam since its original construction 70 years ago. The concrete spillway is in poor structural condition and in need of replacement. The condition of the

spillway foundation is unknown, and the spillway walls would overtop during the design flood required by today's criteria. The outlet works are not capable of passing the flow required by current regulatory criteria without incurring structural damage. Increased storage is required to offset the effects of sedimentation that have taken place since the dam was constructed.

Technical Approach

In 1980, Ruby Dam was inspected by a recognized and reputable engineering firm, in accordance with the National Dam Safety Program. At that time and since, inspections of the embankment, outlet works, spillway, and outlet conduit have identified design, structural, and operational deficiencies that must be addressed to bring the dam into compliance with current federal and state standards.

In 1994, the reservoir was inadvertently drained. This resulted in a large amount of sediment discharge into the river below the dam and a major fish kill. Following this incident, a DNRC task force was appointed to determine a reasonable minimum pool size, to develop meaningful guidelines for operation, and to draft a water delivery plan. In 1995, an agreement was negotiated by DNRC, the DEQ, and the RRWUA which describes actions to avoid another such occurrence. The two main items identified were maintenance of a minimum pool elevation and the maintenance of minimum downstream flows. The additional storage provided by this project addresses these requirements.

Specific tasks to be accomplished:

- Replacement of the concrete spillway with a new concrete spillway;
- Rehabilitation of the outlet works with a new steel penstock liner, control valve, and outlet structure;
- Raising the spillway crest seven feet and raising the embankment crest three feet to provide an additional 3,705 acre-feet of usable storage capacity;
- Construction of new access roads and structures; and
- Stabilization of highway embankments and mitigation of other impacts associated with increasing the storage capacity of the reservoir.

Project Management

SWPB will provide management resources necessary to manage this project. A design consultant will be selected in 2009. Following design, the project is scheduled to bid in summer 2010. Construction will be complete by the end of the 2011 construction season. Once a contractor has been selected, SWPB will execute and manage the construction contract. SWPB also will be responsible for construction engineering activities, including on-site inspection, in coordination with the engineering consultant.

SWPB will prepare an environmental assessment (EA) for the project as well as apply for and obtain the required construction and environmental permits. In accordance with the Montana Environmental Policy Act (MEPA), public participation and input will be required during development and construction phases of the project including pool level and discharge flow management before to and during construction.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$27,490	\$27,490
Professional & Technical	\$0	\$0	\$3,426,900	\$3,426,900
Construction	\$100,000	\$2,000,000	\$6,572,360	\$8,672,360
Total	\$100,000	\$2,000,000	\$10,026,750	\$12,126,750

The funding package for this project consists of an RRGL grant; an RRGL loan; \$1,850,000 from the DNRC's Water Storage Account; \$8,044,560 from the DNRC's Hydropower Earnings Account; and \$132,190 in engineering services provided by SWPB staff.

The \$2 million RRGL loan will be between the DNRC's Conservation and Resource Development Division (CARDD) and WRD. Actual loan payments will be made by the Ruby River Water Users Association under the terms of a repayment agreement with WRD. The 219 ranch and farm operations in the Ruby Valley contract with DNRC for 38,845 acre-feet of water each season. Based on a loan amount of \$2 million at 4.5% for 20 years, the current \$2 cost per acre-foot will increase by \$3.96 to \$5.96 per acre-foot.

Benefit Assessment

Benefits associated with this project include preservation of an existing resource-enhancing irrigation facility as well as water storage development and water conservation, all of which demonstrate efficient management of Montana's water resources. By increasing storage capacity of Ruby Reservoir through dam improvements, the entire Ruby watershed will benefit from sustained late-summer stream flow and its impacts on the development and maintenance of irrigated crop and pasture land, the additional conservation of water through increased reservoir storage, the preservation and enhancement of fish and wildlife habitat, the preservation of the groundwater aquifer, recreation, and other significant economic impacts not only to agriculture but to all of the communities in the Ruby and Jefferson valleys. Montana heavily relies on storage reservoirs such as Ruby Reservoir to collect and store rain and snow runoff each spring, thus enabling the maintenance of late-summer flows in streams and rivers. The proposed project provides measurable long-term, multiple-use benefits and is strongly supported by the water users and communities within the Ruby watershed.

Environmental Evaluation

Environmental impacts associated with this project were evaluated, and no significant adverse long-term impacts will result. The DFWP expressed concern that fill operations associated with the expanded storage may be an issue; however, DFWP indicates in correspondence submitted with the application that this concern need not impede the project. The potential beneficial results are the preservation and maintenance of the dam and reservoir and the associated watershed. Temporary construction impacts will be controlled through permitting and proper construction techniques.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 and loan funding of \$2 million at 4.5% for up to 20 years upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 10

Applicant Name	Nashua, Town of	
Project Name	Nashua Water System Improvements	
Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 423,300	TSEP Grant
	\$ 149,040	DWSRF Loan
	\$ 160,280	DOT (equivalent work)
	<u>\$ 27,250</u>	Town Reserves (cash)
Total Project Cost	\$ 859,870	
Amount Recommended	\$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

- The Nashua water system was constructed in the 1930s with cast iron pipe installed in clay soils. The pipe in Highway 117 is in very poor condition;
- The water quality is extremely poor with very high sulfates (up to six times the secondary MCL), extremely high manganese (15 to 20 times the secondary MCL), and high hardness (680 to 730 mg/l);
- In 2001 the town joined the Dry Prairie Rural Water Authority (DPRWA), scheduled to arrive in mid-2009; and
- DOT has advised the town of plans to reconstruct Highway 117 (Sergeant Street and the western parts of Front Street), and urged completion of repairs and replacements by 2010.

Meters are required for joining Dry Prairie. Meters will minimize costs and usage (the town has to pay for every gallon of water used).

The town also needs to replace aging pipe in Highway 117 during reconstruction to cut the cost in half by not having to disturb pavement twice. Controlling leakage is extremely important.

The project provides substantial resource benefits by conserving water, reducing brine wastes (from softeners, reverse osmosis) to the lagoons and the Milk River, decreasing solid waste from water bottles, and reducing energy (especially in hauling water and coordination with DOT on highway work). This project will also minimize the number of small and inefficient independent systems and connection to Dry Prairie will result in a lower cost to all users. The line to Nashua will provide residential water and stock water for rural areas.

Technical Assessment

Project Background

Nashua is a small community approximately 10 miles east of Glasgow. The water system serves 142 households and a population of 296. The water system was constructed in the 1930s, with additions in the 1940s and 1950s, upgrades in the late 1970s (much of the cast iron replaced with AC pipe), and upgrades in 1996 (250,000-gallon concrete water reservoir, well, and pipeline replacements). Two operating wells provide water with very poor quality, very high sulfates, extremely high manganese, high hardness, and high sodium. None of the above conditions violate a primary EPA standard, but the water requires treatment. High sulfates cause a laxative effect that can be dangerous to infants.

The applicant anticipates water being provided by the DPRWA, per a 2001 agreement, at a rate limited to 140 gallons per minute (averaged over a 24-hour period), an amount less than the current maximum day demand. As the agreement requires, water provided by DPRWA must be metered and Nashua will pay a certain amount for every 1,000 gallons used. The town must have the metering system in place before

DPRWA hookup. Very little information was provided regarding the DPRWA hookup. Two types of individual meters (touch-read versus radio-read) were discussed in the alternatives analysis.

An upcoming DOT highway project rehabilitating Highway 117 (western portion of Front Street and Sergeant Street) resulted in the decision to replace water mains and service lines. These lines are approximately 60 years old and most likely leak. In October 2007 a leak detection consultant found no major leaks, but standing water in valve and curb boxes along the old cast iron pipe in Front Street indicates some leakage. Two alternatives were evaluated regarding what water lines to replace. One alternative is to replace mains and service lines along Highway 117 (coinciding with the west portion of Front Street and Sergeant Street) concurrent with the future DOT project. The second alternative is to replace water mains on Sergeant Street but not on Front Street. DOT would provide equivalent work associated with pavement replacement.

Technical Approach

Nashua proposes to install radio-read meters. Environmental impacts considered were hazards such as snow, ice, dogs associated with touch-read and, the efficiency with radio-read type meters. With water provided by DPRWA, individual users presumably will discard water and reverse osmosis units. This will result in lower total dissolved solids (reducing brine waste) in the waste stream ultimately discharging to the Milk River. Meter installation is slated for August and October 2009. The application was unclear whether installation of meters will serve the town's need to reduce maximum use to 140 gpm.

Nashua proposes to replace all the water pipe along Highway 117 (Sargent Street and Front Street). The PER states that pipeline replacement work is planned to be bid with the DOT project in February 2010 with pipeline replacement construction in June and July 2010. However, DOT will likely not be ready to implement the Highway #117 main/service replacements within the next two years. A DOT employee stated that the project is "in program," but no schedule is associated with the project. While a survey has been completed, MDT expects a three to three and one-half year development schedule.

Specific tasks to be accomplished:

- Install meters on all service lines within the system (182 total);
- Replace 50 curb stops;
- Replace 3,345 lineal feet of water main with eight-inch pvc pipe; and
- Replace service lines and curb boxes associated with main replacement (12¾-inch services).

Project Management

A contracted professional services firm along with city staff will be responsible for administration and project management. The team appears well qualified to assist the city with needs: grant administration, project design, construction management, inspections, and closeout. The project management plan details public involvement thus far in the process and lists a rough plan of how the public will continue to be informed and involved. Public support for the project is strong. The town received TSEP, CDBG, and DNRC grants for its wastewater system improvements in 2004 and is well versed in management/administration processes.

Meters can be installed within two years, but the time line for the DPRWA water supply connection project and water source is uncertain. The PER stated that DPRWA was still in negotiation and design phase of the Nashua extension (April 2008). A letter from DPRWA anticipates a mid-2009 timeline, with water treated by the Montana Aviation Research Company (MARCO) at the Boeing facility in St. Marie, north of Glasgow. The raw water pipeline capacity serving MARCO and improvements necessary at the MARCO treatment facility to accommodate providing water to Nashua are unclear.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$45,879	\$45,879
Professional & Technical	\$10,000	\$0	\$143,710	\$153,710
Construction	90,000	\$0	\$570,281	\$660,281
Total	\$100,000	\$0	\$759,870	\$859,870

The funding strategy includes: a DWSRF loan of \$149,040, *DOT construction project \$160,280, TSEP grant for \$421,300, RRGL grant for \$100,000, and town cash reserves of \$25,200.

*The DOT amount is for providing equivalent work toward the project (paving where service lines have been dug across the roadway).

Current monthly residential rate has increased to \$26.25 from \$21.75 (flat rate). The projected average monthly residential rate is \$49.45. Rate calculation scenarios are presented for funding of all grants, TSEP only, and DNRC only.

Benefit Assessment

Installing meters on a water system and implementing a fee structure based on usage will lead to preservation and conservation of water. The improved water quality will positively impact water quality of the Milk River as high TDS brine wastewater from water softener and reverse osmosis units will decrease significantly as users no longer need to utilize them. Businesses and residences will realize an economic benefit when softeners and reverse osmosis units no longer need to be maintained.

Multiple-use benefits will be realized by metering and subsequent extension of DPRWA water to Nashua: as follows: clean water for residences, businesses, and the school; energy savings by eliminating in-home treatment systems and hauling water; reduced waste stream TDS by discontinuing use of water softeners and reverse osmosis units, which ultimately discharges to the Milk River; and increased efficiency for DPRWA as the system expands and more users are brought on-line.

All questions in the application were addressed.

Environmental Evaluation

All work is within the developed town and environmental impacts will be short term and minimal. Reduced TDS waste stream from town users no longer using in-house treatment systems will positively impact the Milk River.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 11

Applicant Name	Hysham Irrigation District (HID)	
Project Name	Pump Station Electrical Improvements	
Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 4,303	Applicant, In-Kind
	<u>\$ 42,100</u>	Applicant, Match
Total Project Cost	\$ 146,403	
Amount Recommended	\$ 100,000 Grant	

Project Abstract (Prepared and submitted by applicant)

The HID is working to improve the beneficial use of the water supplied by the district. The proposed project will address energy consumption, water supply, and development of additional acres associated with rehabilitation of the main pump station electrical facilities.

The existing pump station is equipped with 1940s vintage motor starters, resulting in numerous pump failures associated with the aging facilities. In addition, the existing motor starters are a severe hazard to operators within the pump station building during normal operation and pump startup. The pump station has no flow-monitoring devices. A flow meter will be installed in the pipeline from the pump station to main canal. The flow meter will be tied into existing telemetry equipment for remote monitoring of flow from the facility. Financial assistance is needed for final design and construction of the improvements to assist HID in its efforts to better conserve one of Montana's most valuable resources, water.

Major objectives addressed by these improvements include:

- Conservation of energy resources;
- Supply of water for development of additional irrigated tracts currently idle;
- Increase of water supply for irrigation-classified tracts without suitable water supply, providing for better management of the system, and preserving the beneficial use of those farmlands; and
- Preservation of the existing 6,165 acres within the district by providing a more reliable water supply.

The proposed project is an important part of the improvement of the HID. Increased water supply will allow farmers to convert idle land to irrigated land and to retain the beneficial use of currently irrigated lands. This will generate greater revenue from farming which, in turn, has the potential to stimulate the area economy.

Technical Assessment

Project Background

The HID was created in 1949 along the Yellowstone River adjacent to Hysham. The HID consists of 6,165 irrigated acres serving 36 farms and ranches. The HID consists of two pumping stations, two main canals, and a number of earthen laterals that serve irrigated acres within the district. This project is part of an ongoing effort to improve the HID's delivery infrastructure and water management strategy.

The pump station operates with the original, antiquated electrical facilities constructed in the late 1940s. Installation of motor savers with integrated PCB transformers has been the only improvement to the facility since its construction. Due to electrical deficiencies of the aging pumping facilities and equipment, the HID experiences numerous unscheduled pump stoppages that interrupt water delivery to high-value agricultural crops. The facilities have become difficult to operate and it has become increasingly difficult to find electricians with experience to work on the outdated electrical equipment. In addition, the existing electrical facilities do not meet National Electrical Code (NEC) requirements for safe working clearances.

Frequent water level fluctuations in the HID's main canals due to unscheduled pump stoppages, combined with continued drought, have restricted the HID from delivering a sufficient water supply to irrigated acres during peak periods. The project will include the replacement of electric motor starters and installation of a flow meter in the discharge pipe. Four alternatives were investigated, including different types of starters: variable frequency drives and across-the-line starters.

Technical Approach

The preferred alternative for HID's pump station electrical improvements is installation of reduced voltage starters (RVSS) and a dynamic automatic-read flow meter. Both the starters and the flow meter will be incorporated into the existing telemetry system developed by the HID to report fluctuations in power, unscheduled stoppages, and water flow rate. These measures will assist the HID in improving reaction time to pump stoppages and better managing the irrigation system. The RVSS would be installed in an existing shop adjacent to the pump house to bring the facilities into compliance with NEC regulations. In addition, an insertion flow meter will be installed in the pump station discharge pipe. The existing pump starters will be removed from the pump house and the wiring in the existing facility rerouted. The new equipment will be connected to an existing telemetry system which will allow for instantaneous responses to conditions that could harm the pump motors and other conditions not normal to operation. The flow meter will also be connected to the existing telemetry system to track pumped flows, helping to improve management of the irrigation system. Elimination of pump stoppages currently experienced will minimize fluctuation of the water level in the canal system to improve irrigation delivery and efficiency. Improvements to the pumping facility will reduce energy demand by the pump station by 10% and will add up to 700 acre-feet of water per year to an irrigation system currently unable to meet its irrigation demands.

The application substantiated the selection of the preferred alternative. The detailed cost estimates provided for each alternative were reviewed and determined reasonable. The application included provisions for a 10% contingency on total construction to protect against unforeseen costs or problems.

Construction is scheduled to begin in January 2010 and will be complete in June of the same year.

Specific tasks to be accomplished:

- Completion of final design;
- Project advertisement and bid process;
- Project construction;
- Construction closeout;
- Grant administration closeout; and
- Project completion.

Project Management

The HID will contract with an engineering firm to develop final design and construction documents and provide limited construction oversight. In addition, a grant administrator will assist the HID in managing the funds, filing reports, and meeting grant deadlines. The contracted engineering firm and grant administrator will have experience in working with and administering grant-funded projects. The HID president will serve as project manager and assist all parties with project facilitation. The HID board will have the final say in decisions associated with the project.

The new starters and all appurtenances will be put out for bid during the procurement process. A licensed electrician will be contracted to install the starters and flow-metering equipment. The contracted engineering firm will provide limited construction oversight, with the HID staff acting as the primary construction inspector. At critical points during the installation the contracted engineering firm will be present to assure compliance with the design and specifications.

Upon award of this grant, the final design and construction documents will be completed. Following completion of the final design, the project will be ready to proceed.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$4,500	\$0	\$4,303	\$8,803
Professional & Technical	\$15,500	\$0	\$0	\$15,500
Construction	\$80,000	\$0	\$42,100	\$122,100
Total	\$100,000	\$0	\$46,403	\$146,403

The application provided a detailed cost estimate for the preferred alternative. Secondary reviewers reviewed figures used in the cost estimate and determined them to be reasonable. The application provided justification for the proposed action as the most cost-effective alternative. The project is not part of a phased project but is part of a long-range rehabilitation and management plan developed by the HID.

The HID is committed to providing \$4,303 in-kind services including project management and construction inspection. The HID is committed to providing an additional \$42,100 in matching funds to fully fund acquisition and installation of the pump starters and flow meter. The applicant noted that the committed funds will not have an adverse impact on the HID budget and should not cause water user fees to increase.

In total 6,165 irrigated acres are served by the HID. Thirty-six users purchase water from the HID at a cost of \$13.50 per acre plus \$9.50 per acre-foot of water. Should project costs exceed the budget, a one-time increase in water user fees may be implemented to cover overages. Following payment of the project overages, user fees would be returned to previous levels.

Matching funds for this project are secure. If awarded, the project will be in position to start implementation in fall 2009.

Benefit Assessment

Energy conservation, water conservation, and resource preservation are the primary renewable resource benefits associated with this project. Installation of new pump starters will minimize unscheduled pump stoppages and reduce the number of times the pumps need to be restarted. The new starters use less power during startups and fewer startups will be required, reducing power consumption by approximately 10%. Nearly 700 acre-feet of water per year are lost to the fluctuation in canal water levels due to inconsistent pump operation. Installation of new electrical systems will provide a reliable source of water, increase irrigation efficiency and reduce the amount of water diverted from the Yellowstone River. In addition, installation of the new starters will ensure that irrigation of 6,165 acres of prime farmland is preserved by providing a reliable water supply. Continued irrigation within the HID maximizes agricultural production in the area while supporting the local economy. Secondary benefits will include potential development of new irrigated acres, improved water management, and elimination of a personal safety hazard.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse, long-term impacts will result. Minimal, short-term environmental concerns associated with construction, e.g., noise, dust, and vegetative disturbance, can be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 12

Applicant Name	Yellowstone County
Project Name	West Billings Flood Control and Groundwater Recharge Feasibility Study
Amount Requested	\$ 100,000 Grant
Other Funding Sources	<u>\$ 250,000</u> FEMA Pre-Disaster Mitigation Grant
Total Project Cost	\$ 350,000
Amount Recommended	\$ 100,000 Grant
Project Abstract	(Prepared and submitted by applicant)

In 1937, a flash flood roared across West Billings, overflowing cropland before heading eastward to inundate downtown Billings. In 2006, a study mapped the 100-year floodplain within the 20-square mile area west of Billings, corroborating this historic event. The area encompasses the fastest-growing portion of Billings. Yellowstone County has discontinued use of flood irrigation, the main source of groundwater recharge. Many developments rely on groundwater as the source for domestic drinking water. As irrigation is eliminated, the groundwater source for domestic wells is compromised. The purpose of the project is to allow continued development without jeopardizing safety and ensuring a sustainable groundwater resource. Flood mitigation and groundwater recharge needs could both be addressed through a comprehensive feasibility study.

A qualified firm will be hired to prepare a feasibility study that identifies solutions for both flood control and groundwater recharge. Preliminary plans consider re-creating natural drainages to eliminate overland flood storage and groundwater recharge areas. This concept and others would be evaluated for cost, functionality, resource preservation, and consideration of property rights.

The project is estimated to cost \$100,000. Eighty-seven percent of the cost would cover contracted engineering services. Seven percent would be used for public outreach, and the remaining 6% would cover administrative costs. A Federal Emergency Management Agency Pre-Disaster Mitigation Planning Grant will be sought to finance the mitigation plan. This grant is uncommitted; if it is not awarded, other funding sources would be sought.

Technical Assessment

Project Background

The proposed project is in a 20-square mile area west of Billings that encompasses the fastest-growing portion of Billings and Yellowstone County. Phase 1 of the project is a feasibility study proposed to address two issues: flood control and groundwater recharge. Flood potential, as defined in a 2006 study, limits development and growth in the area. Increased urbanization in the study area has led to the discontinued use of flood irrigation, the main source of groundwater recharge. The feasibility study aims to identify a preferred alternative to effectively manage overland flooding and ensure that groundwater recharge requirements are met. Phase 2 of the project is preparation of design drawings for the preferred alternative.

Technical Approach

Phase 1 of the project proposes to use RRGL funding to complete a feasibility study that would evaluate design alternatives for flood control and groundwater recharge. Floodplain mapping indicates that several subdivisions and potentially developable properties lie within the 100-year floodplain. The feasibility study would identify specific ways to achieve an acceptable level of flood control to protect existing developments and appropriately direct future development. The study would also address diminished groundwater recharge caused by urban development eliminating flood irrigation. The county aims to outline a management practice that would lead to conservation of groundwater and surface water. The

study would provide an implementation strategy. The county will seek funding for design of the implementation strategy through a FEMA grant (Phase 2) and additional funding for ensuing construction.

The alternatives to control flooding and recharge groundwater include: proceeding with regulatory controls, or completing infrastructure improvements without preparing a feasibility study to identify a comprehensive solution. Regulations would control only on-site improvements and would not address groundwater and surface water as a complete hydrologic system, thereby reducing effectiveness of the solution. The build alternative would require costly engineering design without a thorough alternative analysis. The proposed feasibility study is the preferred alternative since it would consider groundwater-surface water interaction throughout the entire study area and effects of the proposed actions on the entire hydrologic system.

If funded the study is scheduled to begin in May 2009 and would be ready for delivery in October 2009.

Specific tasks to be accomplished:

- Scoping: develop and advertise a request for proposal (RFP) and award contract to consulting firm. Consultant will be responsible for project coordination, public outreach, and reporting;
- Investigation and research: consultant will conduct literature research, data compilation, data mapping, and reporting;
- Analysis: consultant will prepare data comparison and modeling and provide corresponding report; and
- Preferred alternative selection: consultant will hold a public meeting where the preferred alternative will be selected. A final document will be presented to the board of county commissioners at a public hearing.

Project Management

The division manager of the City-County Planning Division and the lead consulting engineer will manage the project. A steering committee including representatives from DNRC, MBMG, Yellowstone Conservation District, and the County Floodplain Administrator will also review proposals. The county attorney will provide oversight for project administration. The county appears to have adequate staff to administer a project of this scope, and appropriate planning has been accomplished to begin the study in May 2009.

The county has an extensive public outreach plan that includes two public meetings and corresponding notification to landowners.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$6,000	\$0	\$0	\$6,000
Professional & Technical	\$94,000	\$0	\$250,000	\$344,000
Construction	\$0	\$0	\$0	\$0
Total	\$100,000	\$0	\$250,000	\$350,000

The cost estimates and overall budget of this study appear reasonable. The study area affects approximately 5,000 people and covers 12,000 acres. The majority of the project budget (94%) would be used to develop the feasibility study and implement a public outreach plan. The remaining 6% would be expended on project management and administration performed by the City-County Planning Division. No construction costs are associated with the study.

Completion of this study hinges on securing RRGL funds. Successful completion of this study would eliminate a need for future studies and provide a platform for action to Yellowstone County. Design of the study's recommended implementation strategy hinges on securing a \$250,000 FEMA grant.

Benefit Assessment

The major resource benefit of this feasibility study is protection of water resources. Implementation of the study's recommendations would enhance surface and groundwater resources by reducing overland flooding, conserving groundwater resources, and preserving instream flows. The study's major citizen benefit is sustainable economic growth and preservation of necessary water resources. These benefits are both measurable and quantifiable because baseline data exist and the county will be able to measure future conditions.

Controlling overland flow in the study area is a measureable benefit to development. Routing water from high runoff into predictable channels or detention ponds would enable development to continue safely without jeopardizing property or life. Flood water management also has high potential to provide multiple benefits from the same mitigation strategy. Slowing overland flow in detention ponds or channels could provide sufficient time for infiltration and aquifer penetration to maintain adequate groundwater supplies. Channels and detention ponds can also enhance recreational opportunities through the incorporation of trails and parks, or a "green-belt" concept. Without a feasibility study, development in this area is likely to proceed without a clear vision and suffer diminished groundwater levels and unplanned growth. A properly implemented feasibility study would enable the area to enjoy economic growth without jeopardizing the environment.

Environmental Evaluation

No environmental impacts are associated with preparing a feasibility study for the West Billings area.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 13

Applicant Name	Clinton Irrigation District
Project Name	Clinton Irrigation District Main Canal Rehabilitation
Amount Requested	\$ 99,611 Grant
Other Funding Sources	<u>\$ 32,255</u> Applicant
Total Project Cost	\$ 131,866
Amount Recommended	\$ 99,611 Grant

Project Abstract (Prepared and submitted by applicant)

The Clinton Irrigation District is approximately 20 miles east of Missoula. The district is applying for funds from the RRGL program for design and construction of a rehabilitation project for a portion of the district's Main Supply Canal. The proposed project will address issues of irrigation efficiency, water conservation, and crop yields within the district.

In November 2007, the district obtained RRPPG funds to conduct an inventory and assessment of the district's irrigation infrastructure and develop a rehabilitation priorities list. Rehabilitation of a portion of the Main Canal was listed as the top priority. Using this information, an Engineering Study was conducted on a 1,550-foot section of the Main Canal within the area noted as the top rehabilitation priority. The primary recommendation of the study is to rehabilitate 1,550 feet of the Main Canal and install Pond-Gard liner through this reach. These rehabilitation measures will help the district reduce seepage, improve overall canal efficiency, reduce sediment load, and increase crop yields. It is estimated that the Main Canal operates at only 30% efficiency, losing up to 1,900 acre-feet (0.62 billion gallons) per year in the proposed project area due to seepage loss and delivery inefficiency.

The proposed project is a vital step toward ensuring sustained, efficient, and effective delivery of irrigation water to members of the district. Due to the condition of this reach of the Main Canal, canal failure is a real probability, which could eliminate 812 acres of irrigation. This loss could amount to a revenue reduction of \$223,200 per year, a substantial impact on the local economy. Implementation of the proposed rehabilitation measures will result in improved irrigation efficiency and increased yields, with potential to stimulate the local economy.

Technical Assessment

Project Background

The Clinton Irrigation District (CID) is headquartered in Clinton in Missoula County. Construction of the CID canal was begun in the 1920s, with significant changes made when Interstate 90 was constructed. The approximately eight-mile long canal serves about 812 acres and 66 farms or ranches. The CID identified 1,550 feet of the main canal as having significant seepage and erosion problems and selected this stretch for lining by this project.

Technical Approach

The preferred alternative is to line 1,550 feet of the main canal with Pond-Gard geomembrane canal liner. Lining of the canal will significantly reduce seepage and erosion, restore the canal's original carrying capacity, reduce the chance of the canal bank overtopping and flooding adjacent lands, enhance crop production in the adjacent 100 acres, and reduce the diversion of water from the Clark Fork River, thus providing additional water for fish, wildlife, and recreation. The lining project could save an estimated 1,900 acre-feet of water annually. Three other alternatives were considered, including no action, rebuilding the canal section with earthen materials, and use of CANAL SEAL, but these alternatives were rejected because of cost and long-term results. Other reasonable alternatives (such as concrete liner) could also have been considered, but would have been very costly. Past maintenance of the project has been on an as-needed basis, with many emergency repairs made. Overall, the canal is in poor condition. In November 2007, an engineering firm completed an inventory of the entire project and made recommendations to CID for rehabilitation of the canal system. The report prioritized locations in the canal for rehabilitation. This project was identified as the No. 1 priority. This project is the beginning of complete rehabilitation of the canal system.

Construction is slated to begin in July 2009 and end in December 2009.

Specific tasks to be accomplished:

- Hire a consulting engineer to design the project;
- Process construction bid;
- Shape and grade 1,550 feet of canal;
- Install geomembrane liner in 550 feet of canal;
- Install ballast/riprap;
- Close out construction;
- Close out grant; and
- Complete project.

Project Management

CID has some experience in managing construction projects, but does not have the proper staffing to successfully administer the grant, develop the construction contract documents, and perform the construction administration. An engineering firm will be hired to provide assistance to the CID board and manager for grant administration and overall project administration. The engineer will make recommendations to the board for final decision making.

Water users, county officials, and national politicians provided a number of letters supporting this project. Public involvement was mentioned, but no plan presented.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$9,255	\$9,255
Professional & Technical	\$20,000	\$0	\$0	\$20,000
Construction	\$79,611	\$0	\$23,000	\$102,611
Total	\$99,611	\$0	\$32,255	\$131,866

A complete cost estimate was made for all four alternatives. The preferred alternative has a higher construction cost, but had the greatest cost benefit over the estimated 20-year life of the project. The preferred alternative also had the greatest estimated improvement in canal delivery efficiency and reduction in sediment and erosion of the canal banks. If the cost of the materials or construction increases, the CID would consider constructing a scaled-down version of the project, or increasing its contribution to the project. The construction estimate used a 15% contingency to help with the potential cost increases. The project is not phased since it will be completed within one construction season. Permit costs were not included.

The project will not result in a cost increase to the water users. No additional O & M costs are expected because of the lining project, and maintenance costs in the lined section will probably decrease.

Benefit Assessment

The major resource benefit is the conservation of approximately 1,900 acre-feet of water each year. This is the amount of water estimated to be lost to seepage within the boundaries of the proposed project. The water conserved can be used to increase instream flows available for fisheries, wildlife, and recreation. The reduction in seepage will eliminate property damage to adjacent landowners, improve crop production on the 100 acres adjacent to the project area, and reduce sediment load in the canal, which would improve water delivery efficiency. The project may improve water quality at 60 Springs.

Environmental Evaluation

The proposed canal lining project will reduce seepage, improve crop production, reduce potential flooding, and potentially improve water quality at 60 Springs (near the end of the canal). The reduction in seepage could result in reduced diversion from the Clark Fork River. No threatened or endangered species were identified within the project area. The reduction in sediment loads at 60 Springs, an historic spawning area for bull trout and western cutthroat trout, could be an important factor in bringing the fish back to the river since removal of Milltown Dam downstream from the project.

Short-term negative environmental concerns associated with construction, e.g., noise and dust, can be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$99,611 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 14

Applicant Name Hardin, City of
Project Name Hardin Wastewater System Improvements

Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 500,000	TSEP Grant
	\$ 15,000	TSEP Planning Grant
	\$ 3,697,712	SRF Loan
	<u>\$ 765,000</u>	City Cash
Total Project Cost	\$ 5,077,712	

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The city's original wastewater system was constructed in 1917, though the city has been working toward improving its wastewater system for many years. Recent collection system improvements have included replacement of approximately 19,300 feet of clay tile pipe. Recent treatment plant improvements have included rehabilitation of the headworks, mixers, oxidation ditch, and clarifiers. The city is also replacing the lift station. Major problems still remaining include:

Collection system

- Increases in flows during summer months/major precipitation;
- Significant inflow and infiltration;
- Poor structural condition of 1917 and 1950s pipe; and
- Reduced pipes slopes.

Treatment

- Violation of the new discharge permit due to fecal coliform; and
- Chlorine residuals near maximum for permit limits.

Watson Drive

- Groundwater contamination through failing septic tanks;
- Documented instances of fecal coliform in drinking water wells within the area; and
- Documented illness attributed to bacteria in drinking water.

The proposed project includes:

- Televiser sewer mains to determine which can be rehabilitated and then reprioritize;
- Replace and rehabilitate priorities 1-4 of the collection system (approximately 31,600 linear feet);
- Install new UV disinfection system; and
- Expand sewer services to the Watson Drive area.

The most significant benefits to renewable resources are preservation of both groundwater and surface water quality. The expansion of sewer services to Watson Drive will preserve area groundwater. The groundwater is polluted through failing septic tanks, as documented by instances of fecal coliform in area wells. Also, the new UV disinfection system will provide a significant increase in disinfection before release of "treated" wastewater into the Bighorn River, a river widely used for recreation.

Technical Assessment

Project Background

Hardin's original wastewater system was constructed in 1917 and includes clay tile pipe in various states of deterioration. The city has been improving its wastewater system for many years. Recent work on the

wastewater system includes collection system and treatment plant improvements. The city will replace the main lift station this year. Despite recent improvements, the city is still concerned about the aging wastewater system. The vintage 1917 to 1950 sewer mains are in poor structural condition, resulting in excessive inflow and infiltration. The treatment system effluent violates the new discharge permit due to fecal coliform content. The Watson Drive subdivision is contaminating the groundwater through failing septic tanks. Alternatives considered in detail included: no action, collection system pipe replacement only; combinations of pipe replacement, using existing chlorine system; providing a new de-chlorination facility; installing a new UV disinfection system; and considering the connection location of the Watson Drive area sewer.

Proposed improvements are replacing and rehabilitating failing sewer mains, installing a UV disinfection system, and expanding sewer services to the Watson Drive area.

Technical Approach

The preferred alternative involves three parts: (1) replacement and rehabilitation of priority 1-4 sewer collection pipes to reduce infiltration and inflow, (2) installation of a UV disinfection system to eliminate discharge permit violations, and (3) construction of sewer collection lines in the Watson Drive area and connection to the city collection system at Lessard, north of 13th Street, to improve groundwater and public health.

Construction is slated to begin in May 2010 and end in June 2011.

Specific tasks to be accomplished:

- Televis sewer mains to determine which mains should be replaced or rehabilitated;
- Replace and rehabilitate priorities 1-4 of the sewer mains;
- Install a new UV disinfection system; and
- Expand sewer services to the Watson Drive area.

Project Management

Hardin's mayor will have lead responsibility for administering the grants and loan, with assistance from the finance officer. After grants are awarded, the city will hire an administrator/project manager to assist in all phases of procurement, project development, and management. The project engineer has been selected and has successfully provided design plans and construction management for numerous wastewater projects. The finance officer will be the fiscal contact. The project management plan spells out clear duties for each member of the management team.

The PER has been completed; depending on funding, the contractor is ready to proceed with design in July 2009.

The city has conducted two informal meetings at the city offices and two public hearings for the project. Citizens present, except for one, seemed to support the project. The project bid will be publicly advertised and minority business enterprises encouraged. The city will include in its billings a discussion of project progress from bidding to completion. In addition to describing project progress, the billing will encourage residents to attend monthly council meetings and provide input.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$364,147	\$364,147
Professional & Technical	\$0	\$0	\$676,009	\$676,009
Construction	\$100,000	\$0	\$3,937,556	\$4,037,556
Total	\$100,000	\$0	\$4,977,712	\$5,077,712

Four funding scenarios were considered. The chosen funding package consists of TSEP grants, RRGL grant, SRF loan, and city cash. The budget is reasonable, complete, and includes detail to show it is sufficient to complete the project. A resolution has been enacted by the city committing the cash from reserves. If any of the grants is not received or substantially reduced, the city would likely reduce the total amount of pipeline replacement and rehabilitation.

The applicant is a local government and can collect charges for operation and debt. Current residential charge for wastewater service is \$19.97 per month. The projected residential rate is \$31.01 per month and will affect 1,143 households. The water rate is \$22.95 per month. The new combined rate would be \$53.96 per month, which exceeds the target rate of \$53.70.

Benefit Assessment

The proposed project contributes to enhancement of renewable resources through preservation of surface and groundwater quality. Surface water in the Bighorn River, a river widely used for recreation, will be preserved through installation of a UV disinfection system. Expansion of sewer services to the Watson Drive area will preserve area groundwater quality, the source of water supply for the entire Watson Drive subdivision. Replacement and rehabilitation of the aging and failing collection sewer (approximately 31,600 linear feet) will preserve groundwater as well as eliminate unnecessary treatment of groundwater that enters the system by infiltration and inflow.

Environmental Evaluation

Environmental effects associated with the proposed wastewater improvement project are mainly beneficial. Surface water in the Bighorn River will be protected by installation of UV disinfection. Extending sewer services to the Watson Drive area, and replacing and rehabilitating aging, failing sewer lines, will protect groundwater. An adverse environmental effect is the slight increase in energy consumption from the possible addition of a small lift station and the new UV system. No major environmental impacts are associated with this project. Minimal short-term, construction-related impacts would be controlled through proper construction observation and control.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 15

Applicant Name: Lewistown, City of
Project Name: Lewistown Wastewater Facilities Improvements

Amount Requested	\$ 100,000	Grant
Other Funding sources	\$ 451,032	RD Grant
	\$ 582,961	RD Loan
	<u>\$ 187,500</u>	Local contribution
Total Project Cost	\$ 1,321,493	
Amount Recommended	\$ 100,000	

Project Abstract (Prepared and submitted by applicant)

Lewistown's wastewater collection system consists primarily of concrete and clay pipe; the newer sections have PVC pipe. Many brick manholes exist in the older sections of town where groundwater is nearest the surface. Older sections of the collection system are constructed of two-foot to three-foot sections of clay pipe with field-constructed joints, which are likely not watertight. An opportunity for infiltration exists at numerous locations between manholes. Tree roots may have caused additional cracking or joint deterioration. The combination of aging sewer lines and high groundwater likely causes infiltration into the wastewater collection system.

Lewistown's wastewater collection system has been plagued with infiltration since at least the 1970s. Hydraulically, the wastewater treatment plant receives an average additional flow of 730,000 gallons per day. This additional hydraulic load decreases the growth capacity of the existing treatment system and the additional clean water dilutes the wastewater and makes treatment of incoming flows much more difficult, particularly effluent concentrations of phosphorus. While flows at the wastewater treatment facility increase in response to precipitation and snowmelt, these increased flows are short term and miniscule in comparison to the everyday additional volume of clean water that flows through the facility. Also, this inflow from the surface is in addition to the infiltrating groundwater also present during precipitation and snowmelt. Where the groundwater level is above sewer mains, and where sewer mains have deteriorated or have ineffective joints, a real possibility of contamination exists.

The infiltrating groundwater is of great significance when considering the anticipated phosphorus limits under future permits. The flow in Big Spring Creek (the receiving water) greatly affects the anticipated effluent phosphorus concentration. Data from 2006 suggest that the facility would not have been in compliance with anticipated phosphorus requirements during several months of the year. A reduction in the amount of inflow and infiltration will allow the treatment facility to meet proposed effluent phosphorus limits. These proposed limits are based on the total pounds per day phosphorus load to Big Spring Creek. The allowable effluent concentration increases as the amount of clean water decreases. As designed, the facility is probably not capable of meeting phosphorus concentrations without a reduction in infiltration.

An amendment (2008) to the Wastewater Facility Master Plan (2003) addressed the large amount of infiltration that enters Lewistown's wastewater collection system and treatment facility. This amendment identified portions of the collection system where infiltrating groundwater is prevalent and rehabilitation of the sewer mains would result in a significant reduction to the inflow problem. The area which has been identified is in the southeastern part of Lewistown between Third and Sixth avenues and between Brassey and Cook streets.

Reduction of infiltration would have the following benefits to Lewistown:

- Concentrating incoming waste would improve the facility's ability to function. Weaker wastes are more difficult to treat than stronger wastes;
- Decreasing the hydraulic load to the facility increases the anticipated allowable concentration of effluent phosphorus. Less clean water through the facility lowers the effluent concentration required; and
- Replacing or repairing mains may prevent contamination of groundwater in the area.

Technical Assessment

Project Background

Lewistown's wastewater facility serves 6,100 Montanans and 2,785 households. The system has been plagued with inflow and infiltration problems since the 1970s. Hydraulically, the wastewater treatment plant receives an average additional flow of 730,000 gallons per day due to infiltrating groundwater. This flow decreases the growth capacity of the existing treatment system and inhibits the city's ability to meet anticipated future phosphorus levels. This clean water that enters the collection system also dilutes the wastewater and makes effluent phosphorus concentrations much more difficult to attain. The PER identified three project phases. Phase 1 is this project and includes infiltration abatement in southeast Lewistown. Phase 2 is construction of additional drying bed space for sludge dewatering. Phase 3 is additional infiltration abatement.

Technical Approach

Rehabilitating or replacing the sewer mains identified through the PER as the most problematic would significantly reduce inflow to the system. Thirteen blocks of particularly critical old sewer mains are proposed for replacement under this project. Alternatives considered include conventional open-dig replacement of piping and manholes, pipe bursting, and in-place pipe. No specific alternative was chosen because all alternatives are viable depending on the condition of the existing sewer main. Additional TV inspection of the sewer mains will be completed in the design phase of the project and the most appropriate technology will be chosen then.

Specific tasks to be accomplished:

- Inspect sewer mains using TV and select replacement technology; and
- Rehabilitate sewer mains in the southeastern part of Lewistown.

Project Management

The project management team includes the city manager, the city's director of public works, licensed wastewater treatment and collection system operators, the city finance officer and staff and a contracted engineer. The city may retain a grant administration consultant to assist with fiscal aspects of project management.

Construction would begin in April 2010, with final inspection anticipated for September 2010.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$76,803	\$76,803
Professional & Technical	\$0	\$0	\$162,808	\$162,808
Construction	\$100,000	\$0	\$ 981,882	\$1,081,882
Total	\$100,000	\$0	\$1,221,493	\$1,321,493

The budget form included in the application is complete and reflects a total project cost of \$1,321,493. Funding sources include local funds, RRGL and RD grants and an RD loan. The funding strategy appears

sound and well thought out. Other funding agencies were considered and the applicant has arrived at the best possible funding package. If grant funds are not received, the city would be forced to delay the project.

Benefit Assessment

The primary benefits to renewable resources are conservation and preservation. The benefits will occur by reducing groundwater infiltration and unnecessary treatment and discharge of extraneous water into Big Spring Creek. By rehabilitating the proposed 13 blocks of leaking clay sewer lines, the infiltration of groundwater will be reduced. Lewistown’s wastewater treatment plant receives an average addition infiltration flow of 730,000 gallons per day during dry weather. By reducing this flow, the plant will be better able to remove phosphorus from the effluent discharged to Big Spring Creek.

Environmental Evaluation

The applicant contacted the appropriate agencies and received no letters of concern. The uniform environmental checklist included in the PER is complete and reports no potentially adverse long-term impacts from the proposed project. Short-term disturbances in air quality and animal habitats may occur during construction and be generally confined to the area where construction equipment is operating, however, the construction period is relatively short (five months).

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 16

Applicant Name	Winifred, Town of
Project Name	Winifred Wastewater Collection Improvements, Phase 1
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 500,000 TSEP Grant
	\$ 450,000 CDBG Grant
	<u>\$ 302,500</u> SRF Loan
Total Project Cost	\$ 1,352,500
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The original system consists of approximately 11,920 lineal feet of eight-inch pipe, the majority vitrified clay. AC pipe was installed at 15 feet on each side of water main intersections. Approximately 550 lineal feet of 10-inch transite sewer pipe exists upgradient of the lagoon influent manhole at a slope of 0.0015 ft/ft. The system is a conventional gravity system with 41 concrete barrel-type manholes. Minor sewer main repairs have been made throughout the history of the system, but no major replacement or rehabilitation projects have been completed.

The treatment system consists of a single cell, facultative discharging lagoon constructed with the original collection system. The lagoon is approximately a quarter of a mile northeast of Winifred. The original design was a 2.5-acre pond with an average depth of five feet. The lagoon operates at six feet deep with 2.4 feet of freeboard. The original Dog Creek channel was relocated east to allow for lagoon construction. A side channel remains north of the pond where wastewater discharges through an overflow structure, eventually seeping into groundwater and surface water flowing to Dog Creek. The facility was designed as a nondischarging system and no permit was issued until 2006. Historical records indicate that the lagoon has

discharged intermittently for at least 30 years. The lagoon now discharges nearly continuously. No major improvements have been implemented at the treatment facility since its original construction.

A summary of known deficiencies includes:

- Lagoon leaks inadequately treated effluent to the groundwater and surface water;
- Infiltration into the collection system and outfall pipe feeds the lagoon, creating hydraulic overload;
- Many manholes are buried, inaccessible, and do not have safe access;
- Collection system has minimum grade and structural deficiencies resulting in sewer flushing to remove debris and eliminate plugging;
- The lagoon has serious odor issues (during summer) that greatly affect the community;
- The discharge ultimately percolates into the ground or surface flows to Dog Creek, creating serious health concerns in an area with no restriction of public access;
- DEQ inspections have noted the likelihood of excessive sludge build-up in the lagoon, probable leakage due to age and condition of the facility, and inadequate treatment capacity or detention time for a discharging system;
- The system does not satisfy a number of current DEQ design standards; and
- The system cannot adequately treat BOD, TSS, fecal coliform, ammonia, or nutrients to meet current and impending discharge permit limits.

The recommended project must include collection system rehabilitation to reduce wastewater flows so that treatment sizing is also reduced. The proposed treatment improvements include construction of accelerated facultative lagoons with storage and spray irrigation disposal. Utilizing the treated effluent for crop irrigation seems attractive to more than one adjacent landowner. Capital costs and user fees associated with collection system improvements and treatment upgrades as a single project are cost prohibitive and would create financial hardship for a number of residents. For these reasons, the first phase of the project will consider sewer main and manhole rehabilitation. Then, additional flow monitoring will be implemented to finalize design flow and treatment facility sizing. A second project phase will construct the accelerated facultative lagoons and spray irrigation system. Delaying treatment improvements may allow DEQ to establish final nutrient-based permit limits.

Activities in the Phase 1 project:

- Rehabilitate 11,920 lineal feet of eight-inch sewer main with CIPP methods;
- Replace 2,400 lineal feet of eight-inch sewer main with open-cut methods; and
- Rehabilitate 40 sewer manholes.

Technical Assessment

Project Background

Winifred has a conventional gravity sewer collection system, mostly vitrified clay pipe. The system was installed in 1961. Physical and TV inspection of a portion of the collection system determined that it has considerable infiltration and inflow problems, most likely due to the age and condition of the facility and sump pumps. Excessive infiltration and inflow into the collection system and outfall piping create hydraulic overloading of the treatment facility. The project goals are to replace or rehabilitate sewer lines and eliminate groundwater pollution in town and reduce surface water degradation associated with the lagoon. Evaluation of alternatives included: no action, replace entire collection system, combination of rehabilitation and replacement of the entire collection system, identify specific collection mains for repair/replacement, various treatment methods and facilities, and a number of disposal options.

Technical Approach

Due to the extent of the problems with the wastewater system, the engineering analysis used a phased approach to create affordable components. The proposed project, Phase 1, involves cured-in-place rehabilitation of about 80% of the sewer pipes and replacement of the other 20%. TV inspection of parts of the system not previously evaluated, will be performed during the design phase to determine the

appropriate type of reconstruction. Manhole rehabilitation will include raising manholes, installing new steps, and coating where infiltration exists. This phase will eliminate groundwater infiltration, sewage exfiltration and pollution, and reduce flows to the overloaded wastewater treatment system.

Construction is slated to begin in May 2010 and end in October of the same year.

Specific tasks to be accomplished:

- Televising sewers to determine which pipes should be replaced or rehabilitated; and
- Replacing and rehabilitating sewer pipe.

Project Management

Winifred is an incorporated community. The mayor will coordinate with the council, review technical documents and contracts, and review expenditures. The town clerk will maintain project financial records, coordinate with the grant administrator to ensure accuracy of financial reports, and track all project-related accounting. The engineering consultant will provide grant/loan administration and project management. As grant administrator, the engineer will be responsible for overall budget management, assuring compliance with funding program requirements, coordination between funding programs, and preparing funding-related documentation for town approval. As project manager, the engineer will provide final design, bid document preparation, bid review and recommendations, construction management, and project closeout.

The PER has been completed and, depending on funding, the project is ready to proceed with design in July 2009.

The town has conducted several public hearings in recent years to inform the public about proposed utility improvements, rate increases, and to solicit comment. Throughout the upcoming project, the town intends to conduct routine public meetings to educate/inform the public about project status. These meetings will be advertised and conducted in conjunction with regularly scheduled town council meetings.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$81,500	\$81,500
Professional & Technical	\$0	\$0	\$215,000	\$215,000
Construction	\$100,000	\$0	\$956,000	\$1,056,000
Total	\$100,000	\$0	\$1,252,500	\$1,352,500

Four funding scenarios were considered. The chosen funding package consists of TSEP grant, CDBG grant, RRGL grant, and SRF loan. The budget is reasonable, complete, and includes detail to show it is sufficient to complete the project. If any grant is not received or substantially reduced, a larger loan could be secured.

The applicant is an incorporated community and has authority to make special assessments, set and collect user fees, provide manpower and operating costs, and pay off debt. Current residential charge for wastewater service is \$25 per month. Projected residential rate is \$29.36 per month and will affect 81 households. The water rate is \$20 per month. The combined rates are \$49.36 per month, which exceeds the DOC target rate of \$47.92.

Benefit Assessment

The project will preserve and protect the local aquifer from raw wastewater pollution by eliminating excessive infiltration, exfiltration, and inflow from the sewer collection system. The project will reduce groundwater infiltration by approximately 16.3 million gallons annually, preserving the quality of the local aquifer. Elimination of raw sewage mixing with clean groundwater will protect the aquifer from pollution.

Improvements will also significantly reduce the volume of flow into the overloaded lagoons, which eventually discharge to Dog Creek.

Environmental Evaluation

Environmental effects associated with the project are mainly beneficial. Rehabilitation and replacement of the leaking sewer collection system will protect the local aquifer and promote sustainable use of local aquifers. Reduction of flow into overloaded lagoons and Dog Creek will improve treatment and reduce pollution in the creek. Environmental impacts associated with this project were evaluated with no apparent adverse long-term, impacts expected. Minimal short-term, construction-related impacts would be controlled through proper construction observation and control.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 17

Applicant Name	Gildford County Water and Sewer District
Project Name	Gildford County Wastewater System Improvements
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 20,000 Applicant
	\$ 538,000 TSEP Grant
	\$ <u>439,800</u> SRF Loan
Total Project Cost	\$ 1,097,800
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The Gildford County Water and Sewer District owns and maintains a wastewater system that consists of conventional gravity collection, a small grinder station, one major lift station, force main piping, and two retention lagoons (4.5-acre total). The system was constructed in 1981.

A PER identified the following problems in the system:

- (1) Water balance calculations for the primary cell, along with the known effectiveness of bentonite lining systems, indicate that 2,942,000 gallons of partially treated wastewater is entering the shallow aquifer annually. Groundwater degradation is a human health concern for local residents for local residents with shallow wells. A number of well logs exist for the Gildford area, most of which access water from the shallowest aquifer. If the primary basin is retrofitted with a synthetic liner, water balance results indicate that the second pond must be activated to meet current flow conditions. Without it, overtopping would result in illegal discharge into Sage Creek.
- (2) The major health and hum asafety concern associated with the collection system is raw sewage backing up into one of the homes connected to the grinder station. Because basement elevations of the two homes differ, continued sewage inflow during pump failure eventually backs up into the lower house. Alleviating backup will require a new grinder station or redesign of the services lines.

The district proposes the following to address the deficiencies:

- Construct two new grinder stations (equipment and installation);
- Connect existing four-inch service connection to new grinder stations;
- Install 400 lineal feet of two-inch pvc force main;

- Install polypropylene liner, fabric, and vents;
- Install pond level gauges;
- Install liner test;
- Remove and dispose of sludge; and
- Construct 3,400 feet of security fence.

Technical Assessment

Project Background

The district's wastewater is contained and treated in two total retention lagoons. The district also has a conventional gravity collection system, a small grinder pump station, one major lift station, and force main piping. No major improvements have been implemented since the system's construction in 1981.

Only one of the lagoon cells currently fills with water and an engineering study determined that almost 3-million gallons of partially treated wastewater enters the shallow aquifer annually. Groundwater degradation is a human health concern for local residents with wells. The grinder pump station serves two homes. Unfortunately the sewer services are at different elevations, creating backflow into the lower home when power is out and the pump fails. The backflow causes a health and human safety concern.

Alternatives included: no action, install liner in cell #1 only, install liner in cell # 1 and # 2, facultative treatment and spray irrigation disposal, lagoon inlet/outlet modifications, lift station repairs, and various solutions for the backflow problem.

Technical Approach

The preferred treatment alternate is continued use of the lagoons, with the addition of a new synthetic liner in cells # 1 and #2 to prevent groundwater pollution. The second cell must be activated and lined to meet current flow conditions. A facultative lagoon and spray irrigation were considered as an alternative but rejected because of capital costs, energy use, and operation and maintenance.

To alleviate the problem of sewage backing up into one of the homes connected to the grinder pump station, it is proposed to add a new grinder station or redesign the service lines. The selected solution will be determined during detailed design.

Construction is slated to begin in May 2010 and end in August of the same year.

Specific tasks to be accomplished:

- Construct two new grinder pump stations or redesign and construct new service lines;
- Prepare site and install synthetic lagoon liners;
- Remove and dispose of sludge; and
- Construct security fence.

Project Management

The district's president and board of directors will manage the project. The district will hire a project manager who will be responsible for overall project management and assuring compliance with state and federal requirements. The project engineer has been selected and has successfully provided design plans and construction management for many wastewater projects. The district's secretary/treasurer will assist with financial management, establishing and administering accounts, disbursements, and supporting documents.

The PER has been completed; depending on funding, the project is ready to proceed with design in July 2009.

All sessions of the board of directors are open to the public. The district has created a special newsletter to provide notice of meetings, give project updates, and solicit public comment.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$72,037	\$72,037
Professional & Technical	\$0	\$0	\$175,000	\$175,000
Construction	\$100,000	\$0	\$750,763	\$850,763
Total	\$100,000	\$0	\$997,800	\$1,097,800

Two funding scenarios were considered. Both included RRGL and TSEP grants. One scenario includes a STAG/WRDA grant and no loan, and the other has no STAG/WRDA grant but an SRF loan. The budget is reasonable, complete, and includes detail to show it is sufficient to complete the project.

The Gildford County Water and Sewer District has the authority to operate and maintain the wastewater system and has done so for over 25 years. The population of the district is 185, with 76 households. The debt service with an SRF loan will require an increase of the sewer rate from \$10.50 per month to \$44.30. This represents a 322% increase for a community with combined water and sewer rate of \$67.22 per month, already 106% of the DOC target rate. With the increase, the district's combined rate would be approximately \$101.02 or 161% of the DOC target rate. Given the magnitude of the proposed increase and knowing that a debt election would be necessary to obtain SRF loan funds, the district's board of directors conducted two votes to measure the level of support for the project. The first, at the public hearing to discuss the project, was 15 to 2 in favor. The second vote was by mail. Each of the 91 customers received a cover letter of explanation and two choices. Thirty-four of the 43 people (69%) who participated in the vote were in favor.

Benefit Assessment

Installing synthetic liners in the wastewater treatment lagoons will preserve and protect the local aquifer and promote the sustainable use of local aquifers by ending leakage of the almost 3-million gallons of partially treated sewage into local groundwater. Lining and activating the second cell will help to preserve Sage Creek by eliminating the risk of overtopping and subsequent illegal discharge of partially treated wastewater into the creek.

Environmental Evaluation

The project will provide significant environmental benefit. Limited treatment is provided to wastewater before it seeps into the groundwater. The synthetic liner and continued evaporation disposal will eliminate negative environmental impact. In addition, separating the two sewer services will eliminate backup from one home to the other and the associated health hazards. No major adverse, long-term, environmental impacts are expected. Minimal short-term, construction-related impacts would be controlled through proper construction observation and control.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 18

Applicant Name	Melstone, Town of
Project Name	Melstone Water System Improvements
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 545,000 RD Grant
	\$ 285,634 RD Loan
	\$ 625,000 TSEP Grant
	\$ 377,875 CDBG Grant (committed in 2004)
	\$ <u>373,863</u> RD Grant/Loan (committed in 2005)
Total Project Cost	\$ 2,307,372
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

In 1986, Melstone constructed a new package-type water treatment plant (WTP) that treated water from the Musselshell River. However, the river's flow stopped in 1988 and then again for a month or longer in 2001 through 2004. In 2001, the town survived through using seeped water. In early 2002, the river was again very low so the town hastily built some raw water storage ponds. The ponds allowed the town to survive for two months, when the river again stopped flowing. Once the river finally started flowing, only inches remained in the pond, and the sedimentation pond was at about half of its normal operating level. In response, the town began looking for a new groundwater source and started long-term planning for a reliable water source. Efforts have included construction of two production wells and three other test wells, along with testing and/or attempting conversion of other wells. Unfortunately, the wells are not sufficient to meet peak day demands, and the WTP is in poor condition and violates numerous state and federal standards.

The proposed project includes construction of two wells, a 12-mile rural pipeline, well house, and chlorination facility. Improvements to the existing five-mile pipeline include connection of Well #2, modification of the well control vault, and installation of a new air relief valve.

The most significant benefits to renewable resources are conservation and preservation of the Musselshell River. The proposed project will allow the town to eliminate the Musselshell River as a water supply source, thus allowing water to pass by Melstone, which is extremely important in a river that stops flowing. Furthermore, the additional water available will help to preserve fish and other life in the river.

Technical Assessment

Project Background

In 1986, Melstone constructed a package-type water treatment plant to treat surface water from the Musselshell River. The river has stopped flowing in four of the last seven years, resulting in dangerously low water quantities for the town. The water treatment plant is in very poor condition and in violation of several state and federal standards. Recently drilled wells have insufficient capacity to meet DEQ standards which require that the total developed groundwater source capacity must equal or exceed the design maximum day demand with the largest producing well out of service. The primary goal of the proposed project is to develop a secure water supply source for the community. Both surface water and groundwater alternatives were evaluated. Surface water alternatives considered included three different types of water treatment processes. Also considered were construction of new groundwater wells, connection to a regional water system, and construction of a joint water supply with the town of Musselshell.

Technical Approach

The PER used a weighted criteria method to evaluate and compare each alternative. Selection of the preferred alternative was based on several criteria including technical feasibility, environmental impacts, life cycle cost, O&M complexity, public health and safety issues, and public opinion.

The preferred alternative is to change Melstone's primary water source from the current Musselshell River surface water to groundwater wells drilled in the Fox Hills aquifer approximately 10 miles west of town. The preferred alternative was not the least-cost alternative. Selection of the preferred alternative was based largely on technical feasibility, public health and safety, O&M, and public opinion. The Musselshell River has stopped flowing in four of the last seven years, so development of a more reliable water source from groundwater wells is a sound proposal, regardless of the additional cost to construct the wells and transmission piping.

The Natural Resources Conservation Service will likely require an evaluation for important farmland status during the design phase of the project. Environmental issues are associated with the pipeline crossing of the Musselshell River; necessary permitting will be obtained during the design phase. Impacts to the river should be minimal because plans include installing the pipeline under the river.

Specific tasks to be accomplished:

- Construct two new wells in the Fox Hills aquifer 10 miles west of Melstone;
- Construct a new 12-mile transmission pipeline between the new wells and existing distribution system;
- Construct a new well house and chlorination facility;
- Connect existing well #2 to the system and modify existing well control vault; and
- Install air release valves along existing five-mile pipeline.

Project Management

The project management plan is thorough and well thought out. The proposed project management team includes the mayor, town council, town clerk, consulting engineer, and town attorney. The project team has been involved in numerous public facilities projects and is familiar with requirements of funding agencies. The consulting engineer will serve as the overall project manager. The mayor and town council will have ultimate authority and responsibility for the entire project. The town clerk, as the town's chief financial officer, will be responsible for management of and record keeping for project financing. The town attorney will review contracts and provide any other legal guidance as needed throughout the course of the project. The proposed project management team is adequate to manage the project successfully from planning through completion and closeout.

The public has been informed about the project at several public hearings. Minutes of the meetings are included in an appendix to the application. The project engineer will attend regular council meetings to keep the board and the public informed throughout. The town will include mailers in monthly bills to keep the public informed on project progress and to encourage residents to attend monthly council meetings and provide input.

The project will be ready for implementation in the next two years, contingent on funding availability.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$95,297	\$95,297
Professional & Technical	\$0	\$0	\$305,114	\$305,114
Construction	\$100,000	\$0	\$1,806,961	\$1,906,961
Total	\$100,000	\$0	\$2,207,372	\$2,307,372

The budget form in the application is complete and reflects a total project cost of \$2,307,372. The proposed funding strategy includes a \$100,000 RRGL grant, a \$625,000 TSEP grant, a \$545,000 RD grant, and a \$285,634 RD loan. Also included are a \$377,875 CDBG grant committed in 2004 and a \$373,863 RD grant/loan committed in 2005. The proposed funding package is considered feasible. The current water rate for Melstone is \$57 per month, with a projected water rate of \$65.51 per month associated with the proposed project. All users would be assessed the rate increase. The future combined water and sewer rate (\$82.01) will be approximately 137% of the DOC target rate of \$59.90. Although the proposed average rate exceeds the target rate, the rate appears affordable, particularly given the favorable public support of the project.

Detailed cost estimates were provided in the PER for the selected alternatives to support the project cost. The cost estimates appear adequate for the proposed project. Costs for bonding, loan reserves, audit fees, legal fees, and other administrative costs have been included. The estimated costs for each line item in the budget appear accurate for the scope of the proposed project.

The applicant states that if the town is not successful in obtaining one or more of the grants, the project may have to be phased, with the understanding that the system would not be in full compliance with some DEQ design criteria. Alternatively, the town would consider re-applying to the Coal Board for additional funding.

Benefit Assessment

The applicant addressed all questions in the application. The benefits to renewable resources include preservation, conservation, and development. The improvements will preserve surface water quality by eliminating the town's consumption of water from the drought-stricken Musselshell River, resulting in increased flows in the river. Water conservation will be accomplished by replacing the surface water treatment plant with new groundwater wells, thus eliminating water wasted during backflow operations in the treatment plant. Natural resource development will be accomplished by construction of two new groundwater wells.

Environmental Evaluation

The applicant adequately addresses the environmental impacts associated with its proposed water system improvements with no long-term, negative impacts noted. The Natural Resources Conservation Service will likely require an evaluation for important farmland status during the design phase of the project. The PER also acknowledges environmental issues associated with the pipeline crossing of the Musselshell River. All necessary permitting for the river crossing will be obtained during the design phase of the project. Impacts to the river should be minimal, due to the proposal to bore the piping directionally under the river. An environmental checklist was included with the application and appears complete. Short-term impacts associated with construction have been identified in the PER and environmental checklist and can be mitigated with the use of BMPs.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 19

Applicant Name	Hysham Irrigation District (HID)	
Project Name	SDSS Flow Monitoring and Data Transfer	
Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 8,505	Applicant, In-Kind
	\$ 1,350	Applicant, Match
Total Project Cost	\$ 109,855	
Amount Recommended	\$ 100,000 Grant	

Project Abstract (Prepared and submitted by applicant)

The HID proposes to implement a pilot project for flow-monitoring equipment and data transfer between monitoring equipment and a regional wireless internet system into its current Irrigation System Spatial Decision Support System (SDSS) Project. These two components must be evaluated simultaneously so that their respective compatibility can be ensured. The district requires financial assistance for the final design and implementation of the before mentioned technologies within the HID to assist water managers in their efforts to better conserve one of Montana's most valuable resources, water.

Goals for this project are to increase the ability of water managers to conserve and manage water throughout the HID maximizing water availability to district patrons. Real-time flow monitoring and control play an important role in water management by improving economic output, conserving water, and reducing operational costs, all in a cost-effective manner.

Major objectives addressed by this improvement include:

- Conserving water resources by incorporating real-time flow monitoring;
- Supplying water for development of additional irrigated tracts currently idle;
- Increasing water supply for irrigation-classified tracts lacking suitable water supply, providing for better management of the system, and preserving the beneficial use of those farmlands; and
- Preserving the existing 6,165 acres within the district by providing a more reliable water supply.

The proposed project is an important part of the improvement of the HID. Increased efficiency with the district's water supply will allow farmers to convert idle land to irrigated land while still retaining the beneficial use of currently irrigated lands. These actions will generate a greater revenue stream from farming which, in turn, could stimulate the area economy.

Technical Assessment

Project Background

The HID was created along the Yellowstone River adjacent to Hysham. The HID consists of 6,165 irrigated acres serving 36 farms and ranches. The HID consists of two pumping stations, two main canals, and a number of earthen laterals that serve irrigated acres within the district. This project is part of an ongoing effort to implement a pilot project aimed at instituting remote flow monitoring to provide real-time data for irrigation water management. The items identified within this project will be connected to an existing SDSS system and website used by HID management.

Like nearly all Montana irrigation projects, the HID operates by monitoring canal water levels and water distribution through use of seasonal ditch riders. Ditch riders attempt to manage large portions of a dynamic system that is continually changing. To facilitate delivery of sufficient water to irrigators, excess water is added to increase water levels in canals and laterals. The majority of this excess water never reaches a field and is either discharged in wasteways or lost to canal overtopping and inefficiencies. Without flow-monitoring equipment, it is nearly impossible to pinpoint the precise amount of water necessary to efficiently facilitate irrigation while minimizing loss of excess water. The HID estimates that it

loses approximately 10% of its pumped water, or 1,800 acre-feet per year, to canal overtopping and discharge to wasteways.

Implementation of the project will be the second, and largest, of three steps in completing the HID's Decision Support System Project. The objective of the project is to improve water management by providing accurate and reliable data to management for decision making.

Alternatives presented in the application included installation of different styles of flow-monitoring devices with different data storage and transmission capabilities. All alternatives accomplished the level of data collection desired, but required different levels of operator involvement along with varying levels of compatibility within the HID's Decision Support System Project.

Technical Approach

The preferred alternative is installation of dynamic flow meters to collect real-time data for water management. The meters, with mobile automatic read capabilities, would be installed at 20 field flow monitoring sites and six on-canal flow monitoring sites throughout the irrigation system. Insertion probes will be installed in the gravity lateral pipes at the 20 field monitoring sites, while ultrasonic flow sensors will be mounted on existing check structures at the six on-canal sites. The flow meters will be incorporated into the HID's static GIS system, used for management of the irrigation. The sites will use radio telemetry to transmit data from the flow meters to ditch riders equipped with mobile receivers. Provided with real-time flow data, ditch riders can quickly react to changing conditions within the canal and lateral system to provide sufficient water to local irrigators. With the ability to react to changing conditions, the HID will maximize efficiency of the system while eliminating canal overtopping and discharge into wasteways. Implementation of the flow monitoring network will allow the HID to cut the amount of water lost within the system by 50%, saving up to 900 acre-feet of water per year. The water savings can be applied to currently idle acres to increase agricultural productivity.

The application provided sufficient evidence that verified the preferred alternative was the most cost-effective and beneficial to the ongoing development of the HID's Decision Support System. The detailed cost estimates provided for each alternative were determined reasonable. The application included provisions for a 10% contingency of total construction cost to protect against unforeseen increases or problems.

Construction is scheduled to begin in January 2010 and will be complete in June of the same year.

Specific tasks to be accomplished:

- Completion of final design;
- Equipment procurement process;
- Project construction;
- Construction closeout;
- Grant administration closeout; and
- Project completion.

Project Management

The HID will contract with an engineering firm to develop the final design and provide construction management, as necessary. In addition, a grant administrator will assist the HID in managing the funds, file reports, and meet grant deadlines. The contracted engineering firm and grant administrator will have experience in working with and administering grant-funded projects. The president of the HID will serve as project manager and assist all parties with project facilitation. The HID Board will have the final say in decisions associated with the project.

All equipment necessary for the project will be put out for bid during the procurement process. The HID staff will install the flow-metering devices and all appurtenances with assistance from the manufacturer's representative. The contracted engineer will provide construction oversight during critical points in the installation process to assure compliance with the design and specifications.

Upon award of this grant, the final design and construction documents will be completed. Following completion of the final design, the project will be ready to proceed.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$8,505	\$8,505
Professional & Technical	\$15,000	\$0	\$0	\$15,000
Construction	\$85,000	\$0	\$1,350	\$86,350
Total	\$100,000	\$0	\$9,855	\$109,855

The application provided a detailed cost estimate for the preferred alternative. Secondary reviewers reviewed the figures used in the cost estimate they were found reasonable with respect to the nature of the project. The application provided justification for the proposed action as the most cost-effective alternative. The project is the second part of a three-phased project to fully complete the HID's Decision Support System Project. The first phase of the project was completed working with the Natural Resource Conservation Service and the DNRC. The final phase of the Decision Support System Project will be completed following completion of this project and as funds become available.

The HID is committed to providing \$8,505 of in-kind services for project management and installation services for the flow meters. In addition, HID is committed to providing another \$1,350 in matching funds to fully fund the acquisition of flow meters and appurtenances. The applicant noted that the committed funds will not have an adverse impact on the HID budget and should not cause water user fees to increase.

In total 6,165 irrigated acres are served by the HID. Thirty-six users purchase water from the HID at a cost of \$13.50 per acre plus \$9.50 per acre-foot of water.

Matching funds for this project are secure. If awarded, the project will be in position to start implementation in fall 2009.

Benefit Assessment

Water conservation is the primary renewable resource benefit associated with this project. Installation of the flow metering sites, combined with their connection to the HID's static GIS system, will significantly improve water management by the HID. By having access to real-time data from multiple areas within the system, the HID can minimize the amount of excess water lost to canal overtopping and discharge into wasteways. Minimization of these losses could result in a water savings of 900 acre-feet per year, leaving that water in the Yellowstone River for downstream use. Improved irrigation efficiency within the HID maximizes agricultural production in the area while supporting the local economy. Secondary benefits will include preservation of 6,165 acres of prime farmland, improved water management, and development of 450 acres of idle lands.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse, long-term impacts will result. Minimal, short-term environmental concerns associated with construction, e.g., noise, dust, and vegetative disturbance, can be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 20

Applicant Name	Choteau, City of
Project Name	Choteau Wastewater System Improvements, Phase 1
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 500,000 TSEP Grant
	\$ 704,215 WPC SRF Loan
Total Project Cost	\$1,304,215
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Choteau’s collection system represents a typical aging system with clay tile pipe throughout. Based on extensive investigation of the collection system, approximately 2,800 lineal feet of collection pipe contributes extensive volumes of infiltration and is scheduled for replacement as part of this project. Given the volumes of groundwater entering the target section of the collection system, it is suspected that during lower groundwater, the same collection mains likely allow raw sewage to percolate into the soils and groundwater around these mains, contaminating the groundwater and damaging a natural resource.

The wastewater treatment facility consists of a single facultative cell. The system is unable to achieve the treatment required to consistently meet discharge permit conditions. The massive volume of infiltration is expected to be the primary reason for the permit violations, particularly with the percent removal requirements for BOD and TSS. Recently, the facultative lagoon exceeded essentially every parameter included in the discharge permit, including percent removal for both TSS and BOD, fecal coliform limits, and BOD and TSS concentration. The resulting discharge from the lagoon goes to the Teton River. Inadequate treatment results in discharge of inadequately treated domestic wastewater into an existing surface water. Further, Choteau is under a compliance directive to meet greatly reduced pathogens in the wastewater system effluent.

The proposed project will be phased. The first phase includes replacement of the sewer mains suspected of contributing a major percentage of the infiltration and installation of UV disinfection equipment. The ultimate quality of discharged water to the Teton River will be improved, thereby facilitating protection of this natural resource.

Technical Assessment

Project Background

Choteau is the county seat of Teton County and comprises 1,075 households. Previous projects in 2000 and 2002 have replaced or rehabilitated over 18,000 feet of the sewer collection system in an effort to reduce groundwater infiltration. Approximately 300,000 gallons per day of groundwater infiltration, hydraulically overloads the city’s wastewater treatment lagoon. The city’s facultative lagoon cannot meet conditions of the discharge permit and has violated most of the effluent parameters. The city is under a DEQ directive to install disinfection by January 1, 2010 to meet discharge permit coliform limits.

Various sewer main rehabilitation or replacement alternatives were evaluated in the PER, including trenchless rehabilitation and replacement by standard trenching methods. Disinfection alternatives considered included chlorination and UV disinfection. Aerated lagoon and mechanical plant treatment plant alternatives were evaluated for replacing the existing facultative lagoon.

Technical Approach

The project has been broken into two phases. The first phase (current project) includes replacement of a 2,800-foot long collection main (between Main and First Avenue), installation of a new UV disinfection

system, and installation of solar-powered mixers in the facultative lagoon. The second phase of improvements includes construction of a new oxidation ditch treatment plant. Collection main replacement was selected because sags and breaks in the existing main would make trenchless rehabilitation difficult. The collection main selected for replacement has the worst groundwater infiltration problem (up to 250 gpm). The UV disinfection system was selected over chlorination because it can be easily incorporated into the Phase 2 improvements, is easier to operate, and more cost effective. The city is purchasing and installing solarpowered mixers that improve efficiency of the treatment lagoon and new UV disinfection system until the new treatment plant can be constructed. The oxidation ditch treatment plant was selected as the preferred treatment alternative because of its flexibility and ability to meet future discharge permit requirements.

The Phase 1 improvements are scheduled to be completed by July 2010.

Specific tasks to be accomplished, (Phase 1):

- Replacement of 2,800 feet of eight-inch sewer main where the most significant groundwater infiltration problem occurs;
- Installation of solar-powered mixers in the existing lagoon; and
- Installation of a new UV disinfection system.

Project Management

The project management plan proposes adequate staff to manage the project. The city has a full-time finance officer with two assistants who manage city finances and administer grants and loans. The engineer will also assist with funding administration. The city has experience with funding administration from a recent water system improvements project. The engineer will coordinate between the contractor and city during construction. The project bond counsel has been identified. Coordination with DEQ, the Montana State Land Office (for treatment plant site improvements), and the local floodplain administrator during design and construction will be provided. Public involvement will be maintained through newsletters in monthly utility bills, newspaper articles, and monthly meetings with the city council.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$84,710	\$84,710
Professional & Technical	\$40,000	\$0	\$146,000	\$186,000
Construction	\$60,000	\$0	\$973,505	\$1,033,505
Total	\$100,000	\$0	\$1,204,215	\$1,304,215

The budget for the Phase 1 improvements included in the uniform application is complete. The city will pay for the purchasing and installing the solar-powered mixers so that item is not included in the above budget.

The city's monthly wastewater rate is \$18.62. The city raised rates in 2000 and again in 2001 to cover costs of previous sewer rehabilitation projects and to start building up a reserve. The projected sewer rate will be \$25.94 which will result in a combined water and sewer rate of \$60.58 will be 123% of DOC combined target rate of \$49.27. Various funding scenarios were evaluated using combinations of an SRF loan only; TSEP grant and SRF loan; TSEP grant, RRGL grant, and WPC SRF loan (proposed funding package); and a TSEP grant, RRGL grant, and RD loan. User rates would vary from \$25.07 (121% of target rate) to \$31.95 (135% of target rate) depending on the funding package. The estimated increase in annual O&M costs for Phase 1 is adequate (\$8,970) and includes electrical and lamp replacement costs for the new UV system. The proposed funding package will make the project affordable. No funding sources are committed for the project.

Benefit Assessment

The major resource benefit of this project is preservation of Teton River water quality. Improvements to the city's wastewater treatment system will improve the quality of discharge into the Teton River.

Environmental Evaluation

The project will create temporary environmental impacts associated with construction, including noise and dust. Best management practices will address temporary construction impacts. Some of the work will occur in the floodplain and an Army Corps of Engineers 404 permit will be required. The local floodplain administrator indicated the proposed project would not present permitting challenges. Some impact to wetlands may occur in Phase 2, but the PER indicates that mitigation can be accomplished by re-establishing any damaged or removed wetlands in the abandoned facultative lagoon. Permits will be required for the discharge of construction dewatering effluent.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 21

Applicant Name	Wolf Creek County Water and Sewer District
Project Name	New Wolf Creek Central Wastewater System
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 606,774 RD Grant
	\$ 778,046 RD Loan
	\$ 20,000 Intercap Loan
	<u>\$ 750,000 TSEP Grant</u>
Total Project Cost	\$ 2,254,820
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Wolf Creek, an unincorporated community in Lewis and Clark County, has 23 permanent residences, 10 seasonal homes, nine businesses, a school, two churches, a fire station, post office, and county road shop. All rely on individual wells and septic systems. Chronic problems with septic systems threatening wells prompted residents to form a water/sewer district in 2007 to pursue central wastewater infrastructure for the community.

The county commissioned a PER for the Wolf Creek and Craig areas in 2007. The PER was updated in 2008 with supplemental information specific for Wolf Creek. The district borrowed \$20,000 from Intercap for project initiation and grant-writing services.

Given geographic constraints and hydrogeologic conditions, drainfields in Wolf Creek function poorly with widespread problems and failures, compounded by lack of replacement space. Recent well tests show elevated groundwater nitrate levels at various locations including one of three public water supplies. Concentrations are higher than background levels in the area, likely influenced by septic systems and aggravated by close proximity of those systems to many wells. These issues must be addressed to reliably conserve and preserve both surface and groundwater resources.

The PER proposes gravity sewers, a central lift station, and treatment plant. An MPDES permit will be obtained for effluent discharge to Little Prickly Pear Creek. The recommended "moving bed bioreactor" treatment process will provide the high level of treatment and nutrient removal anticipated to be required,

at a relatively modest O&M cost. A \$2.2 million capital cost is estimated for the central system, far exceeding local financial capacity. Grants are being solicited from RRGL, TSEP, and Rural Development. Even with these grants, residents face sewer rates over four times the DOC target rate. Despite costs, the project has strong support, as shown by 23 letters of support from local residents.

Technical Assessment

Project Background

The Wolf Creek County Water and Sewer District is along Interstate 15 about 35 miles north of Helena. The district includes 23 permanent residences, 10 seasonal homes, nine businesses, a school, two churches, a fire station, a post office, and a county road shop. The area has no community water and sewer systems so each building is served by a private well and septic system. Lots are typically small, creating conflicts between private water and septic systems. Some lot owners are unable to obtain permits for new installations or for replacement installations because of these conflicts. Lewis and Clark County estimates that approximately 30% to 40% of the private septic systems are more than 20 years old and are likely reaching the end of their useful life. At least eight of these systems have already failed, have shown signs of imminent failure, or are located where serious conflicts exist between existing wells and septic systems.

An initial screening process eliminated several alternatives because of lot size limitations, costs, and regulatory requirements. A centralized septic tank/drainfield style of system was dropped from consideration because of concerns over DEQ nondegradation requirements. The applicant then evaluated in more detail several wastewater collection and treatment alternatives determined to be more appropriate.

Technical Approach

The preferred alternative consists of installation of a new gravity sewer collection system with one lift station, a moving bed bioreactor (MBBR) treatment facility, wastewater disinfection using ultraviolet (UV) light, and a direct discharge to Little Prickly Pear Creek. DEQ would have to review and approve the application for a direct discharge into Little Prickly Pear Creek before construction. DEQ lists Little Prickly Pear Creek and the Missouri River below the confluence with the creek as impaired waters. Discharge to impaired waters typically cannot take place until the Total Maximum Daily Loads (TMDL) for the receiving water have been established. TMDL work is not yet complete for these water bodies.

Existing private septic systems would be abandoned and district customers would be required to connect to the new system. The proposed improvements would be designed in accordance with DEQ standards, and DEQ would review and approve engineering plans and specifications before construction.

The current project schedule estimates construction from May to September 2010, and that the system will be operational by December 2010.

Specific tasks to be accomplished:

- Purchase land and secure easements, where necessary, for the sewer collection and treatment components;
- Construct a new gravity sewer collection system (private systems will be kept in operation until the new system is operational);
- Construct a new raw wastewater lift station; and
- Construct a new MBBR treatment facility, including disinfection and discharge to Little Prickly Pear Creek, and a drainfield or percolation ponds depending upon DEQ requirements.

Project Management

The project engineer has been selected and will be responsible for designing, bidding, and overseeing construction of the wastewater improvements. The district treasurer and secretary will be jointly

responsible for management and record-keeping of RRGL funds. The district board will be responsible for project oversight, including review and coordination of project design, bidding, and construction. The board will also advertise and hire a certified operator to operate and maintain the wastewater system. A project management narrative spells out duties for each member of the management team.

The district will continue to conduct open public meetings and board meetings at which residents can voice concerns about the proposed project. Residents will be notified before connection to the new system takes place.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$139,782	\$139,782
Professional & Technical	\$0	\$0	\$0	\$0
Construction	\$100,000	\$0	\$2,015,038	\$2,115,038
Total	\$100,000	\$0	\$2,154,820	\$2,254,820

Four funding scenarios were considered. The chosen funding package consists of a TSEP grant, an RRGL grant, a RD grant, and a RD loan. This funding package was chosen to pursue the most realistic grant opportunities, recognizing that the district will also be obligated to assume significant new debt. The proposed funding is considered feasible. If a portion of the grant funding is not received, the district may pursue CDBG grant in 2009. The district has completed an income survey and appears to have a low-to-moderate income ratio that would qualify for CDGB funding. Project phasing is not proposed because all components are necessary to have a properly functioning system. The system is designed to serve the population projected for design year 2026.

After project completion, the projected average residential sewer user fee will be \$95.71 per month. The new rate includes \$56.61 monthly for debt repayment and \$39.10 for O&M. The sewer rate will be 435% of the target rate (\$22.01) for Wolf Creek. With 56% LMI households in Wolf Creek, this is a significant burden.

Benefit Assessment

The major resource benefits are in resource protection--improvement of water quality. Approximately 30% to 40% of the septic systems in the district are at least 20 years old and probably do not meet current standards. Approximately eight systems have failed, have shown signs of failure, or are on small lots that result in inadequate separation to wells or inadequate room for replacement. All residents obtain their drinking water from privately owned wells. Groundwater is located as high as six feet below the ground in the district, and some drinking water wells are as shallow as nine feet deep.

A new centralized system would remove the private septic system threats to groundwater, providing for improved protection and quality of drinking water for district residents. The proposed centralized treatment system would better remove or treat harmful components of sewage, including nutrients and pathogenic microorganisms. Water resources that would benefit include groundwater in Wolf Creek, and possibly surface water quality in Little Prickly Pear Creek and the Missouri River.

Other benefits include improved potential for residential and commercial development within the district. Drinking water and sewage disposal aspects of development would be more easily addressed for new homes or businesses.

Secondary resource benefits resulting from water quality protection include water resource conservation, development, and preservation. By protecting the water quality, the water can be put into beneficial use by more people without public health or environmental risk.

Environmental Evaluation

The proposed wastewater treatment system improvements should help protect the area groundwater used by residents for their water supply. Current septic system discharges to groundwater would be eliminated. Improved sewage treatment at the MBBR facility would result in less net discharge of pollutants to the environment. Improved public health protection would result from the elimination of septic system discharges near drinking water wells. However, because DEQ has not reviewed the application for a surface water discharge to Little Prickly Pear Creek, the actual land area requirements for the treatment system are unknown.

Short-term negative environmental concerns associated with construction, e.g., noise and dust, can be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 22

Applicant Name Lower Musselshell Conservation District
Project Name Lost Horse Creek Siphon

Amount Requested \$ 100,000 Grant
Other Funding Sources \$ 22,000 Applicant
Total Project Cost \$ 122,000

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The Delphia Melstone Canal Water Users Association (DMCWUA) and the Lower Musselshell Conservation District, near the towns of Musselshell and Melstone, are requesting funds through the RRGL program for design and rehabilitation of the Lost Horse Creek Siphon Pipeline in the main irrigation canal. The goal of the project is to provide association with an irrigation infrastructure improvement that will conserve water resources, decrease seepage to adjacent property, and increase crop yields. This project was conceptualized by DMCWUA as the first step in long-range planning and modernization efforts.

In compliance with the RRGL program, a Preliminary Engineering Report (PER) investigated the existing infrastructure and operational controls of DMCWUA and evaluated irrigation system alternatives. The study recommended installation of reinforced concrete pipe in 450 feet of the Lost Horse Creek Siphon. This installation will enable DMCWUA to conserve water resources, reduce siphon seepage, eliminate damage to adjacent property, maximize the beneficial use of available water, and increase crop production. The seepage loss from the existing siphon pipeline is estimated at 15 cfs or 30 acre-feet/day, or 5,400 acre-feet annually.

A direct consequence of the seepage loss is a reduction in crop yields over 2,700 acres, with an estimated annual revenue loss to the community of approximately \$405,000. In addition to the water resource benefit of 5,400 acre-feet/year, the project is expected to have significant economic benefit. As presented in the present worth analysis of proposed alternatives, if installation of the siphon pipeline and improved resource management can reduce crop losses by only 25% (from 50% to 25%) on irrigated land, those irrigators will realize a direct annual economic benefit of \$202,500 or \$2,322,828 over the next 20 years (assuming an inflation rate of 3%). This would generate an additional \$712,500 to \$1,425,000 in annual economic activity. Assuming that for every dollar generated from crop production, an additional \$7 is added to the economy from other sources, i.e., freight, then the net impact to the

economy is nearly \$22.3 million over 20 years. In addition, if the Lost Horse Creek Siphon were to fail due to seepage, then land downstream from the siphon would be destroyed with a property loss estimated at \$1 million.

Implementing programs such as siphon pipeline rehabilitation to reduce seepage maximizes the multiple-use benefits of the natural flow diversions of the Musselshell River and storage water from Deadmans Basin Reservoir. The multiple-use resource benefits that DMCWUA will be able to meet through water conservation of 5,400 acre-feet/year are fish and wildlife benefits in the Musselshell River watershed and Deadmans Basin Reservoir, additional irrigation water, increased recreational benefits, and increased available water supply to meet minimum fish requirements.

In addition to the resource preservation benefits associated with the siphon pipeline is the improved community awareness that DMCWUA is implementing measures to maximize the benefits of the limited available water resources. Installation of the siphon pipeline to conserve 5,400 acre-feet/year of the water resource is DMCWUA's first step in a long-term management and operational strategy to improve irrigation service to the existing members. Conserving water resources maximizes beneficial use of limited water to benefit the entire community.

Technical Assessment

Project Background

The DMCWUA is serviced by three canals: diversion dam/ main canal (125 cfs), north-side canal (35 cfs), and the south-side canal (90 cfs) that pull water from Deadmans Basin Reservoir and the Musselshell River. The association identified seepage as the most significant issue.

The Lost Horse Creek Siphon pulls water from the south-side canal; DMCWUA identified this siphon as the priority section for rehabilitation. The 90 cfs-capacity Lost Horse Creek Siphon was estimated to seep 15 cfs with direct consequence of 50% reduced crop yield over 2,700 acres. The siphon was constructed in 1951 with nongasketed tongue-and-groove, four-foot diameter concrete pipe. Alternatives included replacement with reinforced concrete pipe, pvc pipe, or HDPE pipe.

Technical Approach

The preferred alternative is replacement of 450 feet (of 1,350 total feet) of the siphon with B-50 reinforced concrete pipe water-tight for the calculated static head of the siphon. A present worth analysis was performed with: pvc pipe and HDPE pipe. The reinforced concrete pipe was chosen due to lower cost, ability to be exposed above ground, and adaptability to existing concrete siphon. Two alternatives presented, but not investigated, were: installation of measuring devices and canal lining on the main canals. Both alternatives conserved a small percentage of water compared to the rehabilitation of the Lost Horse Creek Siphon. No major environmental impacts were associated with the preferred alternative, with an estimated 60 construction days.

Construction is slated to begin in October 2009 and to end in December of the same year, with an estimated 60 construction days. The technical narrative allows for a postponement of construction until spring 2010 due to the possibility of harsh winter weather.

Specific tasks to be accomplished:

- Grant administration / project setup;
- Detailed site evaluation, selection, and survey;

- Final design and development of construction plans;
- Construction and oversight; and
- Project closeout.

Project Management

The Lower Musselshell Conservation District is the primary applicant for this project. They have agreed to administer and oversee the grant. The DMCWUA is a private water users association and is ineligible to apply for RRGL grant funds. DMCWUA has retained an engineering firm to provide project administration and act as project manager. Communication schedules have been clearly set with the water users association. Adequate staff is available to manage and administer the project. The project is in the early design phase and a detailed site evaluation and final design would be required before ordering materials and construction. Based on information provided in the application, adequate staff is available to proceed and to start construction by October 2009. A public comment session was mentioned in the PER; however, public notices and results were not included. A plan is in place for responding to public concerns.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$0	\$0
Professional & Technical	\$20,000	\$0	\$0	\$20,000
Construction	\$80,000	\$0	\$22,000	\$102,000
Total	\$100,000	\$0	\$22,000	\$122,000

The budget appears reasonable to fund the project. The applicant provided a detailed breakdown of costs. No budget or funding irregularities were found. Unit costs used to develop the budget appear reasonable and adequate. A present worth of design alternatives was presented; the preferred alternative was the least expensive alternative that could meet the goals and objectives of the project. The applicant was listed as a source of matching funds; however, it is unknown if the funds are committed. No alternate source of funding was identified if RRGL monies are unavailable. One secondary reviewer commented that the 10% budget contingency may be low by the time the project is implemented. The project will not affect assessments in the future.

Benefit Assessment

Benefits from this project would be in resource conservation and preservation. The quantifiable resource and citizen benefits include: reduction of seepage, elimination of cropland damage, increased efficiency of irrigation water, increased carry-over storage in Deadmans Basin Reservoir, land returned to full production, and decreased daily reservoir releases for irrigation demands. A few benefits were assigned values that cannot be substantiated with available data: 15 cfs water conservation, 50% crop yield loss on 2,700 acres, and available water supply increase to meet minimum fish requirements. Increased recreational benefits were mentioned but not detailed in the report. The report did not address monitoring of water quantity or quality.

Environmental Evaluation

The proposed siphon replacement will have a net positive effect on the environment. Short-term negative environmental concerns associated with construction, e.g., noise and dust, can be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 23

Applicant Name Whitefish, City of
Project Name Whitefish Wastewater System Improvements

Amount Requested \$ 100,000 Grant
Other Funding Sources \$ 500,000 TSEP Grant
\$ 99,000 Local Funds
\$ 900,650 SRF Loan
Total Project Cost \$ 1,599,650

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The Whitefish wastewater system consists primarily of approximately 45.7 miles of conventional gravity sewer mains and 16 raw wastewater lift stations; a three-cell, aerated lagoon facility, followed by alum addition; and a flocculating clarifier, with discharge to the Whitefish River. The collection system experiences an estimated 78 million gallons of clear water I&I each year. This clear water causes problems, ranging from surcharging lift stations and illicit surface water discharges to reduced treatment efficiency at the plant. In 2006, 10 separate sanitary sewer overflows (SSO) resulted in DEQ enforcement. The compliance order required the city to implement improvements to the lift station network and reduce the amount of I&I into the sanitary sewer system. In 2007, DEQ issued a new MPDES discharge permit with limitations and a compliance schedule for pathogens. When the e.coli limitations become effective in July 2011, the city probably will be out of compliance unless effluent disinfection is implemented.

The proposed project involves replacement/rehabilitation of approximately 10,325 lineal feet of sanitary sewer mains, rehabilitation of up to 44 manholes, and construction of a UV disinfection facility at the WWTP. The proposed project will implement RRGL statutory goals through preservation and enhancement of a renewable resource. I&I negatively impacts the treatment plant's biological efficiency. The project will protect surface water quality in the Flathead Basin by improving treatment efficiency, as well as significantly reducing the risk of discharging untreated wastewater into the Whitefish River. Citizen benefits include reduced risk of exposure to pathogens and also enhanced recreational opportunities. Removing I&I will also result in resource conservation benefits by reducing energy consumption by an estimated 3,500 kwh per year.

Technical Assessment

Project Background

The Whitefish sanitary sewer system experiences an estimated 78 million gallons per year (214,000 gallons per day) of clear water infiltration through leaking sewer pipes and appurtenances. These flows contribute to overflows of raw sewage to the Whitefish River and also reduce treatment system efficiency. MPDES discharge permit limitations for pathogens require addition of an effluent disinfection system to the treatment process. The city is under an administrative compliance order from DEQ that requires correction of overflow and infiltration problems.

Technical Approach

The PER determined that over 18,500 lineal feet of sewer mains exhibit extensive structural, infiltration, and/or plugging defects. This project will rehabilitate or replace a large portion of the defective sewers and add an effluent disinfection system.

Specific tasks to be accomplished:

- Replace/rehabilitate approximately 10,325 lineal feet of sanitary sewer mains;
- Replace/rehabilitate up to 44 sanitary sewer manholes; and
- Install a new ultraviolet light effluent disinfection system;

All tasks include appurtenances and materials necessary to complete the project.

Project Management

An engineering firm has been hired to assist city staff with project management. The firm appears well qualified to assist the city with grant administration, project design, construction management, inspections and closeout. The city intends to hold routine public meetings to educate and inform the public.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$99,000	\$99,000
Professional & Technical	\$0	\$0	\$250,000	\$250,000
Construction	\$100,000	\$0	\$1,150,650	\$1,250,650
Total	\$100,000	\$0	\$1,399,650	\$1,599,650

The district is seeking an RRGL grant, TSEP grant, and SRF loan. The district is providing local reserve funds of \$99,000. Debt obligations total \$172,000. With the current project (all grants received), the monthly sewer user rate will be \$33.13. The combined water and sewer rate will be \$74.39 per month.

Benefit Assessment

The replacement of 10,325 lineal feet of pipe could reduce average daily flows to the treatment plant by 64,000 gpd. Less I&I will result in improved treatment efficiency of the city's effluent. The reduced flow would result in a reduction in power consumption by over 3,500 kWh per year. The proposed project will resolve raw sewage overflows into the Whitefish River, thus eliminating a threat to the health of the river's recreational users. The proposed project will also add an effluent disinfection system that will reduce coliform and e-coli bacteria concentrations entering the river.

Environmental Evaluation

Proposed construction takes place within already disturbed areas. Negative environmental impacts will be short term and construction related, such as dust and noise. Overall, the project will positively impact the environment by reducing raw sewage and bacteria discharges to the Whitefish River.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 24

Applicant Name	Gardiner-Park County Water and Sewer District
Project Name	Gardiner-Park County Wastewater System Improvements
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 373,000 TSEP Grant (Includes 15,000 planning grant)
	\$ 15,000 Local Funds spent on PER
	<u>\$ 248,145</u> SRF Loan
Total Project Cost	\$ 736,145
Amount Recommended	\$ 100,000 Grant
Project Abstract	(Prepared and submitted by applicant)

Park County has been operating the Gardiner wastewater system. The treatment system was expanded in 1991, but the new 2007 discharge permit requires addition of UV disinfection. In summary:

- The county has been cited several times for illegal spills into the Yellowstone River, paid \$10,000 in fines in early 2007, then recently settled over \$28,000 in fines for approximately \$18,000. The early failures and spills of raw sewage into the river were primarily due to control failures at the lift station. The problem was corrected in 2006. However, two of the most recent spills (March 2007) were due to pump failures;
- The spills are very serious threats to human health, the environment, and the tourist industry. The spills have received nationwide coverage, including by Associated Press;
- The new discharge permit will require the system to provide UV disinfection by mid-2009; and
- In February 2008, the water district's voters overwhelmingly voted in favor of expanding the Gardiner Water District into a water and sewer district by a margin of 204 for and 23 against.

Proposed solutions:

- Construct a new lift station adjacent to the present station and use new above-grade controls; place new submersible pumps operating on slide rails in the new lift station (eliminates the confined space issue, and spill-causing time delays from pumping down the dry well for entry); and
- Provide UV disinfection and other smaller improvements (meter, life-line ropes).

This project is essential to protection of the Yellowstone River, its wildlife, and the tourist industry because it is under constant threat from more raw sewage spills.

Technical Assessment

Project Background

Separate districts have historically provided Gardiner's water and sewer services. The Gardiner-Park County Water District provided water service. The Gardiner Rural Special Improvement District (RSID) in Park County provided sewage collection, treatment, and disposal for Gardiner and the National Park Service at Mammoth.

Park County has received many citations for illegal spills into the Yellowstone River and has settled for fines totaling \$18,000. The discharges have received national attention. As a result of these problems, the Gardiner-Park County Water District members voted overwhelmingly to expand the district to include the old RSID. The new entity is named the Gardiner-Park County Water and Sewer District.

As part of the transfer agreement, the Gardiner Water District requested that Park County provide an evaluation of the existing sewage collection and treatment system. The PER is the basis of the current funding application.

Technical Approach

The PER determined that improvements to the lift station and the treatment system were immediately required. The existing lift station will be replaced with a modern, packaged lift station containing removable rail-guided pumps. Any time the existing pumps must be inspected or maintained the confined entry space poses a hazard. A modern pump station will also reduce the likelihood of raw sewage overflows to the Yellowstone River. The PER determined costs for several Montana DEQ-mandated improvements including influent and effluent flow monitoring, effluent disinfection, bypass valves, and emergency egress equipment.

Specific tasks to be accomplished:

- Install new pump station vault with removable rail-guided pumps and all appurtenances;
- Install treatment pond influent and effluent flow meters;
- Install treatment pond bypass valving and emergency egress ropes; and
- Install treatment pond effluent disinfection system.

All above listed tasks included any and all appurtenant components and materials necessary to complete the project.

Project Management

An engineering firm, along with district staff, will manage the project. This team appears well qualified to assist with grant administration, project design, construction management, inspections, and closeout.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$66,193	\$66,193
Professional & Technical	\$0	\$0	\$149,666	\$149,666
Construction	\$100,000	\$0	\$420,286	\$520,286
Total	\$100,000	\$0	\$636,145	\$736,145

The district is seeking an RRGL grant, TSEP grant, and an SRF loan. The district is providing local reserve funds of \$15,000 for the project. Debt obligations total \$1.369 million; with the current project (all grants received), the user rate will be 119% of the DOC target rate.

Benefit Assessment

The addition of a modern, easily maintainable pump station will improve worker safety and reduce the likelihood of accidental sewage spills into the Yellowstone River. The proposed project will also add an effluent disinfection system that will reduce the coliform and e-coli bacteria concentrations entering the river. This project will improve water quality in a valued, highly used recreational area with many benefits to locals and tourists alike.

Environmental Evaluation

All proposed construction occurs within already disturbed areas. Negative environmental impacts will be short term and construction related, such as dust and noise. Overall, the project will have positive environmental impact by reducing bacterial discharges to the Yellowstone River.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 25

Applicant Name Montana Department of Natural Resources and Conservation (DNRC),
Water Resources Division (WRD)
State Water Projects Bureau

Project Name Twodot Canal Rehabilitation

Amount Requested \$ 100,000 Grant
Other Funding Sources \$ 18,511 Applicant, In-Kind
Total Project Cost \$ 118,511

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The Upper Musselshell Water Project (UMWP) owned by the DNRC and operated by the Upper Musselshell Water Users Association (UMWUA). This project comprises three dams; two reservoirs, capturing a maximum of 30,134 acre-feet in storage; and five canals that total 52 miles in length. The original project was completed on September 20, 1939, and was first operated in 1940. It was constructed by the collaborative effort of the federal WPA and the State of Montana Water Conservation Board. Water from the project provides lifeblood for agriculture, fish and wildlife, and recreation; it irrigates ranch and farmland, restores summertime flow to the Musselshell River (a perennially dry stream), provides fisheries for trout, and offers a recreational resource to boaters, hunters, and fishermen.

Harlowton also uses water from the Twodot Canal for municipal uses. From its diversion on the Musselshell three miles west of Two Dot, the 32-mile long Twodot Canal runs north of U.S. Highway 12 terminating in Antelope Creek, northeast of Harlowton. Due to deterioration over time, design deficiencies, and insufficient repairs, the Twodot Canal requires substantial rehabilitation. Seepage from the canal has reduced the structural integrity of the canal berm in places. In May 2007, a highway patrolman observed sloughing on a hillside below the canal, where the canal flows directly above U.S. Highway 12, approximately one mile west of Twodot. Further subsidence of this hillside could cause the canal to spill onto U.S. 12. The unstable condition could cause damage to private property as well. The Upper Musselshell Water Users are also concerned that considerable quantities of water are lost through the porous soils of the Twodot Canal channel. This deficiency is especially painful in view of the drastic water shortages suffered by the water users during 12 consecutive years of drought. Some ranchers and farmers have been driven to the brink of bankruptcy. In order to address these concerns, DNRC-SWPB and the Upper Musselshell Water Users wish to stabilize the hillside and stem the loss of water from the system by lining the unstable and pervious section of canal perched above U.S. 12.

The SWPB is requesting a grant of \$100,000 to eliminate hazardous conditions to U.S. 12 and conserve water for beneficial use to landowners and to the general public. This project is the first step in a three-phase process that will continue rehabilitation efforts for the Twodot Canal.

Technical Assessment

Project Background

The Twodot Canal is in central Wheatland County approximately three miles west of Twodot and serves agricultural lands within the UMWP. The UMWP consists of 30,658 acres operated by 21 farms and ranches and the Duncan Ranch Hutterite Colony. In addition, Harlowton uses water supplied by the Twodot Canal for municipal purposes. The existing Twodot Canal consists of an earthen channel section stretching 32 miles and terminating in Antelope Creek, which feeds back into the Musselshell River. This project is the first step in a three-phased process aimed at canal rehabilitation within the Twodot system.

The Twodot Canal has experienced significant seepage throughout 32 miles of the canal. Water measurements made by the SWPB have shown that the Twodot Canal loses approximately 50% of its diverted flow from end to end. Measurements within the project area show that approximately 10 cfs is lost in this 1,800 foot reach alone. These measurements coincide with field observations which found a large scarp along the base of the south bank of the canal as it parallels above U.S. Highway 12. The large scarp has raised concern about the stability of the canal bank, which, if it failed, would flood U.S. Highway 12. Within the identified project area, the canal traverses a highly permeable fractured sandstone bedrock formation which has directly caused the abnormally high water losses within the reach and the potential public safety hazard.

Losses from the Twodot Canal coupled with 12 consecutive years of drought have severely restricted the ability of the UMWP to deliver full water allotments to the acres it serves. The project will be the first part of a joint effort by the SWPB and Upper Musselshell Water Users Association to improve irrigation delivery efficiency and water resource management. The most cost-effective alternative for the Twodot Canal Rehabilitation Project is installation of an EPDM membrane liner through the identified 1,800-foot reach of the canal. Other alternatives considered were lining the canal with different materials, such as bentonite mats, concrete, and a spray-on polymer.

Technical Approach

Before design or construction activities, the SWPB will contract an engineering firm to conduct a geotechnical investigation of the south bank of the Twodot Canal through the project area. Due to the size of the scarp and its proximity to U.S. Highway 12, the area must be investigated to determine the condition of the slope. The contracted engineering firm will investigate the embankment stability and provide recommendations to the SWPB. The lining project will be considered during the investigation to determine if elimination of the continual saturation will re-establish the stability of the canal bank. Following the recommendations from the contracted engineer, the SWPB will either proceed with the project as proposed or modify the scope. The SWPB believes that installation of the EPDM membrane liner will eliminate the need to reconstruct the canal bank by eliminating the water source which has cause the scarp to migrate.

The preferred alternative is the continued use of the existing canal, with the installation of an EPDM membrane liner through a 1,800-foot reach of the Twodot Canal. The existing canal will be cleaned, all organic material removed, and the canal reshaped as necessary. The EPDM liner will be installed with one foot of gravel ballast placed over the liner to anchor it in place and protect against puncture from animal traffic. Installation of the EPDM liner through the 1,800-foot reach will preserve approximately 10 cfs previously lost to canal seepage. Elimination of seepage will also mitigate the scarp created from continual saturation of the south canal bank. By eliminating saturation of the canal bank, the scarp will not continue to migrate and the potential public safety hazard to U.S. Highway 12 will be mitigated. Installation of the EPDM membrane liner will reduce the required operation and maintenance of the system, and 3,600 acre-feet of water per year will be reclaimed for beneficial use.

The SWPB has used all of the alternatives presented in the application, and through past experience and product performance, has determined that lining canals with an EPDM membrane liner is the most cost-effective and least labor-intensive lining alternative. Square-foot costs for canal lining developed by the U.S. Bureau of Reclamation (USBOR) for the alternatives presented in the application were used to provide a cost analysis. A detailed cost estimate of the preferred alternative was developed by the SWPB using current bid prices from similar SWPB projects. The application did not include a provision for a 10% contingency to protect against budget overages and price increases. Recommending use of an oil-based product such as an EPDM membrane liner without including provisions for product price increases places the applicant at undue risk for cost overages. SWPB and UMWUA will likely be unable to install the entire 1,800 feet of liner due to increases in product costs.

Construction is scheduled to begin in October 2009 and will be complete in November of the same year.

Specific tasks to be accomplished:

- Geotechnical evaluation;
- Detailed site evaluation, selection, and survey;
- Final design and development of construction plans;
- Contractor selection;
- Construction (installation of EPDM liner through 1,800 feet of canal); and
- Project closeout.

Project Management

The SWPB will contract an engineering firm to conduct a geotechnical investigation of the canal bank and provide recommendations on its stability. The SWPB will follow the recommendations of the contracted engineering firm in proceeding with the project. The SWPB will act as the project manager and grant administrator for the project. In addition, SWPB staff will develop the final design, bid documents, and specifications.

Once final design is complete, the project will be put out for public bid for the selection of a licensed construction contractor. The selected contractor will have experience in canal rehabilitation and installation of canal liners. The EPDM membrane liner and all appurtenances will be put out for bid during the procurement process. Construction oversight and administration will be provided by the SWPB staff.

Upon award of this requested grant, data collection will take place to facilitate completion of the final design. Following completion of the final design, the project will be ready to proceed.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$7,120	\$7,120
Professional & Technical	\$14,140	\$0	\$4,755	\$18,895
Construction	\$85,860	\$0	\$6,636	\$92,496
Total	\$100,000	\$0	\$18,511	\$118,511

The application provided a detailed cost estimate for the preferred alternative. Cost estimates for other alternatives presented were taken from USBOR project costs and adjusted to 2008 amounts. The budget was reviewed by the NRCS area engineer covering the project area, and was determined reasonable. Concerns were raised about the rising costs of liner materials and the effect that will have on the project budget. This project is part of a large-scale canal rehabilitation project and is the top priority of the SWPB Canal Section. Further projects and assessments follow completion of this project.

The application requests \$14,140 to contract with an engineering firm to perform a geotechnical investigation of the project area and provide site stability recommendations before final design of the project. The application also requests \$85,860 for the acquisition of canal lining products and installation to be performed by a licensed contractor. The SWPB will provide \$18,511 of in-kind services to provide grant administration, project management, design services, and construction administration and oversight. A 10% contingency was not included in the budget to cover price increases or project overages. It is unlikely, due to the volatility of the market, the budget will cover acquisition and installation of the entire 1,800 feet proposed in the project. The SWPB stated that if the allocated funds cannot cover the entire reach proposed, the project size will be scaled back to fit the budget.

In total 30,658 irrigated acres are served by the UMWP. Twenty-one (21) farms and ranches and the Duncan Ranch Hutterite Colony purchase water from the UMWP at a cost of \$6.50 per acre-foot of water. The application estimates that the user fees will not increase due to project implementation.

Matching funds for this project are secure. If awarded, the project will be in position to start implementation in fall 2009.

Benefit Assessment

Water conservation is the primary renewable resource benefit associated with this project. The SWPB has determined that the reach of Twodot Canal through the project area loses approximately 10 cfs or 3,600 acre-feet per year. The water savings generated from rehabilitation will allow the UMWP to supply a full allotment of water to acres which do not receive sufficient water for effective irrigation to maximize production. During non-drought years when full allotments can be delivered to all acres served by the UMWP, the water saved by the rehabilitation will be directed back into the Musselshell River, thereby improving instream flows for recreational uses. Secondary benefits will include increased agricultural production, elimination of a potential public safety hazard, and preservation of 30,658 irrigated acres.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse long-term impacts will result. Minimal short-term environmental concerns associated with construction, e.g., noise, dust, and vegetative disturbance, can be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 26

Applicant Name	Cascade, Town of
Project Name	Cascade Water System Improvements
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 50,000 Applicant
	\$ 10,000 DNRC Planning Grant
	\$ 450,000 CDBG Grant
	\$ 625,000 TSEP Grant
	<u>\$ 168,000</u> WPC SRF Loan
Total Project Cost	\$1,403,000
Amount Recommended	\$ 100,000 Grant
Project Abstract	(Prepared and submitted by applicant)

After making substantial improvements to its water supply and storage systems, Cascade is now focused on improving its 95-year-old original water distribution system. Phase 1 improvements were completed in 2006 and the town now wants to construct Phase 2 water system improvements. These improvements are critical to water conservation and preserving water quality.

Between 2002 and 2007, an average of 45% of the water flowing through the aged and failing distribution system was unaccounted for. In 2007 alone, Cascade was unable to account for over 29 million gallons of water. It is very difficult for the town to encourage water conservation in the community. In Cascade's case, unaccounted-for water is primarily due to leaks within the system. These leaks are a result of electrolysis (corrosion) which attacks the outside of the pipe and causes holes in it. The proposed project would replace existing pipe that has outlived its usefulness and greatly improve water conservation.

Without a secure and safe water line, water quality is compromised, putting the public at major health and safety risk. Aged and corroded pipe allows contaminants to enter the drinking water supply. This can occur when the system experiences negative pressure from sudden pressure losses such as a major pipe break or when fire hydrants are used. The proposed project would benefit Cascade by preserving water quality and protecting the community's drinking water.

Phase 2 improvements would undoubtedly benefit water conservation and water quality for Cascade. If improvements like this continue, the town will have the infrastructure necessary to sustain residents and promote manageable growth.

Technical Assessment

Project Background

Cascade is an incorporated town with 357 households (population of 852) in Cascade County along Interstate Highway 15. The town's water system consists of: a spring source; two groundwater wells; a 273,000-gallon steel storage reservoir; two concrete reservoirs totaling 204,000 gallons; and approximately five miles of four-inch to 12-inch diameter water distribution main. Hydraulic modeling shows that the current system experiences low pressures during fire flow conditions due to undersized mains (67% are four-inch diameter) and poor looping. Furthermore, over half of the distribution system is cast iron or galvanized pipe in the ground over 93 years and experiencing severe corrosion, leakage, and tuberculation. The town has addressed over 235 leaks over the past 20 years. A comparison of the supply and residential metering records indicates that approximately 45% of the town's drinking water is lost through leakage and unaccounted-for losses. The town also does not have an auxiliary power supply for its two groundwater wells. The lack of a back-up power source does not comply with current state design standards.

Technical Approach

The applicant has evaluated many alternatives to address the deficiencies and has prioritized its needs. The preferred alternative is to replace approximately 8,000 lineal feet of cast iron and galvanized water main with new six-inch through 12-inch diameter C900 pvc water main, appropriately sized to deliver necessary flows at required pressures in compliance with Circular DEQ-1. The town will purchase a portable generator to provide auxiliary power to the wells. The town plans to address deficiencies with remaining cast iron, galvanized, and undersized water main with future projects as funding becomes available. Implementation of the recommended alternatives will enhance system hydraulics, reduce lost water significantly, and provide the auxiliary power required by state design standards. This alternative was chosen for its anticipated effectiveness, favorable cost-to-benefit ratio, and beneficial environmental and socio-economic impacts.

Construction is slated to begin in spring 2010 and end in August of the same year.

Specific tasks to be accomplished:

- Replace approximately 8,000 lineal feet of deteriorated water main with new pvc pipe; and
- Purchase an appropriately sized portable generator to provide auxiliary power to the town's water supply wells.

Project Management

The project engineer has been selected and has considerable experience in administering grants and designing and constructing water system improvements such as those proposed for Cascade. The town clerk, who has managed previous grant- and loan-funded projects, will be the fiscal contact. The town council and mayor will retain ultimate responsibility for the project. The project management plan spells out clear duties for each member of the management team.

The town has employed an aggressive public education process with several meetings and hearings. As a result, the proposed project appears well supported by the community. Cascade has committed to continue the effort with open public and council meetings at which attendees can voice concerns about the proposed project during a public comment and question period. Residents will be notified when construction is going to begin and especially when water service interruptions are anticipated.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$65,000	\$65,000
Professional & Technical	\$0	\$0	\$213,500	\$213,500
Construction	\$100,000	\$0	\$1,024,500	\$1,124,500
Total	\$100,000	\$0	\$1,303,000	\$1,403,000

Six different funding scenarios were considered for the project. The chosen funding package consists of an RRGL grant, TSEP grant, CDBG grant, town reserves, and a DW SRF loan. This funding package was chosen because the applicant should be a good candidate for general CDBG funds and would likely be a good candidate for TSEP funds (both applications have been submitted). Funding the remaining project costs through DW SRF will yield an affordable user rate increase. The funding package is considered feasible. If the applicant does not secure the DNRC grant, the combined water and sewer user rate in Cascade would be 140% of the DOC target rate based on the town's median household income.

After project completion, the projected monthly water rate for each user in Cascade will be \$36.35, a moderate increase from the current rate of \$33.76. The new rate includes a \$2.59 monthly charge for water debt repayment and no additional charge for O&M costs. Replacement of approximately 8,000 lineal feet of cast iron and galvanized pipe will reduce leakage and repair costs making system O&M much more efficient.

Benefit Assessment

The major resource benefits are in resource conservation, preservation, and management. Replacement of the proposed approximately 8,000 lineal feet of six-inch through 12-inch pipe could eliminate as much as 40% (27,400 gpd) of the leakage. Significantly reducing water lost through leakage results in: water conservation through reduced extraction; energy conservation through reduced well pumping; preservation benefits to the aquifer through reduced extraction; and more reliable resource management through the ability to dependably retain stored water for domestic and emergency use. Reduced leakage will also allow the town to generate more revenue per gallon of water extracted from the aquifer, resulting in a more cost-effective use of the natural resource. The portable generator will allow the town to manage its use of the groundwater resource during periods of no power more effectively.

Environmental Evaluation

The proposed water distribution replacement project will have a net beneficial effect on the environment. By reducing losses through leakage, the town will be able to extract less water from the aquifer, yet still meet its domestic and emergency needs. Also, energy consumption will decrease through reduced pumping. Beneficial impacts to the community water users will also be realized by enhancing system integrity and reducing the possibility of contaminants entering the distribution system through holes in the pipe. The project has significant public support in the community with 22 letters of support, including those from Montana's Congressional delegates.

Short-term, negative environmental concerns associated with construction, e.g., noise and dust, can be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 27

Applicant Name Sweet Grass County Conservation District (SGCCD)
Project Name Post-Kellogg Diversion Structure Infrastructure Rehabilitation

Amount Requested \$ 98,180 Grant
Other Funding Sources \$ 2,380 Applicant
Total Project Cost \$ 100,560

Amount Recommended \$ 98,180 Grant

Project Abstract (Prepared and submitted by applicant)

The SGCCD requests funding for rehabilitation of a diversion on the Boulder River south of Big Timber. The Post-Kellogg headgate structure, owned and operated by the Post-Kellogg Ditch Company (PKDC), supplies a canal eight miles long and originally completed in 1907. Water from the project irrigates 1,226 acres of hay, crop, and pasture land. For six months, the diversion also provides livestock water to sheep and cattle grazing native rangeland.

Due to deterioration from age and design deficiencies, several diversion infrastructure components need rehabilitation. The current diversion structure consists of a rock vane that has to be reconstructed by hand every year. Between the main diversion headgate and the waste gate, approximately 200 feet of retaining wall is failing and should be replaced. The waste gate, approximately 1,000 feet downstream from the main diversion, has deteriorated. No flow-measuring device exists on the ditch below the wastegate.

SGCCD proposes to obtain a grant to improve the infrastructure on the site that will provide long-term functionality with greatly reduced maintenance. This situation is typical of many other diversions within the district.

This project warrants funding because it:

- Is highly visible and accessible to ranchers, and thus is an excellent demonstration project;
- Increases fish habitat in the mainstem Boulder River;
- Reduces current rates of annual in-channel disturbance; and
- Provides a means of measuring flows in the ditch.

Technical Assessment

Project Background

SGCCD, the project sponsor, is in Big Timber, Sweet Grass County. The project is owned and operated by the PKDC, also in Big Timber. Construction of the PKDC canal was completed in 1907. The approximately eight-mile long canal serves approximately 1,226 acres and 13 farms or ranches. The diversion structure, diversion canal, wasteway, and headgates are deteriorated and in need of repair. As part of this project a measuring device will be installed in the ditch below the wasteway.

Technical Approach

The preferred alternative is to reconstruct the Boulder River diversion structure with large rock riprap, replace approximately 200 feet of the diversion canal training wall with a concrete retaining wall, replace the existing wasteway structure with a new concrete structure and new gates, and install a flow-measuring device downstream from the wasteway. The Boulder River diversion needs repair before the diversion of water each spring. The work in the river, disturbance, and siltation stress the fishery. High flows have damaged the diversion canal in the past and could cause the diversion canal training walls to be overtopped and fail. The wasteway gates are wooden flashboards that are difficult to remove during high flows and difficult to use for flow control. A new flow-measuring device will allow for more accurate

flow measurement and could result in additional flows returned to the river. Three other alternatives were considered for construction of the training wall in the diversion ditch, including no action, rebuilding the canal section with gabions, and using concrete blocks for reconstructing the diversion canal bank. These alternatives were rejected because of cost and the potential for increased long-term repair costs.

The SGCCD intends to use this project as an irrigation efficiency demonstration project. Many other diversion structures within the district are in the same condition as the PKDC and would benefit from similar repairs.

Past maintenance has been directed at repair of the Boulder River diversion structure. With this project, annual maintenance on the river diversion will be eliminated, thus reducing the annual work in the river and diminishing the sedimentation problem. Other maintenance is performed as needed. Overall, the canal is in serviceable condition.

Construction is slated to begin in summer 2009 and end in early winter 2009. The project schedule may be difficult to meet, but with proper planning, the schedule is workable.

Specific tasks to be accomplished:

- Hire a consulting engineer to design the project;
- Start the construction bid process;
- Replace waste gate;
- Install flow-measuring device;
- Replace ditch retaining wall;
- Construct rock diversion structure; and
- Construction closeout.

Project Management

SGCCD has some experience managing construction projects and will provide project oversight. The Boulder River Watershed Coordinator (BRWC) will be responsible for immediate oversight of the engineer. An engineering firm will be hired to provide assistance to the SGCCD and BRWC for design, construction administration, and overall project administration. The engineer will make recommendations to the SGCCD and BRWC for final decision making. How the project would be managed is not clearly described.

Water users, county officials, and local politicians provided five letters of support for this project. No public involvement plan is presented. The procurement process is unclear.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$6,762	\$0	\$2,380	\$9,142
Professional & Technical	\$37,932	\$0	\$0	\$37,932
Construction	\$53,486	\$0	\$0	\$53,486
Total	\$98,180	\$0	\$2,380	\$100,560

A cost estimate was made for the preferred alternative and the two rejected alternatives for the diversion canal training wall. The preferred alternative has a higher construction cost, but had the greatest cost benefit over the rejected alternatives due to longer expected service life. Should costs of materials or construction increase considerably, the PKDC would increase the amount of its contribution to the project. The PKDC has begun to assess its members an annual fee to provide a fund for future O&M costs. In the past, PKDC members have paid a fee for maintenance, as needed. The construction estimate used a 10% contingency to help with the potential cost increases. The project will not be phased since it will be completed within one construction season.

The project will not result in a cost increase to water users. There probably will be no additional O&M costs because of the project, and maintenance costs on the rehabilitated portion of the ditch will probably decrease.

Benefit Assessment

The major resource benefit will be less annual disturbance in the river for reconstruction of the diversion structure. The measuring device will allow for better control of the water diverted into the ditch, which could result in an increase in instream flows available for fisheries, wildlife, and recreation.

Environmental Evaluation

The proposed project will reduce the annual disturbance in the Boulder River due to reconstruction of the river diversion structure. The design of the structure will potentially enhance the fishery habitat. The evaluation did not mention threatened or endangered species within the project area.

Short-term, negative environmental concerns associated with construction, e.g., noise, dust, and sedimentation, can be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$98,180 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 28

Applicant Name	Wibaux, Town of
Project Name	Wibaux Wastewater Improvements
Amount Requested	\$ 100,000 Grant
Other Funding sources	\$ 500,000 TSEP Grant
	\$ 418,000 SRF Loan
	<u>\$ 14,000</u> Local Resources
Total Project Cost	\$ 1,032,000
Amount Recommended	\$100,000

Project Abstract (Prepared and submitted by applicant)

Wibaux’s two-cell aerated, continuous discharge lagoon was constructed in 1973. The town upgraded electrical controls in 1993 and the lift station in 2002. Aeration breakdowns have led to multiple discharge permit violations, including dissolved oxygen, total suspended solids, and fecal coliform. DEQ has given the town a 2010 deadline to meet more stringent permit parameters for total suspended solids, chlorine residential, and ammonia removal.

DEQ noted it does not believe the current facility, even if upgraded, will allow Wibaux to meet the ammonia parameters scheduled to become effective in the town’s 2010 discharge permit. DEQ recommended a nondischarging design. The current facility has the following deficiencies: broken aeration piping, outdated aerators, only one working aeration pump, and a nonoperational recirculation pump.

The proposed solution calls for eliminating discharge. Aeration will continue in a half-acre treatment cell and a 3-½-acre holding cell. Treated water will be discharged into a 12-½-acre evaporation cell. To make the project more affordable, the original \$1.626 million design for a population of 550 was reduced to a population of 495, with less aeration in the aeration ponds and only one of two evaporation cells.

Sufficient land will be purchased for the second cell if growth requires it, and aeration cells will be sized so additional aeration can be added if needed.

Technical Assessment

Project Background

Wibaux is served by a public sewer system consisting of a two-cell aerated, continuous discharge lagoon constructed in 1973. Mechanical breakdowns have led to multiple MPDES discharge permit violations, including dissolved oxygen, total suspended solids, and fecal coliform. DEQ has given the town a 2010 deadline to meet more stringent total suspended solids, chlorine residential, and ammonia removal permit parameters.

Alternatives considered included:

- Rehabilitate the existing system into an aerated lagoon system including storage, disinfection, and agricultural land application; and
- Rehabilitate the system into a total retention (nondischarging) lagoon system.

DEQ indicated it does not believe lagoon technology will allow the town to meet the discharge limits for the next MPDES permit, so discharging options are not considered.

Technical Approach

The total retention system was chosen as the preferred alternative due to the MPDES discharge permit effluent limits and input from DEQ staff. The proposed solution will eliminate discharge of treated effluent to surface waters. Aeration will be continued in a half-acre treatment cell and a 3-½-acre holding cell. Treated water will be discharged into a 12-½-acre evaporation cell. Construction will begin in May 2010 and conclude in December 2010.

Specific tasks to be accomplished:

- Reroute existing sewer main to new storage pond;
- Construct primary aeration pond and one aerated storage pond;
- Install pipeline from aeration cells to evaporation pond;
- Construct total retention pond; and
- Dispose of sludge.

Project Management

Wibaux will hire an engineer to provide design and construction management services. The town will contract with a project administrator to assist in procurement and project development. The project administrator will submit progress reports to the town council. The town clerk/treasurer will provide grant administration services. The clerk/treasurer has administered the financial and reporting functions of previous grants.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$44,500	\$44,500
Professional & Technical	\$0	\$0	\$160,000	\$160,000
Construction	\$100,000	\$0	\$727,500	\$827,500
Total	\$100,000	\$0	\$932,000	\$1,032,000

The town's funding strategy includes an RRGL grant, TSEP grant, SRF loan, and local resources. The budget should be reasonable. O & M costs are reasonable. The new combined water/sewer user rate will be \$53.80, 106% of the DOC target rate. If the town is unsuccessful in securing the planned funds, the town will pursue long-term funding from RD.

Benefit Assessment

The project will provide resource preservation benefits. The wastewater treatment plant discharges to Beaver Creek. Beaver Creek is classified as fishable/swimable. The wastewater effluent discharge has resulted in repeated MPDES discharge permit violations for BOD over the past five years. Ammonia levels in the creek are also a concern, and DEQ has recommended the town implement a nondischarging wastewater improvements solution. Implementation of a total retention (evaporation) wastewater disposal system will eliminate the existing discharge to Beaver Creek and result in improved water quality in the stream for fisheries and for recreation.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse, long-term impacts will result. Minimal short-term, construction-related impacts will be controlled through permitting and proper construction methodology.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 29

Applicant Name	Ravalli County Environmental Health
Project Name	Bitterroot Valley Septic Systems Impact Evaluation Model
Amount Requested	\$ 96,700 Grant
Other Funding Sources	<u>\$ 14,650</u>
Total Project Cost	\$ 111,350
Amount Recommended	\$ 96,700 Grant
Project Abstract	(Prepared and submitted by applicant)

The Bitterroot Valley Septic System Impact Evaluation Tool is a groundwater study designed to help determine potential nitrate loading to groundwater from septic systems in proposed developments. The project directly addresses the crucial need to protect groundwater in Ravalli County, as the county continues to be one of the fastest growing counties in Montana. The proposed project will help the county establish a finer tool to aid in land use planning. Both the county and developers will be able to address and mitigate potential water quality degradation from nitrates by evaluating the potential for nitrate discharge and transport to the aquifer from septic systems within proposed developments.

Through various processes such as subdivision review, regulation updates, and zoning initiatives, Ravalli County is constantly asked to address the issue of potential water quality degradation. One consistent area of frustration comes from lack of data and studies to help define and address this issue.

The proposed project will build on projects under way or recently completed in Ravalli County. It will build upon and enhance the tools created during the Groundwater Vulnerability Mapping Project and the county's Septic Suitability Analysis. These tools will provide a baseline of vulnerable groundwater areas within the valley. These projects are limited by available data, and the proposed project would allow Ravalli County Environmental Health to collect relevant, on-the-ground data specifically establishing the sensitivity of groundwater to nitrate loading from potential development.

The tool will provide guidance for estimating potential impact from proposed septic systems upon groundwater quality within three to four vulnerable areas in the Bitterroot Valley. The tool will be a

scientifically defensible tool for evaluating and planning for the increase in septic systems associated with new development.

Technical Assessment

Project Background

Ravalli County has been one of the fastest growing counties in the state for nearly 20 years in a row. The Bitterroot TMDL project has identified the Bitterroot River and 13 of its tributaries as impaired due to nutrients. Increased nutrient levels in wells are becoming a significant problem in many rural and developing areas in Montana. This project is a study designed to better determine the potential nitrate loading to groundwater resulting from proposed development. Baseline water quality data collected during this project will contribute to a modeling tool that will aid in assessment of impacts from future development in the Bitterroot Valley.

Most current residents and proposed future developments in the Bitterroot Valley rely on individual, on-site wells and septic systems. The cumulative effect of these septic systems is hard to determine since little background data exist. The project objective is to develop a predictive model with flow and transport components to better understand the impacts of nutrients to groundwater and surface water resulting from on-site septic systems. Ultimately the goal of the project is to protect the aquifer that supplies drinking water to Bitterroot Valley residents and the numerous rivers and streams from nutrient pollution originating from on-site septic systems.

The applicant considered three alternatives: evaluating the entire basin, evaluating only one area, and no action.

Technical Approach

The preferred alternative is to collect data and provide models for three to four areas in the Bitterroot Valley that are susceptible to growth and increased nutrient contamination. The selected alternative was chosen due to the need for basin-wide information to assist in understanding and documenting potential impacts from development.

Environmental impacts directly relating to project implementation would be minimal since data would be collected from existing wells. Project results may provide beneficial environmental consequences to the Bitterroot Valley. The applicant has proposed an August 2009 start date and a completion date of December 2010.

Specific tasks to be accomplished:

- Send out request for proposal/select consultant;
- Conduct well sampling on chosen and approved wells;
- Consultant prepares draft model;
- Receive and incorporate comments on draft model;
- Consultant prepares final model;
- Train staff to use the model; and
- Implement model into planning and development process.

Project Management

Ravalli County Environmental Health will manage the project. The Director of Environmental Health will be project leader and grant contact. An accountant will provide contract administration. Based on information provided in the application, adequate staff will administer and manage the project. A consultant will be hired to model the selected vulnerable areas. Appropriate planning has been done, the project is ready to proceed, and will be implemented by December 2010. Public meetings will be

conducted to explain the project and to solicit homeowners to volunteer for well testing and measuring. The final model will also be presented to the public.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$1,800	\$0	\$1,650	\$3,450
Professional & Technical	\$94,900	\$0	\$13,000	\$107,900
Construction	\$0	\$0	\$0	\$0
Total	\$96,700	\$0	\$14,650	\$111,350

The budget appears reasonable to fund the project. The applicant provided a detailed breakdown of costs. The unit costs used to develop the budget appear reasonable and adequate. The only clarification regarding budget is that the application states in several locations that three to four areas will be modeled at a cost of \$15,000 to \$20,000 each (based on a consultant estimate), and the budget includes four areas modeled at a cost of \$20,000 each. If this application is funded, the final scope of work should state that four areas will be modeled. No other budget or funding irregularities were found. The cost provided for one other alternative is lower than the preferred alternative, but that alternative would not meet the goals and objectives of the project. The matching funds indicated by the applicant are in-kind services and appear to be adequate and secure.

The proposed project will affect over 1.5 million acres in Ravalli County. Approximately 40,000 individuals, 1,600 households and 600 farms and ranches may be affected by this project. The project will provide critical information necessary to minimize environmental impacts resulting from future housing developments in the area.

Benefit Assessment

The primary benefit to renewable resources is natural resource preservation, with potential development benefits. The proposed project would result in measurable future renewable resource benefits through the preservation of surface water and groundwater and will contribute to the enhancement of Montana's fisheries and wildlife habitat by providing a means of controlling and understanding nutrients resulting from on-site septic systems in the Bitterroot Valley.

Another potential resource benefit from the proposed project is resource development. By more effectively predicting nutrient loading, areas that are currently not developable may be opened for future development, thus using the valley's groundwater resource. The primary citizen benefits from the proposed project are multiple uses and economic development. At the project conclusion, measurable enhancement of recreation and fisheries and wildlife habitat will be achieved through reduced nitrate concentrations and adverse impacts to groundwater and surface water. All the above benefits are long term and would be quantified through the use of data collected as part of this project and future monitoring projects.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse long-term impacts will result. The beneficial results are primarily related to the collection of significant hydrogeologic data for use in developing a groundwater model that will be available to regulatory agencies and the general public for use in future land development decision making processes. Minimal short-term impacts will be controlled through landowner access permission.

Funding Recommendation

DNRC recommends grant funding of \$96,700 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 30

Applicant Name Bynum Teton County Water and Sewer District
Project Name Bynum Teton County Water System Improvements

Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 500,000	RD Grant
	\$ 18,000	RD Loan
	\$ 70,000	Bureau of Reclamation Grant
	\$ 195,000	CDBG Grant
	\$ 567,000	TSEP Grant
Total Project Cost	\$ 1,450,000	
Amount Recommended	\$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

Bynum severely needs water system improvements. The residents' water supply comes from very shallow private wells (12 to 18 feet) in the district. Extensive documentation shows that wells within the district are severely contaminated with coliform bacteria and nitrates (exceeding the EPA MCL for nitrate). Coliform in drinking water is evidence of direct hydraulic connection between septic systems and the water supply. This subjects district residents to the potential of a wide array of bacterial and viral infections. The DEQ considers coliform in drinking water a severe threat to public health; and in a public system, the operator would be issued a boil order. Nitrates in drinking water above the MCL is also considered a severe public health threat and can cause blue baby syndrome, gastrointestinal cancer, and spleen issues.

In addition to the quality of the drinking water source, flood irrigation practices heavily influence the wells in the district. In dry years, some of the wells in town run completely dry near the end of the summer.

The proposed solution includes developing a new groundwater supply approximately three miles west of Bynum. MBMG test drilling in this area proves that an adequate quantity of good quality water can be developed for Bynum. The confined aquifer proposed for development is well protected from contamination and an underutilized resource in this portion of Montana. The project includes construction of the well, transmission main, storage tank, distribution piping, and meters. The proposed project will meet all current DEQ standards.

The proposed project will solve serious health and safety problems with the current water supply for Bynum residents.

Technical Assessment

Project Background

The Bynum Teton County Water and Sewer District is along U.S. Highway 89 about 14 miles north of Choteau. The district includes 17 residences and nine commercial or public facilities. Bynum has no centralized water and sewer system, so each building is served by a private well and septic system. Lot sizes are typically small, creating conflicts between private water and septic systems. Some lot owners are unable to obtain permits for new septic system installations or for replacement installations. The private water systems in Bynum are shallow wells, typically less than 20 feet deep. Deeper water is not available because of a shale layer that acts as a barrier to water penetration. Many samples taken from privately owned wells at businesses serving the public have contained coliform bacteria. Samples collected from private wells in Bynum have also contained nitrates at levels exceeding the standard for public water supply systems (10 parts per million). In addition, regional drought conditions over the past 10 or more years have completely dewatered some wells and diminished production in others.

Alternatives considered included treatment and use of surface water and several groundwater supply options.

Technical Approach

Construction of a centralized water system appears the only solution for the variety of water supply problems experienced by district residents. The treatment and use of surface water were initially eliminated because of the costs associated with construction, operation, and maintenance. The applicant then evaluated in more detail several groundwater supply alternatives considered more appropriate than the surface water alternative. However, "bare-bones" alternatives such as using small-diameter piping to deliver low-volume flows from wells to individual cisterns or hauling water to cisterns were not considered. The preferred alternative includes two new wells, a water transmission main, and a new distribution system with one or more storage tanks. Existing private wells would be abandoned. The proposed improvements would be designed in accordance with DEQ standards, and DEQ would review and approve engineering plans and specifications before construction.

A test well constructed in 2007 showed that an adequate quantity of water is potentially available from the Virgelle Sandstone formation west of Bynum. The water contains fluoride in excess of DEQ's mandatory standards and the sodium level is higher than recommended levels, so individual reverse osmosis treatment units will be provided for each customer.

The first production well was constructed in 2008 with funding from the USBR. Construction of the rest of the system is scheduled from May to August 2010. The system is projected to be operational by September 2010.

Specific tasks to be accomplished:

- Secure easements for well construction from DNRC/State Lands and for the transmission main, distribution system, and storage tank from private parties; and
- Complete the following tasks in 2010:
 - Construct the second well;
 - Construct the transmission main from the wells to Bynum;
 - Construct the distribution system, storage tank, and install water meters;
 - Install individual reverse osmosis treatment units for each customer to remove fluoride; and
 - Begin system operation in September.

Project Management

The project engineer has been selected in accordance with required procurement procedures and will oversee designing, bidding, and construction of the water system improvements, for grant administration and coordination with funding agencies. The district's chief financial officer will be responsible for management and record-keeping of all funds. The district board will be responsible for project oversight, including review and coordination of project design, bidding, and construction. The board president will be the official district contact for regulatory and funding agencies. The board will also advertise and hire a certified person to operate and maintain the water system. The operator will be responsible for sampling and maintaining the individual reverse osmosis treatment units, in addition to other routine water system responsibilities. The project management narrative spells out duties for each member of the management team. The county attorney will act as the district's attorney.

The district will continue to conduct open public and board meetings at which residents can voice concerns about the proposed project. Residents will be notified before connection to the new system takes place.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$52,500	\$52,500
Professional & Technical	\$0	\$0	\$0	\$0
Construction	\$100,000	\$0	\$1,297,500	\$1,397,500
Total	\$100,000	\$0	\$1,350,000	\$1,450,000

Five different funding and system scenarios were considered. The chosen funding package consists of a TSEP grant, an RRGL grant, an RD grant, an RD loan, and a USBR grant. This funding package was chosen to pursue the most realistic grant opportunities. The proposed funding is considered feasible. Project phasing is not proposed because all components are necessary to have a properly functioning system. The system is designed to serve the population projected for design year 2026.

After project completion, the projected average residential water user fee will be \$59 per month. The new rate includes \$55 monthly for debt repayment and \$5 for O&M costs. The water rate will be 179% of the target water rate (\$32.96) for Bynum (there is no central sewer system). With 58% LMI households in Bynum, this is a significant burden.

Benefit Assessment

The proposed system would provide a beneficial use of an existing resource that is not used -- water from the Virgelle sandstone west of Bynum. Difficulty in obtaining water rights is not expected because the aquifer has not been developed in this area.

The district plans to use water meters to measure and assess charges fairly. Meter use will help ensure reasonable water use efficiency from the beginning of system operation. Meters will be installed at each well and at each customer's connection to the system. The meters will detect water leaks that could otherwise go undetected. Meter use will help ensure voluntary conservation and long-term viability of the wells, especially during drought conditions. A telemetry system will further increase system efficiency through proper control of well operation to keep the storage tank full, but not overflowing.

Other benefits include improved potential for residential and commercial development within the district. Drinking water and sewage disposal would be more easily addressed for new homes or businesses.

A new centralized water system would eliminate the risks associated with consumption of the shallow contaminated groundwater in Bynum. Public education and meetings have provided citizens with an understanding of the problem and the proposed solutions and increased support. Public meetings and education will continue to obtain citizen input.

A system operation and maintenance manual will provide increased efficiency by improving the operator's knowledge of proper maintenance and operation.

The district plans to develop a well head protection plan to protect the aquifer from degradation.

Environmental Evaluation

The proposed water system improvements should have no long-term, adverse effects on the environment. The aquifer that will supply water to residents is not being used by others, so there should be no adverse impact to existing water users. Short-term, negative environmental concerns associated with construction, e.g., noise and dust, can be averted by using best management practices and obtaining appropriate permits from regulatory agencies.

Individual reverse osmosis treatment units will be installed for each customer to remove excess fluoride and sodium from the drinking water. Improved public health protection would result from consumption of water unaffected by wastewater systems or contamination.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 31

Applicant Name	Lake County
Project Name	Lake County LiDAR Mapping
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 6,102 Applicant
	<u>\$ 5,185</u> DNRC in kind match
Total Project Cost	\$ 111,287
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Lake County is in northwestern Montana and encompasses 1,651 square miles. The Flathead Indian Reservation overlaps two-thirds of the county. Of the total acreage of Lake County, 41% is privately owned, 49% is owned by tribal, federal, state, or local government, and 10% is surface water.

Lake County lies at the southern end of the Flathead Basin, a watershed that drains approximately 6 million acres of northwestern Montana and southeastern British Columbia. Water from this basin flows into the Clark Fork River and eventually into the Columbia River. The waters of the Flathead Basin are renewable resources that play a vital role in the lives of Lake County's citizens and visitors. These waters support fish and wildlife as well as domestic, municipal, irrigation, stock watering, manufacturing, and recreational uses.

Over the past 15 years, the population of Lake County has grown by 28%. In the last five years alone, the population has increased by 5.3%. As the population of Lake County and the region expands, it becomes increasingly important to protect Flathead Basin waters. Accurate data are needed to improve flood hazard mapping, identify steep slopes and environmentally sensitive areas, maintain riparian setback/buffer distances, and better protect and restore riparian buffer areas.

Little accurate elevation data exist for the Flathead Basin. This project would use LiDAR technology to obtain two-foot contour elevation data for portions of the Flathead Basin, specifically Flathead and Swan lakes. The information would significantly improve the decision-making capabilities of the county, as well as other local, state, and federal agencies, while better protecting, managing, and conserving the renewable resources of the Flathead Basin.

Technical Assessment

Project Background

Population in Lake County has grown 28% in the last 15 years and 5.3% in the last five years alone. In order to better manage development and protect natural resources, accurate elevation and floodplain data are needed. Lake County proposes using Light Detection and Ranging (LiDAR) technology to obtain digitally formatted two-foot elevation contour intervals around critical water resources in the county. The data would be used to create an accurate, scientifically defensible, floodplain boundary map which would help improve floodplain hazard mapping, identify steep slopes and environmentally sensitive areas, and maintain and better protect riparian setback/buffer distances and areas.

Technical Approach

LiDAR was selected as the preferred alternative to obtain accurate elevation data based on its accuracy, ease of implementation, precision in heavily forested areas, relative cost, and its ability to provide value-added data in the future. LiDAR topographic mapping is accomplished by sending laser pulses from aircraft at rates up to 150,000 pulses per second and recording them as they reflect off bare earth, tree tops, powerlines, shrubs, buildings, and even grasses.

Other alternatives considered included ground survey, aerial photogrammetric, and Interferometric Synthetic Aperture Radar (IFSAR) mapping techniques. Ground survey techniques are labor intensive, and given the size of the project area, not practical. Aerial photography would provide similar contour interval details but at higher costs. Aerial photographs would also not provide the added-value benefits that can be obtained using LiDAR technology. IFSAR technology, using radar microwave transmission from an aircraft would only be capable of providing five-foot contour intervals, but does not work well in areas of dense vegetation along forested shorelines and riparian corridors. LiDAR technology was chosen because it is more cost effective and can provide the detail needed to produce accurate two-foot contour interval maps.

The proposed project area includes 91 square miles of Lake County, primarily Flathead Lake shoreline, Flathead River, Swan Lake shoreline, the Swan River, the city of Polson, and smaller town sites. Completion of this project would cause no adverse environmental impacts.

The project is slated to begin in July 2009 with completion in June 2010 or 2011 depending on ground cover conditions.

Specific tasks to be accomplished:

- Proposal development and contracting;
- Contractor mobilization, data collection, and processing; and
- Data management.

Project Management

The Lake County Planning Department, coordinating with the Floodplain Management Section of the DNRC, would provide technical and administrative project oversight, regional cooperation, public information, and ultimate financial monitoring for this project. The project would also coordinate with the Federal Emergency Management (FEMA) Floodplain Map Modernization Program and the Montana State Library's Natural Resource Information System.

If grant funding is also obtained by the Flathead Basin Commission (FBC), a collaborative effort between Lake County and the FBC would ensure that the entire Flathead Lake boundary and its critical tributaries would be mapped by LiDAR into one dataset.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$11,163	\$11,163
Professional & Technical	\$100,000	\$0	\$124	\$100,124
Construction	\$0	\$0	\$0	\$0
Total	\$100,000	\$0	\$11,287	\$111,287

The project would use 100% of the grant funding for professional and technical services in collecting and composing LiDAR generated topographic information. No construction costs are associated with this project. Completion of this project would result in no increase in operations and maintenance costs. Administrative costs for this project would be covered by in-kind matches from Lake County and the DNRC.

The cost of professional and technical services for LiDAR mapping is based on proposals prepared for Lake County and the FBC and appear reasonable and adequate given the scope of the project. The cost of using LiDAR is \$1,100 per square mile, but drops to \$631 per square mile if Lake County and the FBC collaborate on mapping efforts. The estimated costs for alternatives considered ranged from \$100 per square mile using IFSAR to \$50,000 per square mile using ground survey techniques. IFSAR was not selected because it is less accurate than LiDAR and does not allow precision in areas of dense vegetation such as riparian corridors and forested shorelines.

Benefit Assessment

Data collected in this project would result in an accurate topographic map of the project area. Final elevation contour data would be available to the public via the Montana State Library's Natural Resource Information System. The comprehensive and accurate topographic information produced from this project can then be used as a resource management tool to benefit the county and the water resources of Flathead and Swan lakes and their tributaries. Primary benefits of this project include accurately locating the floodplain, locating areas of steep slopes, and locating areas of significant vegetative cover. These primary benefits would aid the county in enforcing natural resource management decisions in support of lakeshore protection regulations, floodplain regulations, subdivision and sanitation regulations, and local zoning ordinances. These regulations and ordinances are intended to support water quality enhancement through shoreline buffer and steep slope development restrictions. The project would supply the county with an accurate, quantifiable, and defensible baseline in which these regulations can be enforced and therefore protect and enhance the natural water resource of the region through management practices.

The benefits associated with this project are not quantified in the application. The benefits to citizens and natural resources from this project, other than an accurate topographic map, are intangible and would only be realized through the development of tools and prudent management decisions based on accurate data.

LiDAR appears to be sound technology and would provide crucial data for planners and decision makers in Lake County. This project is a sound first step, but by itself would do nothing to improve water resources in the Flathead Basin. The implementation of tools and resources that use LiDAR data from this project is cornerstone to providing benefit to the water resources of the Flathead and Swan lakes area and the people who inhabit them.

Environmental Evaluation

No adverse environmental impacts would result from this project. Potential environmental benefits resulting from implementing data collected in this project include:

- Identify steep slopes to avoid or minimize development in environmentally sensitive and important riparian areas;
- Improve fire fuel hazard mapping to assist in identifying and mitigating wild land fire hazards;

- Improve floodplain mapping to determine flood risks and protect floodplains;
- Provide data for implementation of important planning efforts to protect and improve surface water quality and decrease the negative impacts of storm water runoff;
- Provide vegetation mapping to update and protect wetlands and designate riparian buffer zones to improve and protect aquatic habitat and terrestrial wildlife species;
- Improve water quality in the Flathead Basin through maintenance of intact floodplains that provide important groundwater filtration and recharge;
- Provide topographic data beneficial to the planning, siting, and construction of facilities;
- Provide the county with critical data related to ordinance enforcement, subdivision approval, zoning conformance, lakeshore and sanitation permits, and environmental protection; and
- Provide important information for landowners, developers, contractors, and municipalities in regard to location, design, and construction of on-site wastewater treatment systems and in identifying surface water drainage patterns.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 32

Applicant Name	Ravalli, County of
Project Name	Water Resource Protection and Flood Hazard Identification Using LiDAR Mapping Technology for Ravalli County, Phase 2
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 14,526 Applicant
Total Project Cost	\$ 114,526

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Ravalli County makes up the majority of the Bitterroot River watershed and is consistently one of the five fastest growing counties in Montana with 10.7% growth from 2000 to 2005. Flood hazard identification and water resource protection planning efforts rely on archaic elevation data consisting of 20-foot to 40-foot contours from U.S. Geological Survey maps available only in paper format. This introduces a costly margin of error in any project requiring ground elevations. In short, Ravalli County citizens, planners, and local decision makers are attempting to deal with rapid growth using inadequate data.

LiDAR mapping is widely accepted as the most efficient and cost-effective means of acquiring digital elevation and terrain data. With impressive accuracy, LiDAR mapping has become the standard for topographic mapping nationwide. Ravalli County has been successful in efforts to protect and conserve water resources and is administering an RRGL grant for LiDAR mapping in the northern portion of the Bitterroot Valley. This second phase of LiDAR mapping must be completed to continue the identification of flood-prone areas. Appropriate steps can then be taken to ensure that the growing population is reasonably safe from flooding. In addition, the two-foot contour data could assist the county in establishing riparian setbacks and buffers to protect precious water resources.

Accurate LiDAR data will not only provide valuable topographic detail to support a variety of land use planning, policy, and regulatory decisions but also will greatly enhance the well-being of Montanans through local management activities that will protect and conserve valuable water resources, open land, fish and wildlife habitats, preserve water quality and quantity, and reduce erosion. The data will be an essential planning tool during this time of rapid change and growth, as well as into the future.

Technical Assessment

Project Background

Ravalli County makes up the majority of the Bitterroot River watershed and has experienced a 10.7% population growth from 2000 to 2005. Increased growth highlights a need to protect the county's water resources. To support the fair administration of county planning and permitting, accurate elevation and floodplain data are needed. Flood hazard identification and water resource protection planning efforts in the Bitterroot Valley rely on topographic maps with 20- to 40-foot contours. This interval can be cause for subjectiveness involving decisions for floodplain delineations, steep slopes, zoning regulations, and subdivision and sanitation compliance review. Ravalli County proposes using Light Detection and Ranging (LiDAR) technology to obtain digitally formatted two-foot elevation contour interval data. The acquisition of LiDAR data is less expensive than traditional ground surveying and requires less investment and better accuracy than radar mapping. LiDAR data would create an accurate, scientifically defensible watershed map which would enhance subdivision review, groundwater monitoring, wastewater and floodplain permitting, land use planning designations, sensitive area designation, and riparian corridor setbacks for high-value structures. This project is the second of three phases to map key areas of the Bitterroot Valley in Ravalli County using LiDAR technology.

Technical Approach

LiDAR technology was selected as the preferred alternative to obtain accurate elevation data based on its accuracy, ease of implementation, relative cost, and its ability to provide valuable data. LiDAR technology mapping is a relatively new technology in topographic data collection that uses a "shot-gun pattern" of laser transmissions from an aircraft. Laser pulses are sent from the aircraft at rates up to 150,000 pulses per second and recorded as the pulses are reflected off the earth. This technology allows for rapid capture of precise bare earth topography in heavily forested terrain. In addition to bare earth topography, it also detects and records the presence and elevation of treetops, powerlines, shrubs, buildings, and even grasses. Large areas of dense vegetation can be mapped with extreme accuracy for relatively little cost. The topographic data are stored in digital format and would be used to develop watershed maps of Ravalli County and to support resource planning decisions.

Other alternatives considered included use of ground survey radar mapping techniques. Ground survey techniques are labor intensive and, given the size of the project area, are more costly and infeasible. Radar mapping, using radar microwave transmission from aircraft would only be capable of providing five-foot contour intervals at reduced horizontal and vertical accuracy. Radar technology does not work well in areas of dense vegetation along riparian corridors and forest cover. LiDAR technology was chosen because it is more cost effective and can provide the detail needed to produce accurate two-foot contour interval maps.

This project is submitted as a stand-alone project, but is Phase 2 of a proposed three-phase project. Phase 1, funded by RRGL, covered 185 square miles of the county. Phase 3 will cover the remaining area. The proposed project area includes 156 square miles of Ravalli County, from Victor to the Grantsdale community immediately south of Hamilton. Ravalli County has adopted floodplain maps for the main stem, East Fork, and West Fork of the Bitterroot River. The floodplains of the tributary creeks and streams are not mapped. As a result, the county is unable to regulate development in these areas.

This project would be accomplished through the county contracting with a qualified LiDAR expert. The project is slated to begin in July 2009 and would be ready for delivery in December 2009. The selected contractor would provide all required goods and services to deliver a final digital product in a format compatible with the county's geographic information system (GIS). Final elevation contour data would be incorporated as a base map into the FEMA Floodplain Map Modernization Program scheduled for Ravalli County. The data would be available to county planners, Streamside Setback Committee members, and other organizations managing water resources.

Specific tasks to be accomplished:

- Contractor selection;
- LiDAR survey; and
- Data delivery.

Project Management

The project management team is the same team responsible for successful implementation of the 2006 RRGL grant for the Phase 1 LiDAR mapping program. The team consists of a floodplain administrator responsible for grant administration and overall project management, a GIS director for technical guidance, and a planning director responsible for project review. The staff is adequate and experienced. The project management plan identifies duties for each member of the management team. The team has adequately prepared the project for implementation in July 2009. The project would be coordinated with the following state and federal agencies to ensure that data obtained from this project would be available for incorporation elsewhere:

- Montana DNRC's Floodplain and Dam Safety programs;
- Federal Emergency Management (FEMA) Floodplain Map Modernization Program; and
- Montana Natural Heritage Program's mapping of riparian areas and wetlands.

Ravalli County would continue to notify the public of the status of the LiDAR mapping project and conduct public meetings in the course of arriving at and implementing land use planning decisions.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$5,962	\$5,962
Professional & Technical	\$100,000	\$0	\$8,564	\$108,564
Construction	\$0	\$0	\$0	\$0
Total	\$100,000	\$0	\$14,526	\$114,526

The project would use 100% of the grant funding for professional and technical services in collecting and composing LiDAR-generated topographic information for 156 square miles. No construction costs are associated with this project. Completion of this project would result in no increase in operations and maintenance costs. Administrative costs for this project would be covered by in-kind matches from Ravalli County.

The cost of professional and technical services for LiDAR mapping is based on proposals prepared for Ravalli County, and appear reasonable and adequate given the scope of the project. Proportionally small amounts of matching funds are required to complete the proposed project. The county successfully managed a similar budget during Phase 1 of this mapping project. LiDAR costs approximately \$695 per square mile, including administrative costs. The estimated costs for alternatives considered ranged from \$70 per square mile using radar mapping to \$50,000 per square mile using ground surveys. Radar mapping was not selected because it is less accurate than LiDAR and requires a substantial investment from the county to process generated data into an accessible format.

Benefit Assessment

The data collected in this project would comprise an accurate topographic map of the project area and elevation contour data would be available to interested parties. The comprehensive and accurate topographic information produced from this project would be a useful tool for managing development in Ravalli County and protecting the Bitterroot watershed and its ecosystem. Primary benefits of this project include accurately locating floodplains, identifying vulnerable water resources, and providing environmental protection for the Bitterroot River and its tributaries. These primary benefits would aid the county in enforcing natural resource management decisions in support of floodplain, subdivision and sanitation regulations, and local zoning ordinances. These regulations and ordinances are intended to

support water quality enhancement through shoreline buffer and steep slope development restrictions. The project would supply the county with accurate, quantifiable, and defensible baseline data to enforce regulations and therefore protect and enhance the natural water resource of the region through management practices.

The benefits associated with this project are not numerically quantified in the application. Other than an accurate topographic map, the benefits to citizens and natural resources from this project are intangible and would be realized only through development of tools and prudent management decisions based on accurate data.

LiDAR appears to be sound technology and would provide crucial data for planners and decision makers in Ravalli County. This project is a good first step, but by itself would do nothing to improve water resources in the Bitterroot Valley. The implementation of tools and resources that use LiDAR data from this project is cornerstone to benefiting the water resources of the Bitterroot Valley and its inhabitants.

Environmental Evaluation

No adverse environmental impacts would result from completion of this project. Potential environmental benefits resulting from implementing data collected in this project include:

- Identifying and protecting important riparian and environmentally sensitive areas;
- Improving fire fuel hazard mapping to assist in identifying and mitigating wild land fire hazards;
- Providing critical data to improve floodplain hazard mapping to protect floodplains and determine flood risks;
- Providing data for planning efforts to protect and improve surface water quality and decrease the negative impacts of storm water runoff;
- Providing vegetation mapping to update and protect wetlands and designate riparian buffer zones to improve and protect aquatic habitat and terrestrial wildlife species;
- Improving water quality in the Bitterroot Valley through maintenance of intact floodplains that provide important groundwater filtration and recharge;
- Providing topographic data beneficial to the planning and construction of developments in suitable areas and capital improvement plans;
- Providing the county with critical data related to planning, ordinance enforcement, subdivision approval, zoning conformance, sanitation permits, and environmental protection; and
- Providing important information for landowners, developers, contractors, and municipalities in regard to location, design, and construction of on-site wastewater treatment systems and in identifying surface water drainage patterns.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 33

Applicant Name Judith Gap, Town of
Project Name Judith Gap Water and Wastewater System Improvements

Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 750,000	TSEP Grant
	\$ 450,000	CDBG Grant
	\$ 60,000	RD Grant
	\$ 50,000	RD Loan
	<u>\$ 258,000</u>	Local
Total Project Cost	\$ 1,668,000	

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Because the Department of Transportation (DOT) has scheduled highway reconstruction in 2010, Judith Gap realizes that utilities within the construction must be the highest priority. DOT policy requires that communities affected by highway reconstruction bear the cost of pipe, manholes, service connections, valves, and all ancillary items to guarantee a 20-year operating life of the utility.

Numerous other deficiencies exist throughout the wastewater system. Original manholes were constructed with brick and mortar and have inadequate and unsafe access. Sewer main problems include structural damage, plugging, sewage backup, likely exfiltration, evidence of clay tile debris in the system, with a possibility of major failure.

Four-inch cast iron pipe and many other small-diameter water mains are incapable of supplying required domestic and fire flows. The distribution system leaks and petroleum contamination could occur along Highway 191. Petroleum hydrocarbons could permeate the water system, especially considering the pipe material (cast iron) and condition. The water storage tank needs final rehabilitation and ladder system upgrades to address health and safety issues. A few remaining services require meters.

Recommended improvements include replacement of the water and sewer mains, manholes, valves, hydrants, and services within the Highway 191 corridor. The town is seeking funding to replace 4,346 lineal feet of cast iron water main, 1,538 lineal feet of ¾-inch copper service line, 11 hydrants, 47 service connections, 10 water main connections, and miscellaneous water storage tower improvements. The water tower upgrades include a new riser pipe, frost jacket, expansion joints, overflow pipe, drain pipe, access ladders, anti-climb/vandal gate, safety climb device with harness, raised railings, ladder pass-through, and frost-proof vent. The project also includes replacement of 3,540 lineal feet of sewer main, 13 manholes, and 19 service connections.

Technical Assessment

Project Background

This project includes improvements to both the water and sewer systems of Judith Gap, a community of about 145 people in central Montana. This project is in response to a DOT requirement that all water and sewer mains be upgraded to a minimum 20-year operating lifespan before reconstruction of highway through a community. The highway project is scheduled for 2010; all water and sewer improvements within the highway right-of-way must be accomplished before this date.

A PER evaluated the condition of the entire water and sewer systems. The PER resulted in recommendations to replace several blocks of water distribution piping and sewer mains. The project also includes rehabilitation of a steel elevated water storage tank and the installation of six water meters. When this project is completed, all water users in Judith Gap will have meters.

Technical Approach

The primary project goal is replacement of water and sewer mains in the highway right-of-way through Judith Gap. Additional sewer collection system improvements were prioritized based on maintenance records and television inspection. Additional water system improvements were prioritized to improve fire flows and supply for domestic demand. Beyond the highway right-of-way, the project was expanded as could be afforded to include an additional 1,904 feet of eight-inch water main and an additional 2,150 feet of sewer main.

The project also includes improvements to an elevated steel water storage tank, the only tank serving the town. These improvements include riser pipe replacement, overflow and drain pipe replacement, installation of a ladder cage, and installation of fall protection and locking devices.

The most significant environmental issue associated with the project is petroleum contaminated soil from nearby leaky underground fuel storage tanks. DOT has addressed these issues in preparation of its project. The project design will be complete and submitted to DEQ for approval. The applicant expects to advertise for construction bids in March 2010; construction is scheduled for completion by September 2010.

Specific tasks to be accomplished:

- Install/replace 3,540 lineal feet of eight-inch pvc sewer main;
- Install/replace 13 48-inch sewer manholes;
- Install/replace 4,054 lineal feet of eight-inch pvc water main;
- Install/replace 292 lineal feet of six-inch pvc water main;
- Install/replace 19 eight-inch water valves;
- Install/replace 11 fire hydrants;
- Make miscellaneous water tank repairs and safety upgrades; and
- Install six water meters.

All tasks included appurtenant components and materials necessary to complete the project.

Project Management

The project management team includes the town mayor, town clerk-treasurer, town attorney, and contracted consulting engineer who will provide project management and design and construction management. The portion of the project within DOT right-of-way is ready for construction; it has been designed and has received DEQ approval. The design of the remainder of the project will be completed in advance of construction, planned for summer 2010. Public meetings will be conducted in conjunction with regularly scheduled town council meetings throughout the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$63,300	\$63,300
Professional & Technical	\$50,000	\$0	\$250,000	\$300,000
Construction	\$50,000	\$0	\$1,254,700	\$1,304,700
Total	\$100,000	\$0	\$1,568,000	\$1,668,000

The project budget is complete and includes a committed CDBG grant for \$242,965 and committed funds from DOT for \$258,000. The applicant has applied for a second CDBG grant (\$207,035) and a TSEP grant (\$750,000). Revised RD grant (\$60,000) and RD loan (\$50,000) applications will be submitted in early 2009.

An irregularity in cost estimating has reduced the amount of available contingency on the project. The PER recognized a \$39,600 deficit between the budget and cost estimates and states that the shortfall can be accounted for in the contingency. This effectively reduces the total contingency for the project from \$110,000 to about \$70,000.

The water and sewer system serves 76.4 equivalent residential units (EDU) in 69 connections. Users will experience a significant combined monthly user rate increase from \$34.68 to \$53.35 per EDU as a result of this project. As the local government, Judith Gap has authority to collect charges for operation, maintenance, and debt retirement.

Benefit Assessment

The project will enhance renewable resources by providing several benefits. The first is the replacement of leaking sewer mains. Television inspection verified existence of these leaks. Although not quantifiable, sewer main replacement will prevent introduction of sewage into the groundwater.

The project will also eliminate water system leakage. Leakage of about 520,000 gallon per year is documented by comparing master water meter records to individual meter records. This project will not address all leakage, since all piping will not be replaced. Reduced pumping and chemical treatment will result in energy conservation.

Environmental Evaluation

The most significant environmental issue for this project is several leaky underground fuel storage tanks along the highway right-of-way. DOT completed both a Phase 1 and Phase 2 environmental site assessment of the corridor and verified petroleum-contaminated soil in two locations. This contamination will be mitigated as a part of the DOT highway project.

Short-term dust emissions are expected during construction and will be mitigated by watering the construction area. Groundwater quality should improve as a result of eliminating leaky sewer pipes. No adverse long-term impacts are expected.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 34

Applicant Name	Crow Tribe of Indians
Project Name	Crow Agency Wastewater System Improvements, Phase 3a
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 750,000 TSEP Grant
	\$ 200,000 Coal Board Grant
	\$ 1,100,000 ICDBG Grant
	\$ 300,000 STAG & WRDA Grants
	<u>\$ 1,523,000</u> RD Loan
Total Project Cost	\$ 3,973,000
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The Crow Tribe is carrying out a four-phase master plan for major capital improvements to water and wastewater infrastructure at Crow Agency. At the time of submitting this application, a new main

interceptor line is under construction as part of Phase 1 improvements. Phase 2 improvements, construction of a new wastewater lagoon, are scheduled to begin in summer 2008. With the new interceptor and lagoon in place, the need to secure funds for construction of Phase 3 improvements, new wastewater laterals, is imminent.

The wastewater collection system was constructed in 1911 and has evolved through numerous additions and reconstruction. Cracked pipes, root penetration, sagging lines, offset joints, and settling are evident in many parts of the lateral system. Water/sewer system operating logs detail approximately 190 sewer line or manhole backups over eight years. Due to incompleteness of the operating logs, the actual sewer backup incidence is probably significantly higher. Recognizing the expense of constructing new laterals throughout the community at one time, the project has been broken into two parts. Phase 3a, the focus of this application, will construct new laterals in the central sector to correct the most critical and problematic lines.

The project is a perfect example of the type of project the RRGL program is designed to support. Keeping raw sewage in wastewater pipes and adequately treating it protects public health and the environment. When sewer backups occur in Crow Agency they can threaten public health, pollute the Little Bighorn River, and violate the federal Clean Water Act. Construction of a new lateral system will protect water, fisheries, and soil from pollution and destruction.

Technical Assessment

Project Background

The wastewater system was built in 1911. Over the past 90 years the collection system has evolved through additions and reconstruction. Mains range from four to 12 inches in diameter. System records are incomplete. The PER determined that the aging, deteriorating, wastewater collection system in Crow Agency needs to be reconstructed. Reported sewer backups in basements, sewer lines, and manholes are sources of concern. Flow data were not presented. The goal of the project is to replace or rehabilitate sewer lines in the central sector of town to eliminate environmental, health, and safety hazards. Alternatives considered in the evaluation were: no action, replace sewer mains using traditional open-cut excavation, pipe bursting, and slip lining.

Technical Approach

Due to the extent of the problems with the wastewater system, the engineering analysis used a phased approach to create affordable project components. Because of the large scope of the needed improvements, the work has been broken into two phases, 3a and 3b. The proposed project, Phase 3a, involves construction of new laterals in the central sector of Crow Agency to correct the most critical and problematic sewer pipes. Sewer lines in the sector will be videoed during design and those lines identified by the Tribe as most critical will be addressed. Construction methods selected are traditional open-cut excavation and slip lining. If pipe rehabilitation is viable, all forms of slip lining will be considered in the final design stage. However, in many cases pipe replacement using open-trench construction will be the only viable option. Manholes identified as options for rehabilitation will be bid as an alternative.

Construction is slated to begin in August 2010 and end in May 2011.

Specific tasks to be accomplished:

- Televising sewers to determine which laterals should be replaced or rehabilitated; and
- Replacing and rehabilitating sewer laterals.

Project Management

The chairman of the Crow Tribe will be responsible for all official contracts with funding agencies, consultants, and construction contractors. The chairman of the Apsaalooke Water and Wastewater Authority will have ultimate authority and responsibility for management of project activities and

expenditure of funds and will be the contact person in all contracts. The Crow Tribe accountant for grant programs will manage and keep records of funds. The Tribe will hire a program manager consultant to provide overall project management and ensure compliance with applicable federal and state requirements. The program manager will serve as the Crow Tribe's liaison with funding agencies. The project engineer has been selected and has provided design plans and construction monitoring for numerous wastewater projects, including phases 1 & 2. Consultants will participate in weekly meetings to report progress.

The PER has been completed; depending on funding, the project is ready to proceed with design in February 2010.

Numerous water and wastewater commission meetings have been and are open to the public. A formal public hearing held in March 2008 in Crow Agency regarding the wastewater system and proposed improvements. The Crow Tribe and Apsaalooke Water and Wastewater Authority will continue to update the public about the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$155,000	\$155,000
Professional & Technical	\$0	\$0	\$621,000	\$621,000
Construction	\$100,000	\$0	\$3,097,000	\$3,197,000
Total	\$100,000	\$0	\$3,873,000	\$3,973,000

Three different scenarios were considered. The proposed funding package consists of a TSEP grant, RRGL grant, Coal Board grant, ICDBG grant, STAG and WRDA grant, and an RD loan. Applications for the Coal Board grant, ICDBG grant, and RD loan have not been submitted. These applications will be submitted in 2009 in accordance with grant schedules. The budget is complete, although it covers the combined water and wastewater system, and it contains enough detail to show adequate funding to complete the project. Crow Agency has 336 residential units with current combined rates of \$40 /month/user and assumes an 80% collection rate. The Bureau of Indian Affairs (BIA) operates the billing and collection system. BIA plans to transfer these responsibilities to the Tribe. The projected average monthly combined residential user rate, after project completion, is \$68.65. The Crow Tribe is firmly committed to charging its residential water and wastewater users a flat rate of \$45/month. The Crow Tribe is making this commitment based on knowledge of the high poverty rate (40.9%) and low and moderate-income households (62.4%) in Crow Agency. The Crow Tribe is committed to paying, out of its general fund, the anticipated difference between \$68.65 and \$45, \$23.65/month for residential users. If a particular funding source is not received, the Crow Tribe will consider increasing its loan request. If the proposed funding scheme materializes, the Crow Tribe will begin working with RD to secure a loan in 2009.

Benefit Assessment

Construction of a new lateral system in Crow Agency will preserve and protect water, fisheries, and soil from pollution and destruction. Water/sewer system operating logs detail a significant number (190) of sewer line or manhole backups since 1997. Overflowing raw sewage can possibly reach and pollute the Little Bighorn River, threaten public health, damage property, pollute the environment, and violate the Federal Clean Water Act. Exposure to raw sewage either directly or through a vector, may cause disease and illness among Crow Agency residents or downstream communities. This project will preserve and protect resources as noted above.

Environmental Evaluation

Environmental effects associated with the proposed project are mainly beneficial. Elimination of surcharging and leaking sewer lines is anticipated to improve air quality, groundwater, surface water, and public health. Upgrading the sanitary sewer system will allow controlled growth and possible commercial

and industrial growth, potentially resulting in increased employment opportunities. No apparent adverse, long-term environmental impacts exist. Minimal short-term, construction-related impacts would be controlled through proper construction observation and control.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget and funding package.

Project No. 35

Applicant Name Stevensville, Town of
Project Name Stevensville Wastewater Improvements, Phase 1

Amount Requested \$ 100,000 Grant
Other Funding Sources \$ 100,000 Applicant
 \$ 311,420 RD Grant
 \$ 726,630 RD Loan
Total Project Cost \$1,238,050

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Stevensville proposes a three-phased approach to upgrade and expand its WWTP. Phase 1 improvements will address deficiencies in the system noted by DEQ and requirements of the MPDES permit. These improvements will bring the WWTP into compliance with requirements of the MPDES permit, including outfall permitting, disinfection, and polishing pond permitting/decommissioning. In addition, the town will install emergency power to meet the requirement of DEQ-2. Total proposed cost for these improvements is \$1,076,233.

Phase 2 will improve the functionality of the WWTP headworks, installing modern, mechanized screening and screening dewatering equipment with grit removal capability.

Phase 3 includes improvements to the biological treatment capacity of the WWTP, allowing the plant to better meet current and proposed effluent nutrient limitations.

Phase 1 will preserve the integrity and quality of the Bitterroot River by allowing the plant to remove pathogenic microorganisms from the effluent stream through ultraviolet disinfection. In addition, proposed improvements will reduce the impact of the WWTP on groundwater, and provide a back-up power system reducing the risk of discharging untreated wastewater.

Phase 2 will result in a more efficient WWTP and reduce unnecessary degradation of other equipment within the WWTP by removing grit and rags at the headworks. In addition these improvements will eliminate the need for plant personnel to handle screened material.

Phase 3 will help the WWTP to meet requirements of the current MPDES permit, the future Bitterroot River TMDL, and future instream water quality standards by focusing on improvements to the biological treatment capacity of the WWTP.

In addition, improvements will renew, replace, or upgrade systems and equipment at the end of their useful life.

Technical Assessment

Project Background

The Stevensville wastewater system was built in 1979 and is nearing the end of its useful life. The last major improvements were in 1998. The PER noted the following deficiencies in the wastewater treatment system: manual bar screen requiring personnel to handle screened material multiple times and posing a health risk, no grit removal capabilities resulting in failing submersible pump systems, leaking oxidation ditch resulting in infiltration and the potential for groundwater contamination, the oxidation ditch lacks adequate capacity to perform biological nutrient removal, leaking polishing pond resulting in infiltration and the potential for groundwater contamination, and lack of back-up power source greatly increasing the risk of discharging inadequately treated sewage. MPDES permit issues, including disinfection, must be addressed by July 31, 2010. Alternatives evaluated: no action, disinfection, polishing pond permitting, outfall, secondary biological treatment, screening, grit removal, and emergency power.

Technical Approach

Because of the extensive problems with the wastewater system, a three-phased approach to create affordable components to upgrade and expand the wastewater treatment system is proposed. Phase 1 will address deficiencies in the system noted by DEQ and meet requirements of the MPDES permit. The work involves outfall permitting, polishing pond permitting/decommissioning, UV disinfection, and emergency power.

Construction is slated to begin in spring 2010 and end by July 31, 2010.

Specific tasks to be accomplished:

- Install new UV disinfection facility;
- Install new backup power;
- Permit polishing pond and retain for backup; and
- Obtain permit for existing outfall.

Project Management

The mayor will have overall responsibility for the project, oversee grant administration, and manage fiscal responsibilities. The water and wastewater superintendent will coordinate activities and communication between the engineers, contractors, and grant administrator, and manage the schedule, cost, and quality of the project. The town will contract for engineering services and grants administration. The selected engineer will be the primary contact between the project management team and the contractor. The grant administrator will work with each agency to ensure compliance with project requirements.

The PER is complete and, depending on funding, the project is ready to proceed with design in July 2009.

The town and engineer inform the public through regular updates at town council meetings and information in area newspapers.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$96,960	\$96,960
Professional & Technical	\$0	\$0	\$224,350	\$224,350
Construction	\$100,000	\$0	\$816,740	\$916,740
Total	\$100,000	\$0	\$1,138,050	\$1,238,050

Stevensville intends to use a combination of RRGL grant, RD grant, RD loan, and town funds to finance the Phase 1 project. The town has committed \$100,000. The budget is reasonable, complete, and

includes detail to show it is sufficient to complete the project. If any grants are not received or substantially reduced, the town will consider implementing an additional phased approach for implementing the project. The town will work with available cash reserves and potential loan programs to accomplish the minimum requirements necessary to meet MPDES permit requirements.

The applicant is a local government and can collect charges for operation and debt. Current residential charge for wastewater service is \$35.09 per month. Projected residential rate is \$40.09 per month affecting 669 households. Combined water and sewer rates are projected to be \$69.23 per month, which exceeds the DOC target rate of \$50.36.

Benefit Assessment

The proposed Phase 1 improvements, UV disinfection, lagoon decommissioning, outfall permitting, and back-up power, will protect the integrity of the neighboring Bitterroot River and Bitterroot Valley aquifer by preventing untreated wastewater discharge and providing a safe means of disinfecting effluent before discharge. Removing the leaking polishing pond from the treatment process will prevent groundwater contamination. The project will benefit Montana’s renewable water resources by preserving and protecting them from contamination.

Environmental Evaluation

Environmental effects associated with the proposed project are mainly beneficial. Surface water in the Bitterroot River will be protected by installation of the UV disinfection system. Lagoon decommissioning will protect groundwater from contamination. Additional energy will be used by the UV disinfection system, a minor, unavoidable impact. Environmental impacts associated with the project were evaluated with no major apparent, long-term impacts are expected. Minimal short-term, construction-related impacts would be controlled through proper construction observation and control.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget and funding package.

Project No. 36

Applicant Name	Flathead County
Project Name	Bigfork Storm Water Facility Improvements
Amount Requested	\$ 100,000 DNRC Grant
Other Funding sources	\$ 625,000 TSEP Grant
	\$ 776,000 SRF Loan
	\$ 14,000 Local Contribution
Total Project Cost	\$ 1,515,000
Amount Recommended	\$ 100,000

Project Abstract (Prepared and submitted by applicant)

Flathead County is requesting support for an urban storm water improvements project in the community of Bigfork. Storm water discharges directly into Bigfork Bay with minimal or no effluent treatment. With significant increases in development and population growth, pollutant levels in Flathead Lake are rising. This project will address infrastructure needs through installing effective storm water conveyance and filtration systems, reducing runoff contaminants, and water quality degradation in Flathead Lake.

Flathead Lake is a listed A-1 water body, and is on the 303 (d) list of impaired waterbodies in Montana. According to testing conducted in the late 1990s by Flathead Lake Biological Station (FLBS), the primary

storm water site in Bigfork exceeded EPA benchmark values for total suspended solids, aluminum, iron, and zinc. Additionally, FLBS found 2,700 fecal coliform bacteria per 100 ml of storm water tested. This exceeds the EPA human contact guidelines of 235/100 ml for a public swimming area. It is vitally important to initiate storm water solutions to protect public safety and the aquatic ecosystem from pollution and destruction.

Flathead Lake is an outstanding aquatic resource important to our county, as well as a crown jewel for the entire state. As Montanans, we have a responsibility to alleviate water pollution from inadequately controlled runoff. Steps must be taken to reverse the downward trend of water quality in Flathead Lake and to protect this resource now and for future generations. RRGL funds will help with final design plans and implementation of system upgrades. Improvements will address storm water conveyance and filtration challenges and ultimately protect and improve water quality in one of Montana's most significant renewable resources, Flathead Lake.

Technical Assessment

Project Background

Storm water runoff from Bigfork is a contributing source of pollutants impairing Flathead Lake. Tests show storm water runoff from Bigfork contains high concentrations of fecal coliform bacteria that exceed EPA criteria for human contact. The runoff also contains high levels of nutrients such as phosphorus and nitrogen that increase plant and algae productivity in the water and deplete oxygen levels in the lake. The interest in improved storm water facilities is in response to health and safety, flood control, and Flathead Lake water quality concerns.

Flood control alternatives considered include:

- No action; or
- Complete replacement and upgrade of the storm pipe system.

Storm water quality improvements alternatives considered include:

- No action;
- Storm water ponds or infiltration basins;
- Pervious pavement; and
- Hydrodynamic devices.

Technical Approach

Flood control will be achieved by near complete replacement of the under-capacity storm pipe system. Hydrodynamic devices are recommended for providing treatment of storm water due to cost and land availability considerations. Construction is scheduled to begin in February 2009 and conclude in June 2010.

Specific tasks to be accomplished:

- Grand Avenue storm water treatment improvements; and
- Grand Avenue flood control improvements.

Project Management

The project management team includes the county administrator, finance officer, project engineer, county funding administrator, chief deputy county attorney, and the education/outreach coordinator/grant administration support. This provides a staff of specialists to perform duties within their areas of expertise important to the project. The project manager and Bigfork Stormwater Advisory Committee will keep the public informed through regularly scheduled meetings and a website.

The project management plan provides for thorough and well-organized contract management with regulatory and funding agencies, consultants, contractors, and other involved parties. Roles of the project manager are clearly defined in the grant application and are appropriate given the budget allocations and project approach. The project budget allows for funding to support the financial and administrative aspects of the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$70,000	\$70,000
Professional & Technical	\$0	\$0	\$241,000	\$241,000
Construction	\$100,000	\$0	\$1,104,000	\$1,204,000
Total	\$100,000	\$0	\$1,415,000	\$1,515,000

The project budget is complete and includes adequate detail to show that the proposed budget is sufficient to complete the proposed project. The proposed funding strategy is comprised of TSEP and RRGL grants, an SRF loan, and local dollars.

No residential rates exist for storm water in Bigfork. According to DOC, the combined target rate for the Bigfork County Water and Sewer District is \$69.22. Adding projected monthly storm water rates to current water and sewer rates equals \$93.18, 135% of the target rate.

Benefit Assessment

The proposed storm water improvements project implements resource management activities that will result in quantifiable benefits to protect and preserve water quality in the Swan River and Flathead Lake. Treatment of the storm water runoff before discharging it into the river reduces sediment, suspended solids, oil, grease, and debris. This project will improve water quality in the Swan River and help protect natural resource-based recreation, an economic anchor for the community of Bigfork.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse long-term impacts will result. Minimal short-term, construction-related impacts will be controlled through permitting and proper construction methodology.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 37

Applicant Name	Kevin, Town of
Project Name	Kevin Water System Improvements
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 15,000 DNRC/RRGL Planning Grant
	\$ 500,000 TSEP Grant
	\$ 15,000 CDBG Planning Grant
	\$ 450,000 CDBG Grant
	\$ 181,000 SRF Loan
	\$ <u>26,394</u> Local Reserve
Total Project Cost	\$ 1,287,394
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The Kevin water system uses three springs and five drilled wells six to seven miles northwest of town. Water from all of the sources flows into a transmission main that carries water to Kevin. The sources provide water to five ranches served from the transmission main and 83 homes and 13 commercial customers served from the distribution system in town. An 840,000-gallon ground-level storage tank on the north side of town provides water storage. Due to the low elevation of the tank in relation to the town, a booster pumping station provides pressure to the distribution system. Much of the system is aging.

The Preliminary Engineering Report (PER) evaluated the capacity of the system over a 20-year planning period. The evaluation included:

- Existing springs and wells;
- Water treatment;
- Alternative sources; e.g., the Rocky Boy's North Central Montana Regional water system (NCRMWS);
- Conservation measures; e.g., individual water meters;
- The transmission main and distribution system;
- System storage; and
- Booster pumping capability.

The PER determined that individual water meters should be installed to promote conservation and equitable water charges. Although watering is restricted during summer, water use still is excessive. System leakage was low. The PER recommends the town connect to the NCRMWS because of long-term concerns about source quantity, quality and condition. The town has already signed an agreement for water service from the NCRMWS when it becomes available. The town seeks funding for water system improvements.

Technical Assessment

Project Background

The Kevin water system is supplied by three springs and five drilled wells. Water flows from these sources to an 840,000-gallon water storage tank through a transmission main that exceeds seven miles in length. Due to the low elevation of the tank in relation to the town, the distribution system is pressurized through a booster pump station. The exact age of the system is unknown, but some of the source water rights date to 1925.

DEQ conducted a compliance inspection of the water system in September 2005. The primary problems were related to the water sources, but deficiencies were also noted for the tank, booster pump station,

and distribution system. Additional DEQ compliance letters were received in January 2006, February 2007, and April 2008. The most important recommendations from DEQ include protecting the water sources from surface water influence, and installing a flow-paced chlorination system to provide consistent chlorine residual levels in the water.

The purpose of this project is to bring the water system into compliance with current regulations and requirements, eliminating as many deficiencies as possible. The project includes improvements to almost every component of the system including the springs, wells, transmission main, tanks, booster station, distribution system, and chlorination. Several forms of hypochlorination and chlorine gas disinfection were considered.

Technical Approach

This project is a general upgrade to the entire water system serving Kevin and impacts almost every component. The improvements include replacing the spring boxes that provide the hub to connect collection laterals. Collection laterals will remain in place and will be reconnected to the new spring boxes. Well houses will be removed and replaced. The well houses cover the well, but would be relocated to house only piping and controls. New pitless adapters and well caps would be added to the wells to allow them to be separated from the building. Complete replacement of all sources was considered, but was discarded due to cost and the town's future plans to connect to the NCMRWS.

A flow-paced sodium hypochlorite system will replace the town's inadequate disinfection system. A telemetry system will control the tank level and prevent overflows.

Spot repair and replacement of about 1,000 lineal feet of seven miles of transmission main between the sources and the tank are included in the project. Repairs/replacement will be provided in locations where soils are corrosive and there is leakage risk. Complete replacement on the older section of the transmission main (about half the total length) was considered, but discarded due to cost.

The storage tank improvements include recoating the interior, upgrading the access hatch and safety, and installing a submersible mixer. Several options were considered to provide tank mixing, but discarded based on effectiveness or cost.

The existing booster station is old, has serious safety issues, and should be completely replaced. The new pumps will have variable frequency drives, removing the need for the large pressure tank associated with the existing station. The new station will be above ground eliminating confined space entry issues.

The remaining cast iron pipe in the distribution system will be replaced with pvc pipe and new fire hydrants will be added. This pipe is about 55 years old. Water meters will be installed to promote water conservation.

Specific tasks to be accomplished:

- Repair spring boxes;
- Replace well pump houses with wells outside of structure, and pitless adapters at each well;
- Install telemetry system to operate wells based on tank level;
- Install flow-paced chlorination system, including building;
- Install/replace 1,000 lineal feet of six-inch pvc transmission main;
- Repair steel storage tank including recoating interior, access hatch, and safety improvements, and provide a submersible pump for mixing and circulation;
- Replace booster pump station with above-grade station with variable frequency drive pumps;
- Install/replace 1,500 lineal feet of pvc six-inch water distribution main;
- Install four new fire hydrants; and
- Install 95 water meters.

All tasks included appurtenances and materials necessary to complete the project.

Project Management

The project management team for this project includes the mayor, clerk-treasurer, city attorney, engineering consultant, and bond counsel. The project is ready to proceed if grant and loan applications are successful. Design would begin July 1, 2009, and be mostly completed by August 2010. Everything appears in place to provide the management necessary to ensure a successful project.

Continued public involvement is planned at regular town council and, special meetings; special project notices will appear in the local newspaper and the project manager will directly respond to any citizen questions.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$53,854	\$53,854
Professional & Technical	\$0	\$0	\$221,080	\$221,080
Construction	\$100,000	\$0	\$912,460	\$1,012,460
Total	\$100,000	\$0	\$1,187,394	\$1,287,394

The proposed budget is complete and includes sufficient funds based on the cost estimates in the PER. In addition to the RRGL grant, grant requests have also been made to CDBG and TSEP. The remaining \$181,000 of the project will be funded through an SRF loan.

The 96 users connected to the water system pay a monthly user fee of \$20.59. This rate will increase by \$8.26 to \$28.85 per month after the project. The town has the authority to assess fees to pay O&M costs and debt retirement.

A secondary reviewer expressed concern about the current level of O&M. The financial information includes a \$3,600 annual increase for the O&M, specifically for reading the new water meters, power for the new tank mixer, and increasing tank maintenance. An additional increase of overall O&M costs may be justified to ensure an appropriate level of maintenance.

Benefit Assessment

This project provides water conservation. Installation of water meters is expected to reduce water use by 28.6% in the system. The reduction was determined by comparing current metered water use of an average of 280 gallon per capita day (gpcd) to an expected water use of 200 gpcd. The 200 gpcd demand was conservatively determined by comparison to other systems. It includes allowance for the town's policy to allow taps to run in the winter to avoid freezing service lines.

The system does not have automated controls so water in the storage tank regularly overflows. This water loss is not measurable with the meters in the current system. The installation of the telemetry system will correct this problem since the wells will be turned off when the tank is filled.

Environmental Evaluation

This project will have short-term environmental impacts normally associated with heavy construction. Dust, noise, and fumes from painting the tank can be expected. The project will disturb springs, causing short-term impacts to water quality. Minor disturbance of grazing land will also occur during construction; these areas will be reseeded.

The project will have obvious long-term benefits to the water system, increasing fire protection and providing improvements to public health and safety. The improvements to the water system benefit the local economy and residential community by increasing the reliability and safety of the water supply. Lower energy consumption will also be realized by replacing the booster station and introducing meters which reduce water use.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 38

Applicant Name Em-Kayan Village Water and Sewer District
Project Name Water System Improvements

Amount Requested \$ 100,000 Grant
Other Funding Sources \$ 290,619 TSEP Grant
\$ 190,619 DW SRF Loan
Total Project Cost \$ 581,238

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The Em-Kayan community water system consists of three springs, two wells, five steel storage tanks, and a water distribution system inclusive of fire hydrants. The system has been expanded numerous times throughout its history.

Distribution system deficiencies:

- Steel water main with a history of main breaks;
- Total coliform positive sample history;
- Old four-inch hydrants require replacement (do not meet DEQ-1 guidelines);
- Fire flow requirements are not met at all hydrants so main up-sizing is necessary; and
- Existing water system does not include water meters.

Additional water system deficiencies:

- Maintenance intensive control system requires improvements;
- Security improvements (such as fencing and locks) around springs and storage tanks were recommended in the last sanitary survey; and
- Storage tanks require replacement of existing tank vent screening. This work is planned as a capital improvements project this year.

Due to budget constraints, the district is planning to perform repair work in phases. For this grant application the following work will be completed:

- 2,340 lineal-feet of eight-inch pvc water main along Yellowtail Road:
 - Replace the “worst-condition” section of thin-walled steel water main; and
 - Eliminate approximately 2,880 gpd (1,051,200 gallons/year) leakage (based on 2007 leak detection records) and protect the water system in this area from contamination through main breaks.
- Install 100 lineal feet of six-inch pvc water main;
- Install 22 ¾-inch copper service lines;
- Remove four and install five fire hydrants (per DEQ-1);
- Install 22 water service connections;
- Install three water main connections;
- Install five sampling stations;
- Install 61 water meters; and
- Install a replacement control system.

Technical Assessment

Project Background

The Em-Kayan Water and Sewer District is approximately seven miles from Libby on Highway 37. The district serves approximately 150 people and has operated since the 1960s. The build-out capacity of the system could reach 199 people; this figure has been used for planning in the PER. The original distribution system was constructed of thin-walled steel pipe and has had several water main breaks over the last six years. Routine leak testing has been conducted to try and identify the leaks before they surface. These tests have measured significant water losses. Identified leaks have been repaired on an emergency basis throughout the last several years. Although the 2007 leak detection effort indicated that water losses associated with noted leaks at that time were only about 14.5% of system flows, the steel pipeline continues to age, has demonstrated continued failure, and needs to be replaced. In 2002, for example, average water losses were nearly 200% of the average daily water demand (estimated at nearly 40,000 gpd). In addition to water losses, hydrants within the system are not properly spaced for fire protection, are no longer compliant with Montana Circular DEQ-1 design standards and, in some cases, cannot produce 1,000 gpm of flow for fire protection. Further, service connections have no meters, which makes continued leak monitoring and water use calculations difficult. Finally, the controls system is outdated, costly to repair, and poses a number of operational challenges.

Technical Approach

The PER explored all reasonable alternatives and provided a thorough alternative analysis which will result in a project that, once completed, will be significantly more reliable and efficient than the existing system on a number of levels. The preferred alternative involves a prioritized replacement of the steel pipeline (an initial amount of 2,340 lineal feet, which comprises the worst of the pipeline and impacts the community most when a break occurs). The pipeline will be upsized and replaced with eight-inch pvc. The pvc pipeline will have a longer service life and provide better hydraulic performance. Upsizing the pipeline from six-inch to eight-inch and reconfiguring the layout of hydrants will provide adequate fire flows to the entire system. Controls system improvements were also ranked as a high priority due to the overall expense and dependency of acceptable system operations on the existing controls system.

Additional improvements, including replacement of the segments of steel pipeline and limited treatment system improvements, are proposed for future phases. However, the first phase of the project will result in a significant improvement in the water system's efficiency. The first phase may also address water quality issues by reducing the possibility of pipeline contamination from exposure of the water system to surrounding soils.

Construction is slated to begin in May 2010 and end in August of the same year.

Specific tasks to be accomplished:

- Replace 2,340 lineal feet of eight-inch pvc water main along Yellowtail Road;
- Replace 100 lineal feet of six-inch pvc water main;
- Remove 4 fire hydrants, install 5 fire hydrants;
- Replace 22 ¾-inch copper service lines;
- Replace three water main connections;
- Install five sampling stations;
- Install 61 water meters; and
- Install a new controls system.

Project Management

The project engineer has been selected and has considerable experience in administering grants and designing and constructing water system improvements. The Em-Kayan Water and Sewer District board members will also participate in project management activities, including primary management of project

budgets, grant and loan program coordination (with the assistance of project administration staff from the engineering firm), and contract management. The project management plan spells out clear duties for each member of the management team.

The general public of the Em-Kayan Village has continuously been involved in development of this project since the water district was created. Throughout the project, board meetings will be open to the public and information will be posted on a community reader board. Residents will be notified in person before any interruption of water service related to construction.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$47,700	\$47,700
Professional & Technical	\$15,000	\$0	\$67,083	\$82,083
Construction	\$85,000	\$0	\$366,455	\$451,455
Total	\$100,000	\$0	\$481,238	\$581,238

Several different funding scenarios were considered. The chosen funding package consists of a TSEP grant, an RRGL grant, and a DWSRF loan. This funding package was chosen because the proposed project and community met all qualifications for the proposed grants. Even with the grant program proposed, new rates associated with the project will be 112 % of the district's target rate. The district has stated that if grants are not realized, it will submit an application for a STAG grant. Project phasing of the entire proposed alternative and comprehensive system improvements were already incorporated into the overall project, with the proposed project the first phase of improvements.

Benefit Assessment

This proposed project provides for resource conservation. It will reduce the occurrence of water leaks that frequently occur in a deteriorated pipeline and minimize loss of water. In 2002 an estimated 40,000 gpd leaked from the system. The addition of water meters will further promote continuous conservation, as water users will become more conscious of how they can use water more efficiently to reduce their bills.

Secondary benefits include development of a more energy efficient system.

Environmental Evaluation

The proposed water treatment system improvements project will have a net positive effect on the environment as it will minimize the transfer of potentially harmful constituents into the drinking water supply via deteriorated water mains. Further, fire protection for the area will be improved and brought into compliance with current design standards.

Short-term negative environmental concerns associated with construction, e.g., noise and dust, can be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 39

Applicant Name Broadview, Town of
Project Name Broadview Water System Improvements

Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 67,000	RD Grant
	\$ 107,000	RD Loan
	\$ 450,000	CDBG Grant
	<u>\$ 500,000</u>	TSEP Grant
Total Project Cost	\$ 1,224,000	
Amount Recommended	\$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

Broadview has a long history of problems with its drinking water supply, including water shortages and poor water quality. In 1939, the town actually sold its water tank to Lewistown because prospects for an adequate water supply to fill the tank were so bleak. The town's existing two wells provide limited production of poor quality water. The water is so corrosive that it caused casing failure in a well in the early 2000s. The two wells are grossly inadequate to meet the community's needs and the town is on the verge of another water supply crisis.

A new well field of three to four wells is proposed to remedy the town's water supply issues. The proposed well site was identified by the MBMG as the best opportunity for a quality drinking water source after inventorying groundwater resources within a nine-mile radius of town. The new well site is approximately 7 1/2 miles west of town, in the groundwater aquifer's recharge area. Test wells constructed and tested by the MBMG show adequate water quantity and good quality to supply the town. Pump testing demonstrated that the new well field can be developed without negative impact to groundwater users. The project includes construction of the well field, pipeline, pump house, and controls. This will maximize power efficiency and decrease operation costs for the town. Finally, the project includes installation of water meters to encourage residents to conserve water when possible. The project will solve serious health and safety problems and enhance the common well-being of Montanans through the conservation, management, development, and preservation of the town's public water system.

Technical Assessment

Project Background

Broadview is along US Highway 3 about 27 miles north of Billings. The 2000 census listed the town's population at 150. The current population is estimated at 162, and the population is projected at 211 in the design year of 2027. The 2000 census showed 66 residences; 64 were occupied. The largest employers are agriculture-related industries and the school system. The water supply is provided by two deep wells, a pump house where chlorine is added to the water, and a small steel storage tank. The wells produce only 38 gallons per minute (gpm) combined, so residents must be very cautious with water to avoid running out. The water quality is also marginal because of high levels of sodium, sulfates, and total dissolved solids. Residents do not water lawns or gardens with the water because of the high dissolved solids content. However, the water does not violate any mandatory state or federal health standards for drinking water. A separate nonpotable water system provides water from a small nearby lake for watering. Recent test wells constructed approximately eight miles west of town were tested for quantity and quality by the MBMG. The tests indicated that water of acceptable quality and quantity is potentially available at that location. The treatment and use of surface water were eliminated as an alternative because of costs associated with construction, operation, and maintenance of a treatment facility. The applicant then evaluated in more detail two groundwater supply alternatives determined to be more appropriate.

Technical Approach

The preferred alternative consists of construction of three new wells eight miles west of Broadview, a pump house with treatment equipment near the new wells, and a water transmission main to deliver water from the new wells to the storage tank at Broadview. Test wells constructed in 2007 showed that an adequate quantity of water is likely available from the Eagle Sandstone formation west of Broadview. The water is of much better quality. The proposed improvements would be designed in accordance with DEQ standards, and DEQ would review and approve engineering plans and specifications before construction. The town plans to measure and assess charges with water meters.

Construction of the system is scheduled from July to October 2010. The system is projected to be operational by October 2010.

Specific tasks to be accomplished:

- Secure easements for well construction, transmission main, distribution system, and storage tank from private landowner(s);
- Begin system construction in July 2010;
- Complete construction in October 2010; and
- Begin system operation in October 2010, including treatment with an iron/manganese sequestering chemical and chlorination.

Project Management

The project engineer has been selected in accordance with required procurement procedures and will oversee designing, bidding, and construction of the water system improvements, for grant administration, and coordination with funding agencies. The town council will be responsible for management and record-keeping of all funds, and project oversight, including review and coordination of project design, bidding, and construction. The mayor will be the official town contact for the engineer and the regulatory and funding agencies. The town clerk/treasurer will be the project fiscal contact. The council will also advertise and hire a certified person to operate and maintain the water system. A project management narrative outlines duties for each member of the management team.

The town will continue to conduct regular open public and council meetings at which residents can voice their concerns about the proposed project. Residents will be notified regarding planned water outages and other project components.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$52,000	\$52,000
Professional & Technical	\$0	\$0	\$0	\$0
Construction	\$100,000	\$0	\$1,072,000	\$1,172,000
Total	\$100,000	\$0	\$1,124,000	\$1,224,000

Two funding scenarios were considered. The chosen funding package consists of a TSEP grant, an RRGL grant, an RD grant, an RD loan, and a CDBG grant. This funding package was chosen in order to pursue the most realistic grant opportunities. The proposed funding is considered feasible. The system is designed to serve the population projected for design year 2027. A second phase of the project would add a new storage tank at an estimated cost of \$849,000.

After project completion, the average residential water user is projected to be \$52.75 per month. The new rate includes \$20.90 monthly for debt repayment and \$31.85 for O&M costs. The combined water and sewer rate will be 102% of the target rate (\$56.55) for Broadview. The LMI ratio in Broadview is 55%.

Benefit Assessment

The proposed system would provide beneficial use of the Eagle sandstone aquifer west of Broadview, an existing resource that appears to have adequate capacity for more production. Other benefits include improved potential for residential and commercial development within the town. Routine public education and meetings have provided citizens with an understanding of the problem and the proposed solutions, and have increased support for the project. The town will continue to obtain citizen input through public meetings and education.

The town plans to use water meters to measure and assess charges fairly. Meter use will help ensure reasonable water use efficiency after the new wells are constructed. Meters will be installed at each well and at each customer's connection to the system. The meters will detect leaks or other water losses that could otherwise go undetected. Meter use will also help ensure voluntary conservation and long-term viability of the wells. A telemetry system will further increase system efficiency through proper control of well operation to keep the storage tank full, but not overflowing.

The new source of water would allow residents to use the water for consumptive purposes, i.e., drinking, cooking, or other uses. The water would also be suitable for irrigation. Even though water meters will encourage conservation, water use will likely increase after construction of the new wells.

At the time of the application, it appeared that landowners near the proposed well sites will protest the town's water right application. This could cause delays in the water right application process, although MBMG believes that the town's proposed wells would not interfere with existing wells.

A system operation and maintenance manual will provide increased efficiency by improving the operator's knowledge of proper maintenance and operation.

The town will have to develop a source water delineation and assessment plan for the wells to help protect the aquifer from degradation.

Environmental Evaluation

The proposed new wells will withdraw water from the same aquifer at a different location. Water use will likely increase since the water from the new wells will have improved quantity and quality. However, based on pump testing results, MBMG believes that no adverse impact would occur to area water users. By installing new water mains within existing roadways, wetlands and other environmentally sensitive areas such as surface water will be avoided.

Short-term, negative environmental concerns associated with construction, e.g., noise and dust, can be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 40

Applicant Name	Montana Department of Natural Resources and Conservation (DNRC) Water Resources Division (WRD) State Water Projects Bureau (SWPB)
Project Name	Deadman’s Basin Terminal Outlet Replacement
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 400,000 RRGL Loan \$ 514,500 DNRC Water Storage Account \$ 63,352 DNRC, In-Kind
Total Project Cost	\$ 1,077,852
Amount Recommended	\$ 100,000 Grant \$ 400,000 Loan

Project Abstract (Prepared and submitted by applicant)

Deadman’s Basin Dam is in Wheatland County, approximately nine miles west of Ryegate. The dam was completed in 1941 and raised 10 feet in 1958. Annual inspections have reported seepage overtopping the outlet structure, erosion of material behind the outlet, excessive seepage and standing water on the downstream side of the dam, and deterioration of the outlet structure.

A relief ditch installed in the 1980s to alleviate the standing water has head-cut over the years and is now a possible route of soil piping. The safety of the exit gradient of the seepage at the downstream toe of the dam has a safety factor below that required by Dam Safety. The high exit gradient increases the potential for movement of embankment materials and subsequent deterioration of the dam.

Project tasks include:

- Remove the outlet structure, extend the conduit, and install a drainage system alongside the new conduit extension;
- Build a new energy dissipating outlet; and
- Build a 15-foot-high toe berm with a filter blanket drain.

The conduit extension will prevent any piping from occurring as well as allowing regular monitoring of seepage flows. The department is requesting a Renewable Resource grant of \$100,000 and a loan for \$400,000 to contribute to the project. Additional funding includes \$514,500 from the Water Storage Account, and \$63,352 from DNRC in-kind contributions. Estimated total cost of the project is \$1,077,852. The SWPB has completed the feasibility study for the project and design construction documents will be completed in 2008.

Technical Assessment

Project Background

Deadman’s Basin Dam is a high-hazard, state-owned dam in Wheatland County nine miles west of Ryegate. Constructed in 1941, the dam has aged and is experiencing seepage at its downstream toe. Erosion around the outlet conduit exists as the result of this seepage, thus presenting the potential for piping and a possible breach. Monitoring of wells drilled in the downstream embankment has indicated that uplift pressures within the dam increase as the pool level rises, causing potential safety problems. Computer modeling based on the observed internal pressures indicates that the exit gradient of the seepage at the downstream toe of the dam has a safety factor below that required by Dam Safety.

Technical Approach

Other than ignoring the problem, two alternatives were considered to mitigate the problems. One alternative was to install a trench drain system in the existing embankment, thus providing a method to relieve the uplift pressures that build up within the dam as the pool level of the reservoir rises. The other alternative was to extend the outlet conduit with a new drainage system, construct a new outlet structure, and construct an earthen berm at the toe of the dam to offset uplift pressures and stabilize the structure.

Excavating into the existing embankment and installing a trench drain could potentially increase seepage and weaken the existing structure. A trench drain excavated into shallow bedrock would also be difficult to construct. As a result, the selected alternative is to extend the conduit with a new drain system, construct a new outlet structure, and install a stabilizing toe berm.

Construction is scheduled for fall 2009.

Specific tasks to be accomplished:

- Prepare a design and bid package for contractor selection during summer 2009;
- Drain the reservoir to low pool late in summer 2009;
- Construct the project during fall 2009. Construction will include removal of existing outlet structure; extension of the existing outlet conduit with a new drain system; construction of a new energy-dissipating outlet structure; construction of a stabilizing toe berm; and regrading of the embankment as necessary.

Project Management

SWPB will provide management resources necessary to manage this project. A consultant is under contract to design the project and prepare bid documents. SWPB will advertise and bid the project in spring 2009. Once a contractor has been selected, SWPB will execute and manage the construction contract. Additionally, SWPB will be responsible for construction engineering activities including on-site inspection in coordination with the engineering consultant.

SWPB will prepare an environmental assessment (EA) for the project as well as apply for and obtain the required construction and environmental permits. In accordance with the Montana Environmental Policy Act (MEPA), public participation and input will be required during development and construction phases of the project including pool level management before and during construction.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$19,102	\$19,102
Professional & Technical	\$0	\$0	\$150,750	\$150,750
Construction	\$100,000	\$400,000	\$408,000	\$908,000
Total	\$100,000	\$400,000	\$577,852	\$1,077,852

The funding package for this project consists of an RRGL grant, an RRGL loan, \$514,500 from the DNRC's Water Storage Account, and \$63,352 in engineering services provided by SWPB staff engineers at an average hourly rate of \$33.50 per hour.

The \$400,000 RRGL loan will be between the DNRC's Conservation and Resource Development Division (CARD) and WRD. Actual loan payments will be made by the Deadman's Basin Water Users Association under the terms of a repayment agreement with WRD. The 193 ranch and farm operations in the area contract with DNRC for 40,500 acre-feet of water each season. Based on a loan amount of \$400,000 at 4.5% for 20 years, the current \$5.50 cost per acre-foot will increase by \$.76 to \$6.26 per acre-foot.

Benefit Assessment

The primary benefit of this project is preservation of a state-owned irrigation facility that provides for the development and maintenance of irrigated crop and pasture land, the conservation of water through off-stream storage, fish and wildlife habitat, irrigation benefits for the Musselshell drainage, preservation of the groundwater aquifer, recreation, and other significant economic impacts not only to agriculture but also to the communities between Harlowton and Roundup. Montana relies heavily on storage reservoirs such as Deadman's Basin to collect and store rain and snow runoff each spring, thus enabling the maintenance of late-summer flows in its streams and rivers. The proposed project provides measurable long-term, multiple-use benefits and is strongly supported by the water users and communities along the Musselshell.

Environmental Evaluation

Environmental impacts associated with this project were evaluated, and no apparent adverse long-term impacts will result. The beneficial results are the preservation and maintenance of the dam and reservoir. Temporary construction impacts will be controlled through permitting and proper construction techniques.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 and loan funding of \$400,000 at 4.5% for up to 20 years upon the development and approval of the final scope of work, administration, budget, and funding package.

Project No. 41

Applicant Name	Big Horn Conservation District
Project Name	Water Reservations Efficiencies
Amount Requested	\$ 33,706 Grant
Other Funding Sources	\$ 997 Applicant (in kind)
Total Project Cost	\$ 34,703

Amount Recommended \$ 33,706 Grant

Project Abstract (Prepared and submitted by applicant)

The Big Horn Conservation District is committed to providing beneficial use of water reservations granted by the Board of Natural Resources. The district was granted a reservation of 20,185 acre-feet of water per year from the Bighorn River with a maximum diversionary flow rate of 143.8 cubic feet per second to irrigate 9,175 acres. Reserved water undeveloped and available for future use is 11,371.6 acre-feet per year and only 35.4 cfs from the Bighorn River.

The conservation district must examine each water reservation to verify that flow and volume rates are correct. If this is not done, the district will have acre-feet (volume) of water remaining, but the cfs (flow rate) will be diminished. The imbalance of the allocation for delivery rate threatens to stop the water reservation process in the near future. This issue threatens to stop irrigation development, a major economic factor in the local economy.

The project would hire a contractor to complete a field inspection of each current water reservation in Big Horn County. The contractor would create cadastral maps of the water reservation area, take pictures of the point of diversion and place of use, map the gps coordinates, and calculate the flow and volume rates needed for irrigation on each property.

After completion of the calculations, the contractor would compare the figures with the flow and volume amounts recorded in each reservation record. If the contractor found discrepancies, these findings would be distributed to the conservation district board for a change approval.

Technical Assessment

Project Background

The Big Horn CD is responsible for managing reserved water rights for the Bighorn River. The CD manages 20,185 acre-feet per year with a maximum diversionary flow rate of 143.8 cubic feet per second. The CD believes that past water reservations have granted higher flow rates than achieved by the water users which has resulted in an over allocation of flow rate relative to the authorized yearly volume. The Big Horn CD wishes to synchronize authorized flow rates with volumes by conducting a field assessment of each authorized use of reserved water rights and, if determined to be excessive, recalculate and modify authorized flow rates so they are closer to actual use. This would enable the CD to grant usage of more of the remaining reserved water to future users.

Technical Approach

Three alternatives were considered for this study: the preferred alternative, no action (do not conduct an efficiency study), and conduct the study using a combination of CD and DNRC irrigation development program resources. The use of the Big Horn CD and DNRC irrigation program resources to conduct the assessment would not be feasible because neither program is adequately staffed to conduct a site visit to every landowner. The no action alternative would result in continuation of an unbalanced allocation of total volume with an overallocated withdrawal rate. The preferred alternative would result in a fair assessment because every user would be evaluated equally, and the use of GPS and ArcView would enable the CD to develop a detailed database with the capability of creating reports usable by the CD, DNRC, the county, and landowners.

The preferred alternative is to hire a contractor who will visit each authorized user and document the diversion location and place of use with pictures and the use of global positioning system (GPS) equipment. Data gathering will include landowner interviews, crop identification, and determination of irrigated acreage, soil type, and irrigation methods. The Big Horn CD proposes to maintain a computer database that will include GPS coordinates, pictures, and detailed water use records for each authorized user. The CD and contractor will employ ArcView to create maps and reports. Once all data are collected, flow rates may be recalculated. The CD board will then determine if changes will be made to water reservation authorizations with flow rates inconsistent with both the total authorized volume and the actual rate of use. The project is ready to implement in July 2009 and will conclude in October 2009.

Specific tasks to be accomplished:

- Hire a contractor;
- Visit each water reservation point to document use and gather data;
- Enter data into computer database;
- Recalculate flow and volume rates; and
- Present information to CD board.

Project Management

The project will be administered by the Big Horn CD administrator. The CD will approve and hire a contractor using a competitive bid process. The CD administrator will oversee contracted activities and serve as the primary and fiscal contact with the DNRC. The project management plan spells out clear duties for each member of the management team including the CD board.

The CD opens all board meetings to the public. An agenda for every CD meeting is publicly displayed a week before the meeting at the entrance to the district office. CD meetings that address the proposed water reservation efficiencies study will be advertised in local papers. Attendees can voice concerns about the proposed project during CD meetings or at other times. Landowners will be contacted in advance of a site visit from the selected contractor and individually notified when the CD board meets to discuss the study results.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$3,064	\$0	\$972	\$4,036
Professional & Technical	\$30,642	\$0	\$25	\$30,667
Construction	\$0	\$0	\$0	\$0
Total	\$33,706	\$0	\$997	\$34,703

Three alternatives were considered when developing the budget: the preferred alternative, no action (would require no funding), and conducting the study using a combination of CD and DNRC irrigation development program resources (would require considerably less funding). The proposed budget is modest, yet reasonable, and adequate to achieve the stated project results.

Benefit Assessment

The findings of the proposed project are expected to accomplish three things: (1) improve the CD's understanding of how reserved water rights are currently used for irrigation in the district. This would benefit the ability of the CD to manage a renewable resource; (2) enable the CD to authorize diversion rates that correspond more appropriately with total authorized volume. This would conserve a renewable resource; and (3) increase the available amount of water the Big Horn CD can authorize for use from its reserved water rights. This would develop renewable resources (water and irrigable land).

The proposed project would result in both conservation and development of water from the Bighorn River and potential development of up to 2,000 additional acres of irrigable land calculated by assuming the modified authorizations would increase available volume by 25% of total volume (since the current volume:rate ratio is 3:4). In addition, over the long term, Big Horn County should experience the economic benefit of increasing the availability of reserved water right authorizations to all producers in the district as well as to future users. Increased availability of water for irrigation may not result in an increase in jobs, but would benefit farm income in Big Horn County.

Environmental Evaluation

The proposed water reservation efficiency study is unlikely to impact natural resources either positively or negatively. No construction will take place, and irrigation methods are not expected to change as a result of this study. Over the long term (greater than five years) more land may be used for production and irrigation than would be used if this study is not performed. Therefore, this project is expected to have a beneficial impact on agricultural lands and production.

Funding Recommendation

The DNRC recommends grant funding of \$33,706 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 42

Applicant Name Montana Department of Natural Resources and Conservation (DNRC)
Water Resources Division (WRD)
State Water Projects Bureau (SWPB)

Project Name Martinsdale Reservoir Drain Project

Amount Requested \$ 100,000 Grant
Other Funding Sources \$ 29,525 DNRC, In-Kind
Total Project Cost \$ 129,525

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Martinsdale Reservoir is approximately 2.5 miles southeast of Martinsdale and was constructed in 1939. A large amount of seepage has historically occurred in the abutments of the north dam since construction. Grouting programs conducted in 1941, 1962-1963, and 1965 to control the seepage had limited success. Additional horizontal abutment drains were installed in 1985 to collect seepage and improve stability of the embankment.

The configuration of the horizontal drain system makes it unsafe and difficult to monitor the drain flows. Accurate flow measurements are also difficult to get from the original toe drain system. In addition, sedimentation is occurring in the toe drain with no means for accurate measurement. Excessive seepage and sedimentation from the drains may indicate a potential problem within the dam, but this cannot be ascertained with the existing drain configuration. The need to measure drain flows and sedimentation rates is crucial to determining if rehabilitation is needed to keep the dam safe. To improve seepage collection and be able to make accurate measurements of drain flow rates and sedimentation transport volumes, rehabilitation of the drain structures is necessary.

The proposed work includes reconstruction of the drain systems to allow accurate and safe measurements of flow and sedimentation rates. The work includes adding manholes to the toe drain system for flow measurements and trapping sediment, and redirecting the outfall of the horizontal drain system farther downstream which will allow for safe and accurate flow measurements of that drain system. Automated reservoir level instrumentation will be installed to allow continual monitoring of the reservoir. To address the remaining seepage, a right groin drainage system will be installed.

Technical Assessment

Project Background

Martinsdale Reservoir is 2.5 miles southeast of Martinsdale on the border between Meagher and Wheatland counties. The reservoir is formed by two earthfill dams constructed in 1939. The larger of the dams, Martinsdale North Dam, has experienced seepage in the abutments since it was constructed. Grouting projects conducted in 1941 and again in the 1960s have met with limited success. The high-hazard status of the dam makes it imperative that seepage and internal sedimentation be accurately monitored to provide an adequate assessment of the dam's structural condition. To improve seepage collection and facilitate the measurement of drainage flow rates and sedimentation transport volumes from within the dam, the structure's internal drain systems must be rehabilitated.

This project consists of the reconstruction of the toe drains including the addition of manholes and the redirecting of the horizontal drain system outfall.

Technical Approach

This project includes the design and development of plans and specifications for the project by SWPB staff engineers. This work is scheduled for completion by the spring of 2010. The project will be publicly bid early in 2010 with construction to be complete by the end of 2010.

Specific tasks to be accomplished:

- Project design and development of plans and specifications;
- Advertisement and bid of the project; and
- Construction of the project including the extension of the right abutment horizontal drain to a new measurement basin; rehabilitation of the existing drains in the toe and groin areas of the dam; installation of flow measurement and sediment trapping structures; and installation of instrumentation to facilitate remote monitoring of the pool level and discharge flows from the reservoir.

Project Management

SWPB will provide management resources necessary to manage this project. Also, SWPB staff engineers will design and prepare bid documents for the project to be constructed in 2010. Once a contractor has been selected, SWPB will execute and manage the construction contract.

SWPB will prepare an environmental assessment (EA) for the project as well as apply for and obtain the required construction and environmental permits. Additionally, SWPB will facilitate public participation and cooperation with the water users during construction to ensure the proper management of reservoir pool levels and downstream flows.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$8,125	\$8,125
Professional & Technical	\$0	\$0	\$7,800	\$7,800
Construction	\$100,000	\$0	\$13,600	\$113,600
Total	\$100,000	\$0	\$29,525	\$129,525

The funding package for this project consists of an RRGL grant and \$29,525 in engineering services provided by SWPB staff engineers.

The Upper Musselshell Water Users Association purchases 166,174 acre-feet of water annually under agreement with DNRC at a cost of \$6.50 per acre-foot.

Benefit Assessment

The primary benefit of this project is preservation of a state-owned irrigation facility that provides for off-stream storage of water for flood control, irrigation, fish and wildlife habitat, the maintenance of the groundwater aquifer, recreation, and other significant economic benefits to agriculture and the citizens of the Musselshell Valley. Montana relies heavily on storage reservoirs such as Martinsdale to collect and store rain and snow runoff each spring, thus enabling the maintenance of late-summer flows in its streams and rivers.

Environmental Evaluation

Environmental impacts associated with this project were evaluated, and no apparent adverse long-term impacts will result. The beneficial results are the preservation and maintenance of an existing water infrastructure facility that provides significant benefits to the citizens of west-central Montana. Temporary construction impacts will be controlled through permitting and proper construction techniques.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon the development and approval of the final scope of work, administration, budget and funding package.

Project No. 43

Applicant Name	Loma County Water and Sewer District	
Project Name	Loma Water System Improvements	
Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 100,000	DNRC/RRGL Grant (FY 2008)
	\$ 750,000	TSEP Grant
	\$ 276,690	RD Grant
	\$ 1,006,110	RD Loan
	\$ 3,000	Local
Total Project Cost	\$ 2,235,800	
Amount Recommended	\$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The Loma County Water and Sewer District provides water to the unincorporated community of Loma and 71 rural water users in northern Chouteau County. The Loma water system draws its water from the Marias River and then treats the water through a package water treatment plant. The system has approximately 119 miles of various sizes of distribution lines. The sizes range from six-inch to one-inch: 42% of the lines measure one-inch. Fifty-seven percent of the system has glue joints and the remainder has gasketed joints.

A PER for the district's water system showed that the water treatment plant is capable of meeting current surface water treatment rules and is providing good quality water to its users. However, the PER identified several deficiencies which will hamper the district's ability to meet future Safe Drinking Water Act regulations. Since the district is a member of the North Central Montana Regional Water Authority and will receive treated water from the regional water system, treatment plant improvements are not necessary.

From 2000 to 2005, the district had over 307 repairs with 99% directly connected to pvc glue joint failure. The estimated leakage range is 100 to 250 gpcd or 26,000 to 52,000 gallons per day. An estimated 20% to 40% of the water is unaccounted for in the current system. Ten line leaks were identified from January 1, 2008, to April 15, 2008.

The district proposes to phase the improvements, with the first phase addressing 90% of the one-inch glued joint distribution lines.

Technical Assessment

Project Background

The Loma water system was originally constructed in 1980 to serve Loma and a large rural area northeast of Loma. The system draws water from the Marias River, provides treatment through a water treatment plant using a solids contact clarifier and filter, and pumps it into the distribution system. A single 150,000-gallon tank also serves the system.

The small diameter glue joint pvc pipe serving the rural portion of the distribution system consistently develops leaks at the rate of 50 to 100 leaks per year in over 120 miles of pvc piping. This rate has remained stable over the last 10 years and is the most significant problem facing the Loma water system.

Water meters and recoating the water storage tank are also included in the project. Improvements to correct treatment plant deficiencies were considered, but were omitted from the project in anticipation of Loma's connection to the North Central Montana Regional Water System.

Technical Approach

The goal of this project is to reduce or eliminate leakage in the rural piping system. The preferred alternative is to replace roughly 90% of one-inch diameter pipe with new high-density polyethylene (HDPE) pipe. HDPE pipe was selected over pvc pipe based on its reliability and cost.

The project was selected to address the most critical leakage, but divided into two phases to keep it affordable. The remainder of the small diameter piping in the rural system is part of the Phase 2 project that will be pursued in the future.

The project also includes water meters to promote water conservation and allow connection of additional users. The water tank has not been coated since its installation in 1980 and this work is also included in the project. Normally this type of tank is painted every 10 to 20 years. The new pipe will be placed along existing pipe alignments and no significant environmental impacts are anticipated.

Specific tasks to be accomplished:

- Install/replace 240,000 lineal feet of one-inch HDPE water main;
- Install 112 water meters (funded under separate RRGL grant); and
- Recoat water storage tank interior and exterior.

All tasks included appurtenant components and materials necessary to complete the project.

Project Management

The project management team includes the board of directors for the Loma County Water and Sewer District, legal counsel, bond counsel, engineer, water treatment plant operator, the district secretary/bookkeeper, and a project manager specifically for this project. The project is ready for implementation and the necessary staff is in place to successfully manage the project.

Design will begin after funding is secured; construction is planned June through December 2010. Continuing public involvement includes direct mailers, local newspaper articles, bill inserts, and public hearings/meetings.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$32,000	\$32,000
Professional & Technical	\$0	\$0	\$292,000	\$292,000
Construction	\$200,000	\$0	\$1,711,800	\$1,911,800
Total	\$200,000	\$0	\$2,035,800	\$2,235,800

The project budget is adequate. One minor discrepancy is that the budget does not include interest for interim financing. The need for interim financing is not completely certain as it depends on whether Rural Development (RD) will allow multi-draws for the project.

Funds committed include a \$100,000 FY 2008 RRGL grant and \$3,000 in local funds. The 2008 RRGL grant was intended specifically for water meter installation, while the current RRGL grant application is for water line replacement. The district currently has a \$750,000 TSEP grant, but has reapplied because of the uncertainty of obtaining matching funds by the June 30, 2009 deadline.

Current monthly water use rate is \$45 for the 32 residential users in Loma and \$100 for the 80 rural users in outlying areas. The rate increase necessary to fund this project is \$49 for in-town users and \$112 for rural users. The water and sewer district has authority to assess fees for system operation, maintenance, and debt retirement.

Benefit Assessment

The primary benefit to renewable resources is conservation of water. The water system leaks an estimated 10 to 20 million gallons per year. This estimate is based on a comparison between a winter water use rate of 346 gallons per capita day (gpcd) and normal water use of between 100 and 150 gpcd for similar systems. The project specifically targets these leaks.

Water from the system is also used by farmers as a part of their chemical fallow practices. This practice reduces wind erosion and helps retain moisture in the ground no tilling is involved. Significant increases in crop yield are also realized; area farmers have reported yields 10 bushels per acre higher than conventional farming techniques.

The amount of energy used for water treated and pumped by the system will also be lowered. Although the project includes water meters, which promote water conservation, they are funded under a separate RRGL grant. Assessing the benefit of these meters is not part of this project.

Environmental Evaluation

All adverse environmental impacts from this project are short term and associated with construction. They include the normal dust, noise, and fumes that occur with most construction efforts. Agricultural lands will be temporarily disturbed to allow pipe installation.

The project also has several long-term benefits, including reducing the risk of contaminants entering the water system, increasing the desirability of the community for both residential and commercial uses, reducing energy use from less pumping demand, and improving the overall reliability of the water system.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 44

Applicant Name Woods Bay Homesites Water and Sewer District
Project Name Woods Bay Homesites Wastewater Collection System, Phase 1c

Amount Requested \$ 100,000 Grant
Other Funding Sources \$ 14,000 Applicant
 \$ 730,000 TSEP Grant
 \$ 130,000 RD Loan
Total Project Cost \$ 974,000

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Wastewater in the Greater Woods Bay Planning Area (encompassing Sheaver’s Creek and Woods Bay Homesites Water and Sewer districts, and the Greater Woods Bay Sewer District) is treated by private septic systems and drainfields. Ineffective and failing systems are leading to contamination of public water supply wells and Flathead Lake. A PER completed in 2008 recommended construction of a gravity collection system and wastewater treatment at the Bigfork WWTF a few miles north.

Renewable resource benefits include preservation and protection of two invaluable water sources: Flathead Lake and drinking water wells in the area. Water tests have shown that the nitrate level in local wells exceeds 10 mg/l. The levels are elevated and increasing, indicating these wells are directly affected by partially treated drainfield effluent. In addition, the 2001 DEQ TMDL report states that near-shore septic tanks contribute up to 5% of the nitrate/nitrite and 3% of total nitrogen loading to Flathead Lake. When this project is completed, wastewater will be treated responsibly and existing water resources will be preserved.

The first phase of the project is broken into four sub-phases. Phase 1a includes construction of the "core system," the main lift station and force main to Bigfork. The Greater Woods Bay Sewer District received a \$250,000 WRDA grant and began preliminary design of the core system in May 2008. Phases 1b, 1c, and 1d include construction of the collection system to serve a portion of the Sheaver's Creek, Woods Bay Homesites, and Greater Woods Bay Districts, respectively. This grant application is requesting funding for the Woods Bay Homesites project (Phase 1c).

Technical Assessment

Project Background

Woods Bay Homesites Water and Sewer District is near Woods Bay on the east shore of Flathead Lake, close to the Lake County-Flathead County line. Development in the area uses septic systems for wastewater treatment and a combination of public water supply wells and individual wells for water supply. Technical documentation was provided suggesting that the septic systems may be contaminating water supplies as well as surface waters in the lake. Old septic systems, porous soils, and high groundwater have been indicated as factors causing poor performance of the septic systems. Flathead Lake does not meet current water quality standards, and septic systems have been identified as one of the sources of nutrients impacting the lake. The Woods Bay Homesites Water and Sewer District is one of three districts in the Woods Bay area pursuing financial assistance to help fund a centralized wastewater collection system to allow abandonment of existing septic systems. Estimated population of the district is 115.

Technical Approach

Three water and sewer districts combined to make the Greater Woods Bay Planning Area. A PER prepared for the three districts evaluated various means to collect and treat wastewater generated in the area. After evaluating the cost effectiveness of the various alternatives, the districts concluded that a conventional gravity sewer system with lift stations, pvc pipe, and 48-inch manholes was the preferred alternative. Four phases of the project are proposed and the project proposed under this grant application addresses only one phase, phase 1c.

Treatment will be provided by the plant in Bigfork, requiring over four miles of force main and one or more lift stations to connect to the system. The Bigfork County Water and Sewer District owns and maintains the treatment plant and is in the process of improving it.

Construction for the proposed Woods Bay projects is slated for May 2010.

Specific tasks to be accomplished:

- Install 2,594 feet of eight-inch collector sewer main;
- Construct eight manholes;
- Construct a lift station and force main;
- Install emergency generator; and
- Replace/repair disturbed asphalt and gravel roads.

Project Management

The project engineer has been selected and has experience in administering grants and designing and constructing wastewater improvements. The district manager will be the fiscal contact. The project management plan in the application is brief.

The three districts in the Woods Bay area offered an active public involvement program including public meetings, websites, publications, and other activities. Additional efforts are planned.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$ 41,500	\$ 41,500
Professional & Technical	\$0	\$0	\$155,000	\$155,000
Construction	\$100,000	\$0	\$575,000	\$777,500
Total	\$100,000	\$0	\$874,000	\$974,000

The budget, as described above, is limited to the project to construct a local sewage collection system for the Woods Bay Homesites Water and Sewer District. In addition, a “core system” must be constructed, including a lift station and force main to convey waste from the district to the Bigfork Water and Sewer District. The Bigfork district will charge an O&M fee plus a capital investment fee for use of its treatment system. Homeowners must install an individual service line. User costs for the system are estimated at \$61.99 per month plus approximately \$4,400 capital investment fee and \$3,500 for the sewer service line hookup. Estimated costs are based on obtaining various grants and low-interest loans developed through a viable financial plan. Options where grants were not obtained were also evaluated. The projected combined water and sewer user fee is \$110.99, about 187% of the DOC target user rate. Consequently, affordability of the project must be considered, particularly if grant assistance is less than projected.

This budget appears sufficient and reasonable to fund the proposed project. Material, labor, and equipment costs used to develop the budget appear reasonable and adequate. The district’s funding strategy appears reasonable with a TSEP grant and an RD loan in addition to the RRGL grant request. A 40-year term was proposed for the RD loan. The costs to acquire treatment capacity from the Bigfork plant were not included in the budget.

Benefit Assessment

The proposed project will help preserve the water quality of Flathead Lake, a highly valued water quality resource. The DEQ has identified the lake as an impaired water body with nutrients from near-shore development one source of impaired water quality. By sending accumulated wastewater to an improved treatment system capable of producing high-quality effluent, the project should preserve existing water quality and not allow water quality degradation to continue. The lake is a very important recreational resource and protection of the resource will contribute to economic development throughout the area, increased tourist visitation, and ongoing support of many businesses tied to the recreational industry. Actual benefit has not been clearly defined or quantified in the grant application and supporting documents. The proposed project is a component of a developing regional wastewater treatment system.

Groundwater resources will benefit through implementation of the project, including protection of public water supplies impacted by septic tank effluent.

Several letters of support for the project were provided in the grant application and the project appears to have very strong local support. Support for the project was received from the Confederated Salish and Kootenai Indian Tribes.

Environmental Evaluation

The proposed wastewater treatment system improvements should have a net positive effect on local surface and groundwater quality in the Woods Bay area by reducing pollutant loads. If the project stimulates significant growth in the project area or in the area between Woods Bay and Bigfork, adverse, secondary growth-related impacts can occur. These impacts were not evaluated in the application. The long force main delivering untreated wastewater from the three districts in the Woods Bay area to the Bigfork district has significant potential for generating odors due to anaerobic conditions that will likely develop. Odor control was not discussed in the environmental assessment for the projects. Inconsistencies exist between the current application and prior studies regarding environmental impacts.

Short-term, negative environmental concerns associated with construction, e.g., noise and dust, can be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 45

Applicant Name	Sheaver's Creek Water and Sewer District
Project Name	Sheaver's Creek Wastewater Collection System, Phase 1b
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 14,000 Applicant
	\$ 600,000 TSEP Grant
	<u>\$ 84,500 RD Loan</u>
Total Project Cost	\$ 798,500
Amount Recommended	\$ 100,000 Grant
Project Abstract	(Prepared and submitted by applicant)

Wastewater in the Greater Woods Bay Planning Area (encompassing the Sheaver's Creek and Woods Bay Homesites Water and Sewer districts, and the Greater Woods Bay Sewer District) is treated by private septic systems and drainfields. Ineffective and failing systems are leading to contamination of public water supply wells and Flathead Lake. A 2008 PER recommended construction of a gravity collection system and wastewater treatment at the Bigfork WWTF a few miles north.

Renewable local resource benefits include preservation and protection of two invaluable water sources: Flathead Lake and drinking water wells in the area. Water tests have shown that the nitrate level in local wells exceeds 10 mg/l. The levels are elevated and increasing, an indicating these wells are directly affected by partially treated drainfield effluent. In addition, the 2001 DEQ TMDL report states that near-shore septic tanks contribute up to 5% of the nitrate/nitrite and 3% of total nitrogen loading to Flathead Lake. When this project is completed, wastewater will be treated responsibly and existing water resources will be preserved.

The first phase of the project is broken into four sub-phases. Phase 1a includes construction of the "core system," the main lift station and force main to Bigfork. The Greater Woods Bay Sewer District received a \$250,000 WRDA grant and began preliminary design of the core system in May 2008. Phases 1b, 1c, and 1d include construction of the collection system to serve a portion of the Sheaver's Creek, Woods Bay Homesites, and Greater Woods Bay districts, respectively. This grant application is requesting funding for the Sheaver's Creek project (Phase 1b).

Technical Assessment

Project Background

Sheaver's Creek Water and Sewer District is near Woods Bay on the east shore of Flathead Lake, close to the Lake County-Flathead County line. Development in the area uses septic systems for wastewater treatment and a combination of public water supply wells and individual wells for water supply. Technical documentation was provided suggesting that the septic systems may be contaminating water supplies as well as surface waters in the lake. Old septic systems, porous soils, and high groundwater have been indicated as factors causing poor performance of the septic systems. Flathead Lake does not meet current water quality standards, and septic systems have been identified as one of the sources of nutrients impacting the lake. The Sheaver's Creek Water and Sewer District is one of three districts in the Woods Bay area pursuing financial assistance to help fund a centralized wastewater collection system to allow abandonment of existing septic systems. Estimated population of the district is 127.

Technical Approach

Three water and sewer districts combined to make the Greater Woods Bay Planning Area. A PER prepared for the three districts evaluated various means to collect and treat wastewater generated in the area. After evaluating the cost effectiveness of the various alternatives, the districts concluded that a conventional gravity sewer system with lift stations, PVC pipe, and 48-inch manholes are the preferred alternative. Four project phases are proposed; the project proposed under this grant application addresses only one phase, Phase 1b.

Treatment will be provided by the plant in Bigfork, requiring over four miles of force main and one or more lift stations to connect to the system. The Bigfork County Water and Sewer District owns and maintains the treatment plant and is in the process of improving it.

Construction for the proposed Woods Bay projects is slated for May 2010.

Specific tasks to be accomplished:

- Install 6,785 feet of eight-inch collector sewer main;
- Construct 21 manholes; and
- Replace asphalt and gravel roads.

Project Management

The project engineer has been selected and has experience in administering grants and designing and constructing wastewater improvements. The district manager will be the fiscal contact. The project management plan in the application is brief.

The three districts in the Woods Bay area offered an active public involvement program including public meetings, websites, publications, and other activities. Additional efforts are planned.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$ 36,500	\$ 36,500
Professional & Technical	\$0	\$0	\$127,000	\$127,000
Construction	\$100,000	\$0	\$473,000	\$635,000
Total	\$100,000	\$0	\$698,500	\$798,500

The budget, as described above, is limited to the project to construct a local sewage collection system for the Sheaver's Creek Water and Sewer District. In addition, a "core system" must be constructed including a lift station and force main to convey waste from the district to the Bigfork Water and Sewer District. The

Bigfork district will charge an O&M fee plus a capital investment fee for use of its treatment system. Homeowners must install an individual service line. User costs for the system are estimated at \$56.69 per month, plus approximately \$4,400 capital investment fee and \$3,500 for the sewer service line hookup. Estimated costs are based on obtaining various grants and low-interest loans developed through a viable financial plan. Options where grants were not obtained were also evaluated. The projected combined water and sewer user fee is \$96.69, about 163% of the DOC target user rate. Consequently, affordability of the project must be considered, particularly if grant assistance is less than projected.

This budget appears sufficient and reasonable to fund the proposed project. Material, labor, and equipment costs used to develop the budget appear reasonable and adequate. The district's funding strategy appears reasonable with a TSEP grant and an RD loan in addition to the RRGL grant. A 40-year term was proposed for the RD loan. The costs to acquire treatment capacity from the Bigfork plant were not included in the budget.

Benefit Assessment

The proposed project will help preserve the water quality of Flathead Lake, a highly valued water quality resource. The DEQ has identified the lake as an impaired water body with nutrients from near-shore development one source of impaired water quality. By sending accumulated wastewater to an improved treatment system capable of producing high-quality effluent, the project should preserve existing water quality and not allow water quality degradation to continue. The lake is a very important recreational resource and protection of the resource will contribute to economic development throughout the area, increased tourist visitation, and ongoing support of many businesses tied to the recreational industry. Actual benefit has not been clearly defined or quantified in the grant application and supporting documents. The proposed project is a component of a developing regional wastewater treatment system.

Groundwater resources will benefit through implementation of the project, including protection of public water supplies impacted by septic tank effluent.

Several letters of support for the project were provided in the grant application, and the project appears to have very strong local support. Support for the project was received from the Confederated Salish and Kootenai Indian Tribes.

Environmental Evaluation

The proposed wastewater treatment system improvements should have a net positive effect on local surface and groundwater quality in the Sheaver's Creek area by reducing pollutant loads. If the project stimulates significant growth in the project area or in the area between Woods Bay and Bigfork, adverse, secondary growth-related impacts can occur. These impacts were not evaluated in the application. The long force main delivering untreated wastewater from the three districts in the Woods Bay area to the Bigfork district has significant potential for generating odors due to anaerobic conditions that will likely develop. Odor control was not discussed in the environmental assessment for the projects. Inconsistencies exist between the current application and prior studies regarding environmental impacts.

Short-term, negative environmental concerns associated with construction, e.g., noise and dust, can be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 46

Applicant Name	Bozeman, City of
Project Name	Hyalite Creek Source Water Protection Barrier
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 0 Applicant
	<u>\$ 300,000</u> U.S. Forest Service
Total Project Cost	\$ 400,000
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The goal of the Hyalite Creek Source Water Protection Barrier Project is to prevent contamination of the city's water supply. Vehicle accidents have resulted in release of petroleum products into the creek above the city's intake. This project will prevent future vehicle entry into the creek by construction of guardrails.

Hyalite Creek provides 40% of the city's water supply. In 2001, the city prepared a source water analysis, identifying vehicle entry into Hyalite Creek as a high level hazard. In 2004, the city convened an advisory committee including members from the U.S. Forest Service (USFS), City Public Works and Engineering, Gallatin Local Water Quality District, Bozeman Watershed Council, and DEQ that identified vehicle entry into Hyalite Creek as a Phase 1 source water risk that should be remedied by 2009.

Hyalite Canyon Road provides sole access to popular Forest Service lands and Hyalite Reservoir. The area undergoes intense recreational usage. Normal summertime use exceeds 1,000 vehicles per day, increasing to greater than 2,500/day on weekends. Wintertime use also can be heavy due to recreational users, cross-country skiing events, and ice-climbing festivals. Routine plowing of the road is in public favor, and will dramatically increase use during a time of hazardous driving conditions.

During 2007, speeding and poor road conditions resulted in five vehicles entering Hyalite Creek. Petroleum products observed in the creek upstream from the intake have been cleaned up by water operations staff. Hydraulic analysis has shown that contaminants transport rapidly to the intake, precluding emergency closure before contaminant arrival.

Bozeman is sponsoring this RRGL grant to contribute funds for construction work on the project. Additional funds for construction and professional services will be provided by the U.S. Forest Service. The total project budget estimate is \$400,000.

Technical Assessment

Project Background

Bozeman has used the Hyalite Creek water supply since 1958 and it is the city's most important water system asset. Bozeman prepared a Source Water Protection Plan identifying several high risks to the Hyalite Creek water supply, including spills from vehicle accidents on Hyalite Canyon Road. The Hyalite Canyon Road is a USFS road that enters the Gallatin National Forest south of Bozeman and is paved to the reservoir. Vehicles, bicycles, and pedestrians travel the road year-round. Relatively frequent accidents on the road have resulted in the release of petroleum products into the creek. The project goal is to prevent contaminant spills into the Hyalite Creek water supply. Alternatives considered included: no action, restricted use, vehicle requirements, law enforcement, roadway delineation, roadway barriers, roadway design modification, additional signs, and combinations of these.

Technical Approach

The city selected the roadway barrier alternative to protect Hyalite Creek water from vehicle spills. A guardrail barrier would keep vehicles out of the creek and prevent release of petroleum products into the creek. Other alternatives such as vehicle requirements, additional signs, or law enforcement determined to be not as effective. Fire is the greatest risk to the source water quality in the Hyalite watershed, but the application did not consider alternatives that would address this greater water quality risk. The project coincides with the city's Source Water Protection Plan and the Gallatin Forest Plan.

The bidding process would start in May 2009, and the barrier would be installed by November 2009, weather permitting.

Specific tasks to be accomplished:

- Bid the construction;
- Mobilize to site;
- Survey and stake the site;
- Clear and grub the site;
- Install guardrail (9,630 lineal feet);
- Install terminal sections (20 sections); and
- Demobilize from site.

Project Management

The Gallatin National Forest engineer would be the project manager. The USFS would provide professional services for the project including engineering design and construction management and would procure a contractor for construction activities. The final project design would be reviewed and approved by the district ranger and the forest supervisor. The City of Bozeman and USFS would execute a Memorandum of Understanding (MOU) for the project. The MOU will establish that Bozeman will participate in plan reviews and will reimburse USFS upon invoice for construction fees generated as a result of the project. The MOU will specify the maximum amount to be paid by the city to the USFS for satisfactorily completed construction work.

Project planning has occurred and staff are on hand to manage and administer the project. Once bid, the project could go immediately to construction, once bid. USFS funding is not in place, but the city has a contingency plan identifying the areas most critically in need of guardrail and could proceed with this scaled-down project. Construction could begin earlier than 2009 if USFS funds become available.

The USFS will manage public involvement through its public affairs department. The primary means of informing the public will be local newspaper articles. The project will also be described on the Gallatin National Forest website, and will be discussed, if needed, at user-group meetings conducted by the USFS.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$0	\$0
Professional & Technical	\$0	\$0	\$0	\$0
Construction	\$100,000	\$0	\$300,000	\$400,000
Total	\$100,000	\$0	\$300,000	\$400,000

Two different funding scenarios were considered (project with USFS funding and project without USFS funding). The chosen funding package consists of \$100,000 (in costs covering mobilization, guardrail system, and terminal sections) from RRGL funds and \$300,000 (in costs covering mobilization, guardrail system, and terminal sections) from the USFS. If only the RRGL portion is funded, guardrails would be

selected to protect the most critical areas and this would be treated as project phasing, with the remainder portions constructed after USFS funding comes available.

The barrier project would not impact rate payers in Bozeman because all project funds would be grant funds or USFS funds. The city would not acquire new debt or provide new services. Current average monthly residential water rate is \$35.30 and average monthly residential sewer rate is \$22.27. The water system is used by 38,000 citizens in Bozeman. The costs presented for this project are reasonable and adequate for the stated purpose.

Benefit Assessment

The major resource benefit for this barrier project would be in resource preservation, protecting the water in Hyalite Creek from petroleum product pollution. Protecting the water would also sustain use of the river for fishing, other recreation, and irrigation. Damage to riparian vegetation from each accident could be estimated, on average, to affect .01 acre (in 2007 five accidents occurred in which cars went into the creek). This damage would be prevented. Preventing pollution of the water would also be more efficient than cleaning up contaminated water, although the city did not quantify the potential clean-up costs.

Environmental Evaluation

The proposed road barrier would protect water resources from contamination from vehicles entering the water and releasing petroleum products into the water. Other beneficial environmental impacts include uninterrupted water supply, uninterrupted fisherman days on the river, and preventing damage to plants, animals, and fish. Approximately 250,000 visitors access the Gallatin National Forest via Hyalite Canyon Road annually.

Citizens have commented that the guardrails would be visually distasteful for this scenic area. The city plans to educate the public of the project purpose and need. No proposals were presented to mitigate visual impacts other than public education (no color or style changes). Short-term negative environmental concerns associated with construction, e.g., noise and dust, can be averted by using best management practices.

The city provided 14 support letters from city, county, and state offices (for example, Gallatin Local Water Quality District, Department of Public Safety, Montana DEQ) and various private organizations (for example, Greater Yellowstone Coalition).

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 47

Applicant Name Greater Woods Bay Sewer District
Project Name Greater Woods Bay Area Wastewater System Improvements

Amount Requested \$ 100,000 Grant
Other Funding Sources \$ 14,000 Applicant
\$ 732,000 TSEP Grant
\$ 130,000 RD Loan
Total Project Cost \$ 976,000

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Currently, wastewater in the Greater Woods Bay Area (which consists of the Sheaver's Creek and Woods Bay Homesites Water and Sewer districts, and the Greater Woods Bay Sewer District) is treated by private septic systems and drainfields. Ineffective and failing systems are leading to contamination of public water supply wells and Flathead Lake. A PER completed in 2008 recommended construction of an gravity collection system and wastewater treatment at the Bigfork WWTF, a few miles to the north.

The renewable resource benefits include preservation and protection of two invaluable water sources- Flathead Lake and drinking water wells in the area. Water tests have shown that nitrate levels exceed 10 mg/l. The levels are elevated and increasing with time, an indication that these wells are directly affected by partially treated drainfield effluent. In addition, the 2001 DEQ TMDL report identifies that near-shore septic tanks contribute up to 5% of the nitrate/nitrite and 3% of total nitrogen loadings to Flathead Lake. When this project is completed, wastewater will be treated responsibly and existing water resources preserved.

The first phase of the project is broken into four sub-phases. Phase 1a includes construction of the "core system", the main lift station and force main to Bigfork. The Greater Woods Bay Sewer District received a \$250,000 WRDA grant and began preliminary design of the core system in May 2008. Phases 1b, 1c, and 1d include construction of the collection system to serve a portion of the Sheaver's Creek, Woods Bay Homesites, and Greater Woods Bay districts, respectively. This grant application is requesting funding for the Greater Woods Bay Sewer District project (phase 1d).

Technical Assessment

Project Background

The Greater Woods Bay Sewer District is on the east shore of Flathead Lake, close to the Lake County-Flathead County line. Development in the area uses septic systems for wastewater treatment and a combination of public water supply wells and individual wells for water supply. Technical documentation was provided suggesting that the septic systems may be contaminating water supplies as well as surface waters in the lake. Old septic systems, porous soils, and high groundwater are factors causing poor performance of the septic systems. Flathead Lake does not currently meet water quality standards and septic systems have been identified as one of the sources of nutrients impacting the lake. The Greater Woods Bay Sewer District is one of three districts in the Woods Bay area pursuing financial assistance to help fund a centralized wastewater collection system to allow abandonment of the existing septic systems. Estimated population of the district is 262.

Technical Approach

Three water and sewer districts combined to form the Greater Woods Bay planning area. A PER prepared for the three districts evaluated various means to collect and treat the wastewater generated in the area. After evaluating the cost effectiveness of the various alternatives, the districts concluded that a conventional gravity sewer system with lift stations, PVC pipe, and 48-inch manholes was the preferred

alternative. Four phases of the project are proposed; this grant application addresses only one phase, described in the planning documents as phase 1d.

Treatment will be provided by the treatment plant in Bigfork, requiring over four miles of force main and one or more lift stations to connect to the system. The Bigfork County Water and Sewer District owns and maintains the existing treatment plant and is in the process of implementing improvements to the plant.

Construction for the proposed Greater Woods Bay project is slated to occur in May 2010.

Specific tasks to be accomplished:

- Install 7,190 feet of eight-inch collector sewer main and 805 feet of 10-inch main;
- Construct 25 manholes;
- Construct bridge crossing;
- Replace asphalt and gravel roads.

Project Management

The project engineer has already been selected and has considerable experience in administering grants and designing and constructing wastewater improvements. The district manager will be the fiscal contact. The project management plan in the application is brief.

The three districts in the Woods Bay area have had an active public involvement program to consider the project including public meetings, websites, publications, and other activities. Additional efforts are planned.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$ 41,500	\$ 41,500
Professional & Technical	\$0	\$0	\$156,000	\$156,000
Construction	\$100,000	\$0	\$678,500	\$778,500
Total	\$100,000	\$0	\$876,000	\$976,000

The budget, as described above, is limited to constructing a local sewage collection system for the Greater Woods Bay Sewer District. In addition, a “core system” must be constructed, including a lift station and force main that will convey waste from the district to the Bigfork Water and Sewer District. The Bigfork district will charge an O&M fee plus a capital investment fee for use of its treatment system. Homeowners must install an individual service line. Estimated user costs for the system are estimated to be \$54.72 per month, plus approximately \$4,400 for capital investment and \$3,500 for the sewer service line hookup. Estimated costs are based on obtaining various grants and low-interest loans as developed through a viable financial plan. Options where grants were not obtained were also evaluated. The projected user fees are about 235% of the DOC target user rate. Consequently, affordability of the project must be considered, particularly if grant assistance is less than projected.

This budget appears sufficient and reasonable to fund the proposed project. Material, labor, and equipment costs used to develop the budget appear reasonable and adequate. The district’s funding strategy appears reasonable with TSEP grant and RD loan funds in addition to the DNRC grant request. A 40-year loan term was proposed for the RD loan. Costs to acquire treatment capacity from the Bigfork plant were not included in the budget.

Benefit Assessment

The proposed project will help preserve the water quality of Flathead Lake, a highly valued water quality resource. The DEQ has identified the lake as an impaired water body with nutrients from near-shore development identified as one of the sources. By sending accumulated wastewater to an improved treatment system capable of producing high-quality effluent, the project should conserve existing water

quality and not allow continued water quality degradation. The lake is a very important recreational resource and protection of the resource will contribute to economic development throughout the area, increased tourist visitation, and ongoing support of many businesses tied to the recreational industry. Actual benefit has not been clearly defined or quantified in the grant application and supporting documents. The proposed project is a component of developing a regional wastewater treatment system.

Groundwater resources benefit through implementation of the project, including protection of public water supplies impacted by septic tank effluent.

Several letters of support for the project were provided in the grant application and the project appears to have very strong local support. Support for the project was received from the Confederated Salish and Kootenai Tribes.

Environmental Evaluation

The proposed wastewater treatment system improvements should have a net positive effect on the local surface and groundwater quality in the Greater Woods Bay area by reducing pollutant loads. If the project stimulates significant growth in the project area or in the area between Woods Bay and Bigfork, adverse secondary growth-related impacts can occur. These impacts were not evaluated in the application. The long force main delivering untreated wastewater from the three districts in the Woods Bay area to the Bigfork district has significant potential for generating odors due to anaerobic conditions that will likely develop. Odor control was not discussed in the environmental assessment for the projects.

Short-term, negative environmental concerns associated with construction, e.g., noise and dust, can be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 48

Applicant Name	Virginia City, Town of	
Project Name	Virginia City Wastewater System Improvements	
Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 250,000	STAG Grant
	\$ 138,000	SRF Loan
Total Project Cost	\$ 488,000	
Amount Recommended	\$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

The wastewater system serving Virginia City and neighboring Nevada City is experiencing infiltration and inflow (I&I). Groundwater infiltration is flow of groundwater into the sewer pipe through leaking sewer pipe joints, broken and cracked pipe sections and manholes, and leaking service taps and service lines. Inflow is the entrance of surface water during precipitation into the sewer pipe through leaking manhole lids, leaking manhole sections, and roof drains connected directly to the collection system. Design storage capacity has been reached. Due to inadequate sewer services and four-inch sewer mains, wastewater pipes plug and back up into area homes and businesses presenting a health and safety problem for Virginia City citizens.

Recommended improvements for Virginia City include replacing approximately 2,500 feet of eight-inch sewer main and installing about 1,000 feet of new eight-inch sewer main. These improvements will alleviate I&I problems, provide storage capacity, and eliminate sewer line backup.

Technical Assessment

Project Background

Virginia City completed an upgrade to its wastewater treatment ponds and spray field system in 2003. Because of recent increases in wastewater flows and high levels of sewer I&I, the wastewater system storage cell is at capacity and can no longer store treated effluent through an entire winter. Unless this problem is corrected, the town may be forced into early irrigation. Doing this may result in less than optimal treatment. By eliminating excess I&I into the sewer system, the storage system capacity can be increased.

A wastewater facility plan was prepared in 1999. As a result, the town completed an expansion of wastewater treatment facilities, installation of a collection main linking Nevada City and Virginia City, and a new lift station. A facility plan amendment was prepared in 2008 that identified possible sources and methods for reducing these flows. The PER determined that approximately 14,400 gallons per day of winter I&I (about 50%) can be removed by replacing certain aging sewer mains, thus removing significant burden on the storage cells.

Technical Approach

The project will replace sections of eight-inch sewer mains on Cover and Wallace Streets plus several spot repairs.

Specific tasks to be accomplished:

- Wallace Street sewer main: replace 800 linear feet of eight-inch pipe;
- Cover Street sewer main: replace 2,500 linear feet of eight-inch pipe and Jackson Street spot repairs; and
- South of Idaho/Main Street: replace 300 linear feet of sewer main.

All tasks include appurtenances and materials necessary to complete the project.

Project Management

An engineering firm hired to assist the town staff will be responsible for project management. The firm appears well qualified to assist the town with: grant administration, project design, construction management, inspections, and closeout. The town has recent experience (wastewater system upgrade project) working with projects funded through grants and loans.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$43,000	\$43,000
Professional & Technical	\$0	\$0	\$94,000	\$94,000
Construction	\$100,000	\$0	\$251,000	\$351,000
Total	\$100,000	\$0	\$388,000	\$488,000

The town is seeking an RRGL grant, STAG grant, and SRF loan. The town is not providing local reserve funds for the project, but is raising rates to including a reserve. The city's debt obligations total \$0.716 million, and current user rates are below the DOC target rate. According to the PER, "it is anticipated that user rates will be raised to meet target rate requirements by the time construction of this project begins."

Benefit Assessment

The proposed project will reduce winter I&I into the town's collection system. Assuming that the I&I source is groundwater, this project will also reduce an obvious waste of groundwater. The volumes involved are small, about 10 gallons per minute, and may not measurably influence local groundwater availability, so actual resource benefits are minor.

Environmental Evaluation

Proposed construction takes place within already disturbed areas. Negative environmental impacts will be short term and construction related, such as dust and noise. Overall, the project will positively impact the environment by reducing the summer leakage of untreated wastewater.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 49

Applicant Name Helena Valley Irrigation District (HVID)
Project Name HVID Main Canal Lining Project

Amount Requested \$ 100,000 Grant
Other Funding Sources \$ 92,720 Applicant, In-Kind
Total Project Cost \$ 192,720

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The HVID is near Helena. HVID is requesting funds through the RRGL program for design and construction of canal lining in the main irrigation canal. The goal of the project is to provide HVID with an irrigation infrastructure improvement that will conserve water resources, decrease seepage to adjacent property, and increase crop yields. This project was conceptualized by HVID as the first step in long-range planning and modernization efforts.

In compliance with the RRGL program, a Preliminary Engineering Report (PER) investigated existing infrastructure and operational controls of HVID and evaluated irrigation system alternatives. The primary recommendation of the study is to install Pond-Gard liner in 2,640 feet of the Helena Valley Main Canal so HVID can conserve water resources, reduce canal seepage, eliminate damage to adjacent property, maximize the beneficial use of available water, and increase crop production. The seepage loss is estimated at 15 cfs or 30 acre-feet/day, or 5,400 acre-feet annually.

A direct consequence of the seepage is reduction in crop yields over 2,700 acres, with an estimated annual revenue crop loss to the community of approximately \$405,000. In addition to the water resource benefit of 5,400 acre-feet/year, the project is expected to have significant economic benefit. As presented in the present worth analysis of proposed alternatives, if installation of the canal lining and improved resource management can reduce crop losses by only 25% (from 50% to 25%) on acres of irrigated land, those irrigators will realize direct economic benefit of \$202,500 or \$2,322,828 over the next 20 years (assuming an inflation rate of 3%). This would generate an additional \$712,500 to \$1,425,000 in annual economic activity. Assuming that for every dollar generated from crop production, an additional \$7 is added to the economy from other sources (i.e., freight), then the net impact to the economy is nearly \$22.3 million over 20 years. In addition, if the Helena Valley Main Canal were to fail due to seepage, then 30 homes would be destroyed, with a property loss estimated at \$8 million.

Implementing programs such as canal lining to reduce seepage maximizes the multiple-use benefits of the natural flow diversions of the Missouri River and storage water from Canyon Ferry and Helena Valley reservoirs. The multiple-use resource benefits that HVID will be able to meet through water conservation of 5,400 acre-feet/year are fish and wildlife benefits in the Missouri River watershed and Canyon Ferry and Helena Valley reservoirs, additional irrigation water, increased recreational benefits, and increased available water supply to meet minimum fish requirements.

In addition to resource preservation benefits associated with canal lining, community awareness that HVID is implementing measures to maximize the benefits of the limited available water resources will be increased. Installation of canal lining to conserve 5,400 acre-feet/year of the water resource is HVID's first step in establishing a long-term management and operational strategy. The project will improve irrigation service to the members by conserving water resources and maximizing beneficial use of the limited water resources to benefit the entire community.

Technical Assessment

Project Background

The HVID is within the Helena Valley between the Missouri River and the City of Helena. HVID consists of approximately 17,000 irrigated acres serving 120 farms and ranches. The HVID Helena Valley Unit also supplies some drinking water to Helena. The HVID has 64.8 miles of canals and laterals; 12.9 miles have been lined or put into pipe. This project is part of an ongoing effort to improve the HVID's delivery efficiency in the irrigation system.

The HVID Main Canal experiences significant seepage as it passes through the north half of Section 1, Township 10 North, Range 4 West. This 2,640-foot reach of the main canal was built through a fill area in relatively poor soils and is not adequately equipped to retain water. A U.S. Geological Service (USGS) study conducted in 1993 determined that the 2,640-foot reach of the main canal lost approximately 15 cfs or 5,400 acre-feet of water per year. The determination coincides with field observations which found continually saturated topsoil adjacent to the main canal throughout this reach. In addition, the Wagon Wheel Subdivision is adjacent to the east bank of the main canal. Severe seepage within this is has leaked into basements within this development and caused property damage.

Losses throughout the HVID infrastructure coupled with continued drought have not allowed the HVID to deliver full water allotments to the acres it serves. The project will continue an effort to improve the delivery efficiency and reduce water loss. The most cost effective alternative for the HVID-Main Canal Lining Project is installation of Pond-Gard liner through the identified 2,640-foot section of the main canal. Other alternatives considered were lining the canal with different materials including concrete and a spray-on polymer.

Technical Approach

The preferred alternative is continued use of the canal with installation of a Pond-Gard liner through the identified 2,640-foot section. The existing canal will be cleaned, removing organic material, and reshaped where necessary. The Pond-Gard liner will be installed with one-foot of gravel ballast placed over the liner to anchor it in place and protect against puncture from animal traffic. Installation of the Pond-Gard liner through the 2,640-foot reach will preserve up to 15 cfs previously lost to canal seepage. Elimination of the water loss will minimize soil saturation in the Wagon Wheel Subdivision, mitigating any potential property damage caused by the seeping canal. Installation of the Pond-Gard liner will also reduce the required operation and maintenance of the system and allow 5,400 acre-feet of water per year to be put to beneficial use.

Little discussion was presented on the alternatives not selected. However, meetings with the applicant provided sufficient evidence to support selection of the preferred alternative. The application provided a lineal-foot cost estimate for each alternative but did not provide detailed information to substantiate it. The application included provisions for a 10% contingency on the price of the Pond-Gard liner to protect

against price increases. Because the liner is an oil-based product, all of the budget contingency will likely be used in product acquisition due to the volatility of the market.

Construction is scheduled to begin in October 2009 and will be complete in November of the same year.

Specific tasks to be accomplished:

- Grant administration and project set-up;
- Detailed site evaluation, selection, and survey;
- Final design and development of construction plans;
- Construction (including canal shaping);
- Installation of Pond-Gard in a 2,640-foot section of canal, with oversight;
- Placement of gravel ballast; and
- Project closeout.

Project Management

The HVID will contract with an engineering firm to develop final design and construction documents and provide construction oversight. The contracted engineering firm will also act as the project manager and grant administrator for the HVID. The contracted engineering firm will have experience in working with and administering grant-funded projects. The HVID will provide limited assistance in administration of the grant. However, it will act as the final authority on major decisions pertaining to the project.

The Pond-Gard liner and all appurtenances will be put out for bid during the procurement process. Construction and installation will be performed by the HVID staff with construction oversight provided by the contracted engineering firm. The HVID staff has experience in canal rehabilitation and liner installation from past work on the HVID infrastructure.

Upon award of this requested grant, data collection will take place to facilitate completion of the final design. Following completion of the final design, the project will be ready to proceed.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$0	\$0
Professional & Technical	\$27,400	\$0	\$0	\$27,400
Construction	\$72,600	\$0	\$92,720	\$165,320
Total	\$100,000	\$0	\$92,720	\$192,720

The application provided a linear-foot cost estimate for the preferred alternative. Detailed information to support the development of the linear-foot cost was not provided. It is not clear how the applicant arrived at the linear-foot cost, but product research and current cost estimates from the DNRC Water Projects Bureau on similar projects appear to support the cost estimate. The application provided little discussion of potential alternatives. However, selection of the preferred alternative was justified by a cost comparison of the alternatives. This project is not part of a phased project plan but is part of a long-range infrastructure rehabilitation plan developed by the HVID. Further rehabilitation projects will be undertaken following completion of this project, as funds become available.

The application requests \$72,600 for the acquisition of canal lining products, which includes a 10% contingency for product acquisition. The HVID is proposing to provide \$92,720 of in-kind services to install the liner. Due to the volatility of oil-based product markets, it is possible that the money allocated for construction product acquisition along with the 10% contingency will not be sufficient to purchase material to fully complete the project. In the event, the length of canal lined will be scaled down.

In total 17,000 irrigated acres are served by the HVID. One hundred twenty users purchase water from the HVID at a cost of \$17.96 per acre. The application estimates that the user fees will increase to \$18.96

per acre to cover increasing operation and maintenance costs to manage the system. The estimated increase is not related to the costs associated with implementing this project.

Matching funds for this project are secure. If awarded, the project will be in position to start implementation in fall 2009.

Benefit Assessment

Water conservation is the main renewable resource benefit associated with this project. The USGS has determined that the reach of main canal through the project area loses nearly 15 cfs or 5,400 acre-feet per year. Excessive seepage in the area has caused property damage to homes adjacent to the main canal. Lining the proposed reach of main canal will eliminate seepage, effectively eliminating property damage to adjacent residences and providing a significant water savings. The water savings provided by the project will be a direct benefit to Lake Helena, a public water supply for Helena. Secondary benefits will include increased agricultural production, elimination of a potential public safety hazard, and preservation of 17,000 irrigated acres.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse long-term impacts will result. Minimal, short-term environmental concerns associated with construction, e.g., noise, dust, and vegetative disturbance, can be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 50

Applicant Name	Flathead County	
Project Name	Flathead Regional Wastewater Management Group (FRWMG)	
Amount Requested	\$ 89,983	Grant
Other Funding Sources	\$ 23,514	Applicant (in kind)
Total Project Cost	\$ 113,497	
Amount Recommended	\$ 89,983	Grant

Project Abstract (Prepared and submitted by applicant)

This proposal would establish a working group of elected municipal and county officials, public wastewater district board members, citizen members appointed by the Flathead Basin Commission, and members of the Confederated Salish and Kootenai Tribal Council. This group would develop a basin-wide plan that clearly identifies sewage treatment resources and establishes fiscally sound and effective public policy around sewage treatment to protect water quality into the future.

Challenges facing the Flathead community to provide sewer services are great, but not insurmountable. Some of these challenges, when addressed, may enhance the services in the Flathead and, in turn, protect valuable water resources:

- Lack of clear sewer service planning areas;
- Lack of coordination between sewer service entities;
- Lack of coordination between planning boards and elected officials regarding proposed developments;

- Compliance with the pending Flathead Lake TMDL and ramifications for all pollution and discharge elimination system permits; and
- Lack of understanding on the contribution of on-site sewage treatment systems to the Flathead Lake TMDL.

Proposed 12 members of the FRWMG:

- One elected representative from Kalispell City Council;
- One elected representative from Whitefish City Council;
- One elected representative from Columbia Falls City Council;
- One elected representative from Polson City Council;
- One representative from Bigfork Water and Sewer District Board;
- One representative from Lakeside Water and Sewer Board;
- One representative from Evergreen Water and Sewer Board;
- One county commissioner from Flathead County Board of Commissioners;
- One county commissioner from Lake County Board of Commissioners;
- One representative from Confederated Salish and Kootenai Tribal Council; and
- Two citizen members appointed by the Flathead Basin Commission.

Technical Assessment

Project Background

The Flathead Lake watershed has experienced considerable population growth resulting in new commercial and residential development throughout the basin. Basin growth planning and permitting is controlled by the State of Montana, two counties, several cities and towns, and the Confederated Salish and Kootenai Tribe. Because multiple governmental entities each have limited authority, no comprehensive basin-wide effort for wastewater inventory and management has occurred. The goal of the proposed wastewater management group is to create a formal forum and structure for all stakeholders to understand how wastewater is managed throughout the basin and develop recommendations for a basin-wide approach for wastewater management. The approach will protect water quality through better wastewater management, especially in areas experiencing high growth.

Technical Approach

Three alternatives were considered: the preferred alternative, no action (do not develop a basin-wide wastewater management plan efficiency study), and request additional regulatory oversight through the legislative process. The no action alternative would be the least expensive in the short run, but may result in considerable future expense if the cumulative effects of uncoordinated Basin-wide wastewater management adversely affect water resources in the basin. The option of additional regulatory oversight would also be inexpensive for the applicant but would require considerable expense on the part of Montana. In addition, state regulatory oversight does not include local decision makers to the extent it would under the preferred alternative. This could result in a lack of investment in the plan.

The preferred alternative is to hire a facilitator who will work with eight communities and sewer districts (Kalispell, Whitefish, Columbia Falls, Polson, Bigfork, Lakeside, and Evergreen), two counties, the Confederated Salish and Kootenai Tribes, and the Flathead Basin Commission to establish a working group of 12 members to inventory wastewater systems and develop a basin-wide plan that identifies public policy options to protect water resources. The approach is designed to conduct consistent and productive meetings, document progress, obtain information, understand problems, and develop practical recommendations. To ensure consistent and productive meetings, working group will be selected by, or will include, community leaders; meetings and events will be directed, facilitated, and scheduled by an outside contractor; travel and meeting expenses will be reimbursed; and meeting information and decisions will be well-documented. Information supplied to the group will be developed by a professional consultant. Necessary supplies will be provided. The application included provisions for working group

education from state and federal government officials, scientists and engineers, and community planners. All tasks appear to follow a reasonable time frame.

Specific tasks to be accomplished:

- Hire a meeting facilitator;
- Hold 24 wastewater management group meetings;
- Hire an engineer;
- Analyze data from 10 county or municipal treatment plants;
- Conduct data deficiency analysis and combine with septic information; and
- Make recommendations to wastewater management working group.

Project Management

The Flathead County Health Department will administer the project, with oversight by the Flathead County Commission. The health department and commission will seek bids from contactors for group facilitation and project management. The selected contractor will assist the County with procurement of professional services necessary to conduct a wastewater management inventory, provide wastewater management guidance, and assist the working group with plan development. The project management plan includes provisions for legal and administrative services during the contracting effort. The project management plan spells out clear duties for each member of the management team.

The proposed working group will be composed largely of elected officials and all meetings will be advertised and open to the public. Public attendees will be invited to voice concerns about the proposed project during working group meetings. Recommendations to the relevant jurisdictional agencies will be presented as a management plan also available to the public. Letters of support were submitted by the Flathead County Commission, the Flathead Lakers, and the Flathead City-County Board of Health.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$10,090	\$0	\$864	\$10,954
Professional & Technical	\$79,893	\$0	\$22,650	\$102,543
Construction	\$0	\$0	\$0	\$0
Total	\$89,983	\$0	\$23,514	\$113,497

Three alternatives were considered when developing the budget: the preferred alternative, no action (would require no funding), and seeking legislative support for additional regulatory controls on wastewater management. The proposed project is financially feasible with the given budget. Cost estimates are reasonable and adequate to achieve stated project results.

Benefit Assessment

The proposed project is likely to result in preservation and improvement of water quality in the Flathead Basin. The project addresses growth management, one of the DNRC thematic challenges. The project would contribute to a basin-wide wastewater assessment recently initiated by the EPA.

The Flathead Basin is experiencing high population growth. The applicant states that surveys of residents indicate that clean water is the most important amenity in the basin. A previous study (submitted as supporting information) indicated that a multi-jurisdictional, basin-wide approach is needed to adequately manage wastewater at Flathead Lake. This inventory and planning project would enable multiple government entities to coordinate wastewater management efforts, address problem areas, and prepare for future wastewater needs. Because the economic health of most Flathead Basin communities depend on preserving the quality of Flathead Lake, this project has multiple benefits. It will provide a tool for communities to preserve water quality and maintain the economic vitality of the region. As the application states: "preservation of clean water will enhance fisheries, promote tourism, facilitate proper planned

residential growth, and provide a template for dealing with significant challenges through cooperation and careful strategic planning.”

Environmental Evaluation

The proposed working group, wastewater management inventory, and management plan development is unlikely to impact natural resources negatively. No construction will take place, some wastewater management practices are likely to change as a result of this study, and new treatment options for areas using individual systems may be implemented. Over the long term (greater than five years), this project is expected to increase water quality protection and potentially improve the water quality of Flathead Lake.

Funding Recommendation

The DNRC recommends grant funding of \$89,983 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 51

Applicant Name:	North Baker Water and Sewer District (Fallon County)
Project Name:	North Baker Water and Sewer District Wastewater Improvements
Amount Requested	\$ 100,000 Grant
Other Funding sources	\$ 500,000 TSEP Grant
	\$ 50,000 RD Grant
	\$ 226,760 RD Loan
	\$ <u>908,825</u> District Donations (Fallon County)
Total Project Cost	\$ 1,785,585
Amount Recommended	\$ 100,000

Project Abstract (Prepared and submitted by applicant)

On May 7, 2004, Fallon County formed the Fallon County North Baker Water and Sewer District. The district has six residential users and 22 commercial users; commercial users are light industrial and service companies.

The district receives potable water from Baker’s water system. The water is supplied to users through two four-inch pipes and one three-inch pipe, all of which are dead-end lines with no looping or interconnections. No fire protection exists in North Baker other than that offered by the storage capability of the Baker Rural Fire Department.

Users in the Fallon County North Baker Water and Sewer District have no sanitary sewer system. Users rely on septic tank and drainfields or holding tanks. Users in the district have reported septic tank failures with sewage surfacing on the ground.

Two health and safety concerns will be addressed by a wastewater collection system. The first is the potential for sewage to leak from septic tanks with drainfields and contaminate surface water and groundwater. No contaminated surface water or groundwater has been documented.

The second issue is the potential for sewage to leak and contaminate the existing water system through pipeline leaks. However, no such leaks have been documented. The potential for these issues to occur is ongoing and will not change until the wastewater system is replaced.

The PER proposed the actions for which funding is sought. The district has:

- Obtained financial commitment from Fallon County commissioners to install a trunk line to help absorb some of the cost;
- Applied to TSEP for funding to construct the wastewater system;
- Applied to Rural Development as a possible funding source for construction; and
- Applied to RRGL for grant funding.

The most significant benefits of the proposed project are preservation of the groundwater and surface water, public health, and public safety. Reportedly, leakage has migrated into Sand Creek.

Technical Assessment

Project Background

Fallon County formed the Fallon County North Baker Water and Sewer District in May 2004. The district comprises six residential and 22 commercial users.

North Baker has no sanitary sewer system. Residents rely on septic tanks with drainfields or holding tanks. Failures of septic tank drainfields with sewage surfacing on the ground have been reported. Area soils have severe limitations for septic systems with drainfields. The sanitarian for Fallon County has placed a moratorium on installation of future septic systems. The moratorium has prevented economic growth in the area.

Two health and safety concerns would be addressed by installing a wastewater collection system. The first is the potential for sewage to leak out of septic tanks with drainfields possibly contaminating surface water and underlying groundwater. The second is the potential for sewage to leak out and contaminate the existing water system through pipeline leaks.

Alternatives considered included: constructing a new treatment facility, a small-batch mechanical system, and gravity sewer system into Baker's treatment facility.

Technical Approach

Installing a conventional gravity collection system with connection to Baker was chosen as the preferred alternative. The city's existing treatment facility is capable of containing all of North Baker expansion. This alternative will require minimal operation and maintenance. The lift station will require daily inspection and periodic maintenance.

The Fallon County commissioners have committed \$908,825 for the main trunk sewer line that will service many of the local businesses. This portion of the project began in July 2008. The entire project will be completed by July 2010.

Specific tasks to be accomplished:

- Construct lift station;
- Install 15,000 lineal feet of gravity wastewater collection system; and
- Connect to Baker wastewater system with a 1,600 lineal foot force main.

Project Management

The district has hired an engineering firm to finalize plans and specifications, bidding and negotiations for hiring a contractor, contract administration with the contractor, resident inspection, and testing services. The district will contract a project administrator to assist in all phases of procurement, project development, and management. Public involvement has been encouraged through public meetings. Strong public support exists for the proposed project. Once construction has begun, the public will be encouraged to attend the weekly progress meetings.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$71,000	\$71,000
Professional & Technical	\$0	\$0	\$124,000	\$124,000
Construction	\$100,000	\$0	\$1,490,585	\$1,590,585
Total	\$100,000	\$0	\$1,685,585	\$1,785,585

The budget appears sufficient and reasonable to fund the proposed project. The applicant's funding strategy consists of RRGL, RD and TSEP grant funds, an RD loan, and local funds. The project budget has a contingency of less than 5% of estimated construction costs. Typically, a 10% contingency is provided for this type of project. Some of the estimated costs appear on the low side when compared to other similar projects. Given the small contingency budgeted for the project, this could pose a problem.

The district does not have different user rates for residential and commercial users. The district believes commercial users should pay a higher rate than residential users and is proposing a rate structure to provide O&M funds and debt service for the project. Commercial users in the district support the increase. Commercial users would be charged a \$75 base rate for 1,000 gallons and \$6.50 per additional 1,000 gallons. Residential users would be charged a \$20 base rate and \$5 per additional 1,000 gallons.

The proposed average monthly combined (water and wastewater) rate is \$69 for a residential user, slightly higher than the target rate for Fallon County. However, users at the public meeting conducted in April 2008 stated they would be willing to pay the rate.

Benefit Assessment

The project will provide quantifiable resource preservation benefits. The district includes 28 users who rely on septic tanks and drainfields or holding tanks for sewer service. The proposed project will protect and preserve water quality by eliminating the use of failing septic systems. This project will bring the system into compliance with all state and federal regulations, thus preserving the environment. Completing the project will also allow development in the commercial area. Several new businesses have expressed interest in moving to Fallon County once the infrastructure is in place. One has made a purchase agreement to build a \$900,000 building that will create new jobs for Fallon County.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse, long-term impacts will result. Minimal, short-term construction-related impacts will be controlled through permitting and proper construction methodology.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 52

Applicant Name Valier, Town of
Project Name Valier Water System Improvements

Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 625,000	TSEP Grant
	\$ 545,173	RD Grant
	\$ 858,897	RD Loan
	<u>\$ 20,000</u>	Local
Total Project Cost	\$ 2,149,070	

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Valier's water supply consists of four groundwater wells: three on the southeastern side of town, and one on the southwestern side. The wells are in well houses with a 60,000-gallon elevated storage tank next to Pumphouse No. 4. The town's distribution system comprises AC, cast iron, and pvc piping (installed in the 1970s) delivering water to users. The system includes 111 valves and 41 fire hydrants.

The town received letters from DEQ citing total coliform MCL violations in 1991, 1993, and 2003. The town levies watering restrictions during the summer irrigation season, typically from May 1st to October 31st.

Needs:

- Address historic total coliform MCL violations;
- Water meters;
- Increased storage;
- Back-up power supplies;
- Distribution main improvements;
- Source water protection BMPs; and
- Replace faulty valves and hydrants.

Phase 1 Improvements:

- New 210,000-gallon elevated water storage tank;
- Water meters, main replacements;
- Existing storage tank improvements; and
- Eliminate leaking sewer on Illinois Avenue.

Phase 2 Improvements:

- Distribution system improvements;
- New controls/telemetry;
- Lining Well No. 4;
- Construct new well and pump house; and
- Provide back-up power supply.

Technical Assessment

Project Background

Valier owns and operates a water system within its city limits in Pondera County. This water system provides service to 265 residential water services and 39 commercial/nonresidential users. The water system includes four groundwater production wells, one elevated storage tank (60,000 gallons, constructed in 1913), and distribution piping. The distribution mains range between eight inches and two

inches in diameter. An older clay sanitary sewer main is 65 feet from Well #1 and 85 feet from Well #2. The wells are between 47 and 70 years old and have corrosion. The storage reservoir does not provide adequate storage to meet the needed fire flow (NFF) as prescribed in Circular DEQ-1. The distribution system also includes undersized water mains which do not have the capacity to meet the NFF. The existing elevated storage tank is not equipped with a ladder and the tank vent is a gap between the roof and sidewall. The town is not metered and watering restrictions have been required. Alternatives considered to remedy the system deficiencies include: a new elevated storage tank to meet the NFF requirements, a ground-level storage tank and pumping station, upsizing water mains, improvements to the existing tank, construction of additional wells, rehabilitation of existing water wells, and installation of individual water meters.

Technical Approach

The preferred alternative includes constructing a new 210,000-gallon elevated storage tank, upsizing the water main to the commercial area of town to improve fire protection, constructing a ladder and tank vent at the existing tank, relocating the sewer main in proximity to wells #1 and #2, and installing individual water meters. A future phase recommends source water improvements, a telemetry system, purchase of a portable generator to provide increased operational reliability, and additional distribution main improvements. The new tank is sized to provide the estimated future average day demand plus fire flow, thus meeting the requirements of Circular DEQ-1.

The proposed project should have no significant environmental impacts, other than standard, short-term impacts associated with construction. The proposed alternative was selected based on several criteria including present-worth analysis, operational complexity, environmental impacts, operational flexibility, and ease of implementation. The report did not explain why the town would work on the existing storage tank, as the new storage tank would be sized adequately to meet the town's needs. Also, meters will be installed at 71 vacant lots or abandoned structures. The cost to install these meters is significant. Construction is slated to begin in spring 2010 and end in summer of the same year.

Specific tasks to be accomplished:

- Construct a new 210,000-gallon elevated water storage tank
- Seal roof gaps and Install a new ladder and vent at the existing water storage tank;
- Install approximately 3,150 feet of 10-inch water main;
- Replace sanitary sewer main located near Well #1 and Well #2; and
- Install individual water meters.

Project Management

The project management plan spells out clear duties for each member of the management team. The project engineer has been selected to manage the project and perform design, construction management and inspection for the project. The town has hired a separate firm to administer the grants and loans. The town's mayor will be the owner's representative and final authority regarding management issues.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$54,200	\$54,200
Professional & Technical	\$0	\$0	\$321,500	\$321,500
Construction	\$100,000	\$0	\$1,407,826	\$1,773,370
Total	\$100,000	\$0	\$2,049,070	\$2,149,070

The budget form in the application is complete and reflects a total project cost of \$2,149,070 excluding the PER which has already been completed. The proposed funding strategy appears sound and includes a \$100,000 RRGL grant, a \$625,000 TSEP grant, a \$545,173 RD grant, and an \$858,897 RD loan. The proposed funding package is feasible. Current water rates in the town are \$26.98 per month, with a

projected post-project water rate of \$46.91 per month. The town has both water and sewer. The residential sewer rate in Valier is \$30 per month. The DOC combined target rate is \$57.50 per month.

The applicant states that if the town is not successful in obtaining any of the funding, the town intends to renegotiate with RD and reapply for grant funds.

Benefit Assessment

The primary benefit to renewable resources is resource conservation. The proposed project provides conservation benefits by installing individual water meters to reduce usage. Also included is replacement of existing water mains, which catastrophically fail resulting in lost water. Replacement of these mains should result in water conservation. Improved fire protection with installation of a new storage reservoir will improve the town’s ability to protect structures in the event of a fire.

Environmental Evaluation

The applicant adequately addresses the environmental impacts associated with its proposed water system improvements project with no long-term, negative impacts noted. A positive environmental impact will be the conservation of groundwater realized by installation of individual water meters. An environmental checklist was included with the application and appears complete. Short-term impacts associated with construction have been identified in the PER and environmental checklist. They include noise, traffic, dust, and energy consumption.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 53

Applicant Name Flathead Joint Board of Control
Project Name FJBC Jocko K Canal Lining

Amount Requested \$ 100,000 Grant
Other Funding Sources \$ 133,600 Applicant
Total Project Cost \$ 233,600

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The Flathead Indian Irrigation Project (FIIP) is near St. Ignatius. FJBC is requesting funds through the RRGL program for design and construction of canal lining for the Jocko K Canal below the Jocko K Canal Siphon. This project was conceptualized by FJBC as a major step in the long-range planning and modernization efforts for FIIP.

In compliance with the RRGL program, a Preliminary Engineering Report (PER) investigated existing infrastructure and operational controls of FJBC and evaluated irrigation system alternatives. The primary recommendation was to install Pond-Gard liner for 4,000 feet of the Jocko K Canal so FJBC can conserve water resources, increase instream flows available to the threatened bull trout, reduce canal seepage, eliminate damage to adjacent property, maximize the beneficial use of available water, and increase crop production. The seepage loss is about 10 cfs or 20 acre-feet/day, or 3,600 acre-feet annually.

A direct consequence of the seepage is a reduction in crop yields over 1,800 acres, with an estimated annual revenue loss to the community of approximately \$540,000. In addition to the water resource

benefit of 3,600 acre-feet/year, the project is expected to have significant economic benefit. As presented in the present worth analysis of proposed alternatives, if installation of the canal lining and improved resource management can reduce crop losses by only 25% (from 50% to 25%) on 1,800 acres of irrigated land, those irrigators would realize a direct annual economic benefit of \$270,000 or \$4,016,790 over the next 20 years (assuming an inflation rate of 3%). This would generate an additional \$945,000 to \$1,890,000 in annual economic activity. Assuming that for every dollar generated from crop production, an additional \$7 is added to the economy from other sources (i.e., freight), then the net impact to the economy is nearly \$37.8 million over 20 years. In addition, if the Jocko K Canal were to fail due to seepage, then adjacent cropland would be destroyed, with an estimated property loss of \$1 million.

Implementing programs such as canal lining to reduce seepage maximizes the multiple-use benefits of the natural flow diversions of the Flathead and Jocko rivers and storage water from FIIP reservoirs. The multiple-use resource benefits that FJBC will be able to meet through water conservation of 3,600 acre-feet/year are fish and wildlife benefits in the Flathead and Jocko river watersheds and FIIP reservoirs, additional irrigation water, increased recreational benefits, and increased available water supply to meet minimum fish requirements.

In addition to the resource preservation benefits associated with canal lining, the community is becoming more aware that FJBC is implementing measures to maximize benefits of the limited available water resources.

Technical Assessment

Project Background

The Flathead Joint Board of Control (FJBC) is headquartered in St. Ignatius in Flathead County. The Jocko K Canal is part of the FIIP which was authorized in 1904. Construction of the FIIP was begun about 1922 and nearly all facilities were completed by 1940. As of August 2002, the FIIP comprised 134,788 acres, with approximately 6,000 acres served by the Jocko K Canal. FJBC identified about 6,000 feet of the Jocko K Canal as having significant seepage problems, but the most critical 4,000 feet were selected for lining by this project.

Technical Approach

The preferred alternative is to line 4,000 feet of the Jocko K Canal with a Pond-Gard geomembrane liner. The canal lining will significantly reduce seepage, improve canal bank stability, and save about 3,600 acre-feet of water annually which will be used to provide additional instream flow for bull trout restoration. This alternative was also chosen because FJBC crews install the liner. Three other alternatives were considered, including no action, a concrete canal liner, and use of CANAL SEAL, but these alternatives were rejected because of cost and long-term results.

Construction is slated to begin in October 2009 and end in January 2010.

Specific tasks to be accomplished:

- Hire a consulting engineer to design the project;
- Bid construction;
- Shape and grade 4,000 feet of canal;
- Process gravel ballast;
- Install liner on 4,000 feet of canal; and
- Obtain certificate of substantial completion.

Project Management

FJBC does not have the proper staff or experience to successfully administer the grant, develop the construction contract documents, and perform the construction administration. An engineering firm will be

hired to provide assistance to the FJBC board and manager for grant administration and overall project administration. The engineer will make recommendations to the board for final decision making.

Four support letters were provided from water users on the Jocko K Canal. The county commissioners have told the FJBC that they would write support letters, but they have not been received. No public involvement plan was presented.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$0	\$0
Professional & Technical	\$1,000	\$0	\$22,000	\$23,000
Construction	\$99,000	\$0	\$111,600	\$210,600
Total	\$100,000	\$0	\$133,600	\$233,600

Only one funding scenario was considered. If the concrete lining alternative had been selected, the FJBC would have required a loan and grant to complete the project. Estimated costs may be low, but are reasonable. Should the purchased materials increase in cost, the FJBC would consider constructing a scaled-down version of the project or would increase the amount of its contribution to the project. The project is not phased since it will be completed within one construction season.

The project will not result in a cost increase to the water users. No additional O & M costs would occur because of the lining project and maintenance may even decrease in the lined section.

Benefit Assessment

The major resource benefit is the conservation of approximately 3,600 acre-feet of water each year. This is water estimated to be lost due to seepage within the boundaries of the proposed project. The conserved water will be used to increase instream flows available to threatened bull trout. The reduction in seepage will eliminate damage to adjacent property, help maximize the beneficial use of available water, and increase crop production.

Environmental Evaluation

The proposed canal lining project will allow for increased instream flows, which will benefit the threatened bull trout. Other threatened species within the area around the project are: grizzly bear, Canada lynx, gray wolf, bald eagle, water howellia, Spalding’s campion, and slender moonwort. Since the work is in the canal, there do not appear to be any potential adverse effects to the threatened or endangered species.

Short-term, negative environmental concerns associated with construction, e.g., noise and dust, can be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 54

Applicant Name	Sweet Grass County
Project Title	Yellowstone Greycliff Study
Amount Requested	\$ 80,315 Grant
Other Funding Sources	\$ 13,500 Applicant, In-Kind (committed)
	\$ 1,000 NRCS (In-kind)
Total Project Cost	\$ 94,815
Amount Recommended	\$ 80,315 Grant

Project Abstract (Prepared and submitted by applicant)

The Yellowstone Greycliff Study is an engineering study to design a project to conserve cropland pasture and wildlife habitat along the Yellowstone River near the town of Greycliff. The study will gather enough information and public support for permit applications to implement the project in 2010. Funds for implementation will be requested through the Pre-Disaster Mitigation Competitive grant administered by FEMA. The implementation of this project is applicable to this funding source because of the proximity of the Lower Sweet Grass Road.

After flood waters receded in 1997, river channel alteration resulted in current directly flowing at the bank. This flow pattern has continued, creating a more pronounced “S” curve. Landowners estimate that 60 to 80 acres have been washed away. Witnesses have seen the bank fall away even during average water flows.

Engineers will complete a study of the project area and include comments gathered through a series of public meetings offered throughout the project schedule. Design alternatives, including no action, will be analyzed and one design will be approved by the project’s end.

Technical Assessment

Project Background

The project area has been hit hard by floods over the years. After flood waters receded in 1997, the river channel alteration resulted in current flowing directly at the bank. This flow pattern has created a more pronounced “S” curve. Since 1997, landowners estimate that 60 to 80 acres have been washed away, even during average water flows. The county has struggled with solutions to this problem, especially since more agricultural land and Lower Sweet Grass Road are threatened by continued erosion. Due to stringent permitting requirements for approval to perform work in the Yellowstone River and the need to provide a detailed design, deadlines for funding sources related to saving infrastructure have been missed. Visits to the site area by the engineering firm under contract for the county and information collected has shown a serious lack of data to successfully apply for any needed permits. The county has fulfilled eligibility requirements for the PDMC grant program and has been advised to secure necessary permits before applying for these funds. The purpose of this project is to complete an engineering study and design for protecting pasture and hay ground, a portion of the Lower Sweet Grass Road infrastructure, and fish and aquatic insects adversely impacted by sediment produced from active bank erosion.

Technical Approach

The preferred alternative is to perform a detailed engineering study before implementing an erosion abatement project. Due to the prominence of the Yellowstone River and the number of stakeholders involved, a single project with unilateral acceptance has yet to be achieved. The option to do no erosion control does not appear to be financially logical once the cost of replacing infrastructure and the value of land has been appropriately factored.

Engineers will complete a study of the project area and include comments gathered through a series of public meetings offered throughout the project schedule. Design alternatives will be analyzed and one design will be approved by the end of the project.

Specific tasks to be accomplished:

- Compile and review existing data;
- Host public meetings about the study, design, and implementation phase;
- Design a project that will significantly reduce or eliminate erosion for flow rates up to the 100-year flood stage;
- Receive public comment about the design; and
- Begin the permit process using the compiled data and public comment.

This application seeks funding for Phase 1 through 4 of the project. Phase 1 is to clearly identify the problem through organizing existing data, physically inspect the entire site, perform a preliminary environmental review, and include public outreach to local interest groups, potential funding agencies, permitting agencies, and others interested. Public outreach will continue throughout the project. Phase 2 will be an alternative analysis using information and input gathered during Phase 1 and reasonable designs developed and examined by engineers. Phase 3 will include geomorphologic and environmental investigations, as well as a preliminary design. Phase 4 will be the environmental assessment, permitting process, agency review, and public review. The final design will be completed after comments from the public, stakeholders, and permitting agencies.

Project Management

Sweet Grass County personnel will manage the project, and funds will be tracked through approved government accounting practices. Commissioners will oversee management duties with assistance from the clerk and recorder, treasurer, and may include Disaster and Emergency Services (DES) and Planning personnel during certain segments of the study. These individuals have sufficient expertise and experience to successfully manage and implement this project. The project is ready to implement in July 2009, with a goal of completion by February 15, 2010 to meet a grant application deadline for implementation funds. The applicant plans to conduct public meetings about the study, design, and implementation phase.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$4,500	\$4,500
Professional & Technical	\$80,315	\$0	\$10,000	\$90,315
Construction	\$0	\$0	\$0	\$0
Total	\$80,315	\$0	\$14,500	\$94,815

The requested funds would be used to hire an engineering firm to design the erosion-reducing project along the Yellowstone River. The county and NRCS will provide in-kind support with personnel in the planning, commissioners, and disaster and emergency services offices. In-kind funds are provided through the public funding structure. The applicant does not have a viable alternative funding plan if this grant is not funded.

Benefit Assessment

This project is targeted at finding a way to preserve land, soil, and vegetation along the last free-flowing major river in Montana. Land that is being lost provides habitat for deer, birds, and other small animals. This same land is used by landowners for grazing livestock and harvesting hay. Fish habitat is suffering from excess sedimentation due to continued erosion and warming of waters due to reduced vegetative cover. Recreationists frequently use a nearby fishing access, fish from the banks, and canoe and raft this stretch of river. Implementation of the design may return this section of the river to healthy habitat for fish

and aquatic insects by reducing the sediment load in that part of the river, restoring instream habitat, and re-establishing streambank cover.

Potential resource benefits associated with this study would depend on the ability to implement design results in the stabilization and enhancement of the Yellowstone River channel throughout the project reach. Since the goal of this project is to design an engineered stabilization project widely accepted by the public and permitting agencies, additional funding agencies would look favorably at grants and award higher scores if an engineering study has gathered all necessary data.

Environmental Evaluation

No adverse short- or long-term environmental impacts are associated with this project.

Funding Recommendation

The DNRC recommends grant funding of \$80,315 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 55

Applicant Name	Cut Bank, City of	
Project Name	Cut Bank Water System Improvements, Phase 4	
Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 500,000	TSEP Grant
	\$ 350,000	SRF Loan
	<u>\$ 150,000</u>	Local Reserve
Total Project Cost	\$ 1,100,000	
Amount Recommended	\$ 100,000	Grant
Project Abstract	(Prepared and submitted by applicant)	

The water system serving Cut Bank dates to 1914 and consists of a water treatment plant, two 1-million gallon storage tanks, and approximately 123,000 lineal feet of water main. The source of water is Cut Bank Creek.

This creek has the following deficiencies:

- Rapid changes in turbidity make treatment difficult;
- Very low stream flows that yield insufficient water to satisfy community needs;
- The city is forced to place severe restrictions on water use;
- Running out of water is possible ; and
- The city joined the North Central Regional Water Authority to supplement its supply.

The distribution system has the following deficiencies:

- Approximately 98,000 feet (75%) of the piping was constructed in 1914 and with limited upgrading;
- Approximately 48,000 feet (45%) of the system is undersized at four inches in diameter or smaller and corroded;
- Hydraulic analysis has shown that much of the system has deficient fire flow which represents a public safety concern;
- Leakage in the distribution system is very high (approximately 90 million gallons per year);
- The frequency of repair is very high compared to other communities;

- Heavily corroded pipelines encourage growth of biofilms which harbor bacteria and make it difficult to maintain an adequate chlorine residual in the distribution system, posing a public health risk;
- Heavily corroded lines also inhibit flushing velocities and minimize flushing effectiveness exacerbating previously mentioned public health concerns; and
- Low pressure in portions of the distribution system could result in backflow and associated contamination.

The proposed solution is to continue to complete distribution improvements in phases. For this grant application, the following work will be completed:

- Replace 6,000 lineal feet of pipe, eight fire hydrants, and 22 gate valves.

Technical Assessment

Project Background

The water system serving Cut Bank dates to approximately 1914. At that time the water distribution system consisted of primarily galvanized and cast iron pipe. In 1935 a new 1-million gallon buried concrete tank with a wood roof was constructed. A well was added to the system in 1940; it was later abandoned due to pump and valve problems related to mineralization. The water treatment plant was constructed in 1950 using contact stabilization and rapid sand filtration. In 1962 a booster station was added to serve the higher elevation areas of Cut Bank. The water treatment plant was rebuilt in 1975 converting the treatment process to conventional flocculation, sedimentation, and rapid sand filtration. Also in 1975, the water system intake on Cut Bank Creek was improved and a second 1-million gallon water storage tank was constructed. At sometime during this process, the original water storage tank was refurbished.

In 1998 an analysis of water system needs was prepared which identified many of the water system improvements that the city has recently been constructing. Some of the improvements already made include: upgrading the water intake on Cut Bank Creek to improve the collection ability during low flows and constructing an off-stream reservoir to assist with reducing turbidity and provide additional water storage. The city has recently joined the North Central Regional Water Authority to supplement the city's water supply during low flow.

The city is implementing a program of annual distribution pipe upgrades to address aging pipe and fire flow deficiencies. However, the program will not be able to replace enough pipe annually to offset the rate of degradation. Within Cut Bank, approximately 98,000 linear feet of pipe are over 100 years old and approximately 48,000 linear feet of pipe are undersized. In addition, the water distribution system leaks an average of 90 million gallons per year.

Technical Approach

To address the old and deteriorating water main issue, approximately 6,000 linear feet of water main will be replaced with six-inch and eight-inch pvc pipe. The new pipe should help alleviate the excess water use attributable to leaking water mains, provide better system pressure and fire flows, and alleviate some potential water quality concerns. As part of this construction project, 22 gate valves will be replaced or installed. Also, eight fire hydrants will be replaced or installed to increase fire protection capabilities of the local fire department and enhance the protection of life and property in Cut Bank.

Specific tasks to be accomplished:

- Replace 4,900 lineal feet of existing main with eight-inch pvc water main;
- Replace 1,100 lineal feet of existing main with six-inch pvc water main;
- Install or replace eight fire hydrants; and
- Install or replace 22 gate valves;

Project Management

An engineering firm, along with city staff, will manage the project. The contracted engineer appears well qualified to assist the city with: grant administration, project design, construction management, inspections, and closeout. Cut Bank has experience working with projects funded through grants and loans.

The management plan details public involvement thus far in the project and lists a general plan of how the public will continue to be informed and involved.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$82,000	\$82,000
Professional & Technical	\$0	\$0	\$170,000	\$170,000
Construction	\$100,000	\$0	\$748,000	\$848,000
Total	\$100,000	\$0	\$1,000,000	\$1,100,000

The city is seeking an RRGL grant, TSEP grant, and an SRF loan. The city has allocated \$150,000 of local reserve funds. The city's current debt obligations total \$2.6 million, and the current user rate in Cut Bank is 104% of the DOC target rate.

Benefit Assessment

Excessive leaking from the current water distribution system wastes vast amounts of water. The proposed project will replace many of the leaking water mains and address both excess power draw and water waste. The increase in fire flow and system pressure will benefit users by providing for better protecting life and property.

Environmental Evaluation

The proposed project consists of installation and replacement of water mains and fire hydrant installation or replacement. Proposed construction occurs within already paved areas. Negative environmental impacts will be short term and construction related, such as dust and noise. Overall the project will have positive environmental impacts by replacing old, deficient water mains and improving fire flows.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 56

Applicant Name Confederated Salish and Kootenai Tribes
Project Name Jocko Upper S Lining

Amount Requested \$ 100,000 Grant
Other Funding Sources \$ 133,600 Applicant
Total Project Cost \$ 233,600

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The FIIP is near St. Ignatius. Confederated Salish and Kootenai Tribes (CSKT) are requesting funds through the RRGL program for the design and construction of canal lining for the Jocko Upper S Canal, Reach S-1. The goal of the project is to provide CSKT with an improved irrigation infrastructure. This project was conceptualized by CSKT as a major step in long-range planning and modernization efforts for the Flathead Indian Irrigation Project (FIIP).

In compliance with the RRGL program, a Preliminary Engineering Report (PER) investigated the existing infrastructure and operational controls of CSKT and evaluated irrigation system alternatives. The primary recommendation of the study is to install Pond-Gard liner for 4,000 feet of the Jocko Upper S-1 Canal Reach so CSKT can conserve water resources, increase instream flows available to the endangered bull trout, reduce canal seepage, eliminate damage to adjacent property, maximize the beneficial use of available water, and increase crop production. The seepage loss is about 5 cfs or 10 acre-feet/day, or 1,800 acre-feet annually.

A direct consequence of the seepage is a reduction in crop yields over 900 acres, with an estimated annual revenue loss to the community of approximately \$270,000. In addition to the water resource benefit of 1,800 acre-feet/year, the project is expected to have significant economic benefit. As presented in the worth analysis of proposed alternatives, if installation of the canal lining and improved resource management can reduce crop losses by only 25% (from 50% to 25%) on 900 acres of irrigated land, a direct annual economic benefit to those irrigators of \$135,000 or \$2,008,395 over the next 20 years would be realized (assuming an inflation rate of 3%). This would generate an additional \$472,500 to \$945,000 in annual economic activity. Assuming that for every dollar generated from crop production, an additional \$7 is added to the economy from other sources (i.e., freight), then the net impact to the economy is nearly \$18.9 million over 20 years. In addition, if the Jocko Upper S-1 failed due to seepage, adjacent cropland would be destroyed with a property loss estimated at \$1 million.

Implementing programs such as canal lining to reduce seepage maximizes the multi-use benefits of the natural flow diversions of the Flathead and Jocko rivers and storage water from FIIP Reservoirs. The multi-use resource benefits that CSKT will be able meet through water conservation of 1,800 acre-feet/year are fish and wildlife benefits in the Flathead and Jocko river watersheds and FIIP Reservoirs, additional irrigation water, increased recreational benefits, and increased available water supply to meet minimum fish requirements.

In addition to the resource preservation benefits associated with canal lining, the community is becoming more aware that CSKT is implementing measures to maximize benefits of the limited available water resources.

Technical Assessment

Project Background

The Confederated Salish and Kootenai Tribes are attempting to improve irrigation infrastructure to decrease seepage to adjacent property, conserve water resources, increase instream flows available to

the threatened bull trout, and increase crop yields. The irrigation system infrastructure was completed before 1940 and has deteriorated over time. The irrigation canals leak, resulting in less water available for instream flows and irrigation. The project goal is to maximize the beneficial use of the Tribes' water rights and conserve water resources. The Tribes completed a preliminary engineering report in May 2008 to consider alternatives to address canal leakage. The Tribes considered four alternatives to address the canal leakage problem: (1) no action, (2) concrete liner, (3) canal sealant, (4) geomembrane liner.

Technical Approach

The Tribes selected the geomembrane liner alternative. This alternative was selected because the technology is effective at controlling seepage and easy to maintain, and it is cost effective. The greatest environmental impact discussed pertained to water conservation and improved instream flows for bull trout, with secondary availability of water for irrigation. The ditch lining project would start in May 2009 with a detailed engineering report and conclude in November 2009, weather permitting.

Specific tasks to be accomplished:

- Prepare detailed engineering report;
- Bid the construction;
- Shape the canal;
- Install geomembrane liner on 4,000 lineal feet of canal; and
- Place gravel ballast.

How the project sponsor selected this stretch of ditch for lining is not clear. Project phases are not defined. Seepage loss was estimated.

Project Management

CSKT will retain an engineering firm as the overall project manager. The firm will perform both grant administration and project management. Grant administration will include filling out forms, record keeping, and disbursement of funds. Project management will include project scheduling, construction administration, and project closeout. The engineering firm will be directly responsible to the Tribal Council and will provide recommendations to the Tribal Council for final decisions. During project startup, the CSKT intends to set up a schedule for routine correspondence on the project. The detailed engineering report would need to be completed before the project could proceed. The project will take place in BIA right-of-way and special construction permits are not expected to be required. The Tribes, the FJBC, and the BIA meet with the FIIP water users each year. The lining project will be discussed at these meetings. Procurement method is not clear.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$0	\$0
Professional & Technical	\$1,000	\$0	\$22,000	\$23,000
Construction	\$99,000	\$0	\$111,600	\$210,600
Total	\$100,000	\$0	\$133,600	\$233,600

Four different funding scenarios were considered (1) no action, (2) concrete liner, (3) canal sealant, and (4) geomembrane canal liner. The chosen funding package consists of geomembrane liner at \$1.46 per square foot, 40 feet wide per foot, 4,000 feet of canal. The extra water available downstream would be used for instream flows for bull trout. More efficient use of water would also result in more water available for irrigation use, and more carry-over storage.

How costs were estimated is unclear; unit costs are difficult to verify. DNRC independent assessment of costs found the following concerns: At \$.70 per ft², 4,000 lineal feet, and 40 ft² per lineal foot, liner materials alone would cost \$112,000. The project sponsor has only budgeted \$90,000 for liner material.

These additional costs more than use up the 10% contingency for costs listed in the budget forms. Using in-kind costs provided by the project sponsor for work performed on this project (\$0.835 per ft²). Installed costs may reach \$1.535 per square foot. If 4,000 feet were lined at this cost per foot, the overall cost would be \$245,600 although the budget is only \$233,000.

Project sponsor has proposed to provide \$18,000 in materials to include purchase of liner seaming materials, gravel ballast, and geotextile liner. However, gravel ballast alone will cost \$24,000 using the figure the project sponsor provided of \$6 per ft² of gravel.

Geomembrane liner is a reasonable and cost-effective method of achieving the project goals, but the costs have not been well defined in the application and the costs of the alternatives are not well documented. Given that the geomembrane liner is a petroleum-based product, secondary reviewers expressed concerns about increasing costs that could negatively affect project feasibility. Some of the alternative costs may be overstated (concrete liner at \$700 per square yard seems high according to one secondary reviewer).

How this project would proceed without sponsor funding or BIA support is unclear. Sponsor has not stated that they can absorb the excess costs noted above. BIA has not provided a letter of support or commitment to the project.

Currently water users are assessed annually \$23.45 per acre. Rates would not be expected to change. Line item costs were not included for the selected alternative, nor for the other alternatives.

Benefit Assessment

The major resource benefits for this project are in resource conservation, development, and preservation. Conservation: Water would not seep as readily from the canals resulting in more efficient use of this renewable resource. The applicant estimates that the reduction in seepage would be 1,800 acre-feet per year. This would result in 5 cfs of increased stream flow (smaller water diversions). More water could also be left in carry-over storage (smaller daily reservoir releases for irrigation demands).

Development: With increased water available for irrigation, more land could be put into production, crop yields would increase, and the economy would benefit. The Tribes estimate 900 acres of land could be put back into full agricultural production at 100% capacity or 1,800 acres at 50% capacity, but \$300 per acre may be overstated for economic return. The total annual increased crop yield at the stated rate would be \$270,000. Other multiple-use benefits are mentioned: recreation benefits would be realized with more fish, improved fish habitat, more angling opportunities, more water for boats or other recreation, and improved aesthetics, but these benefits are not quantified.

Preservation: Habitat would be improved for bull trout and other fish as a result of the increased stream flow, and water quality would improve.

The Tribe plans to develop a water accounting program and water budget. The water budget is not yet done, but the Tribe expects it to be complete before the project starts. The project is part of an overall effort to improve the irrigation system. The sponsor provided five letters of support for the project, most from irrigation users in the area and mentioned other public support (from meetings) for the project, but documentation was not provided. BIA provided a letter of support for the Jocko K lining project, and mentioned the overall plan to work with the irrigation project to conserve water for bull trout habitat, but a letter was not received specifically for the Jocko S project. The USFWS and other entities are aiming to reduce the impacts of irrigation in the Jocko River drainage on bull trout, and provided a letter of support for the Jocko S project. However, no additional information on the overall bull trout plan was provided.

The proposed lining rehabilitates an inefficient tribal irrigation system, but does not include installation of water measuring devices. No offstream storage is planned. An alternative energy source would not be involved. No tourism benefits are involved nor development of new agricultural practices. No trade

balance or restoration of resource would be directly associated. No direct relationship to population growth is presented.

Environmental Evaluation

The proposed ditch lining would have a beneficial impact to fish and wildlife and vegetation resources. Several threatened and endangered species live in the area. One of the stated objectives of the project is to maximize the beneficial use of the Tribe's water rights and conserve water resources to increase instream flow for the endangered bull trout. USFWS provided a letter in support of the Jocko S Canal and discussed its support for lining canals in the Jocko River drainage. Short-term negative environmental concerns associated with construction, e.g., noise and dust, can be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 57

Applicant Name	St. Ignatius, Town of
Project Name	St. Ignatius Water System Improvements
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 253,000 TSEP Grant
	<u>\$ 153,000</u> RD Loan
Total Project Cost	\$ 506,000
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

St. Ignatius's water system does not provide sufficient supply or storage to meet DEQ requirements. Recommended improvements have been split into a two-phase implementation plan since the community could not weather costs of a single project. The first phase (proposed project) will include groundwater supply and distribution system improvements; total project cost is \$506,000. Water storage improvements will be implemented as a second-phase project, with an estimated cost of nearly \$2 million.

The proposed project will result in resource conservation, resource development, resource preservation, and resource management:

- Replacing time-worn water mains, a potential cause of water loss, and completing a leak detection survey to find and repair system leaks;
- Installing a new groundwater well, reallocating existing water rights, and installing auxiliary power at the new well;
- Replacing problematic water mains approximately 60 years old and in poor condition. Replacing the mains helps minimize the risk of drinking water supply contamination. Further, a second water line crossing Mission Creek eliminates the potential for separation of the system supply (south of the creek) from the system storage (north of the creek); and
- Effective tracking of water use by metering the town parks and completing a system leak survey. Providing auxiliary power to the new well pump will aid in managing water supply should an extended power outage occur.

Improvements will reduce water losses, increase fire protection capacities, and enable better management of the water system. Proposed improvements will satisfy DEQ requirements for the projected 20-year planning period and allow for community growth in accordance with the town's growth policy.

Technical Assessment

Project Background

St. Ignatius is north of Missoula and east of the Mission Mountains along U.S. Highway 93 in Lake County. The water supply and distribution system provide water service to 276 residential customers and 48 commercial/other customers. The system includes two groundwater wells, one elevated storage tank (300,000 gallons), and distribution piping. The two wells (Well #1 and Well #2) provide 250 and 210 gallons per minute (gpm), respectively. The current maximum day demand is 270 gpm and the projected is 352 gpm in 20 years. The storage tank is undersized. An additional 482,000 gallons are needed to meet the 20-year fire protection requirements. The distribution system includes several mains undersized for adequate fire protection and a single feeder line provides all of the service to the portion of town north of Mission Creek. Water usage in the town is high compared to other similarly sized communities. Alternatives considered to remedy the system deficiencies include: construction of a new well to meet the maximum day demand with the largest well out of service, replacement of and new distribution mains, new storage reservoir alternatives, and a leak detection survey.

Technical Approach

The preferred alternative includes construction of a new well, distribution system improvements for increased fire protection, installation of a second feeder main across Mission Creek for improved system reliability, and a leak survey to identify leaking water mains. The new well would be sized to meet future peak day demands with the largest well out of service as required by Circular DEQ-1. The report recommends construction of a 500,000-gallon storage reservoir as a future Phase 2 improvement.

The proposed project should have no significant environmental impacts, other than standard, short-term impacts associated with construction. Construction is slated to begin in summer 2010 and end in fall of the same year.

Specific tasks to be accomplished:

- Construction of a new groundwater production well with a minimum flow of 147 gpm;
- Installation of a new water main on Mountain View Drive for increased fire protection;
- Installation of a second water main across Mission Creek;
- Installation of a water main on Home Addition; and
- Completion of a leak survey to identify leaking water mains;

Project Management

The project management plan spells out clear duties for each member of the management team. The project engineer has been selected to complete project design, construction management, and inspection. The engineer will also administer the grants in conjunction with the town. The town will retain ultimate responsibility for the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$32,775	\$32,775
Professional & Technical	\$20,000	\$0	\$106,000	\$126,000
Construction	\$80,000	\$0	\$267,225	\$347,225
Total	\$100,000	\$0	\$406,000	\$506,000

The budget form in the application is complete and reflects a total project cost of \$506,000. The proposed funding strategy appears sound and realistic and includes a \$100,000 RRGL grant, a \$253,000 TSEP grant, and a \$153,000 RD loan. The proposed funding package is considered feasible. Current

water rates in the district are \$19.47 per month, with a projected water rate of \$20.74 per month following the proposed project. All users would be assessed the rate increase. The sanitary sewer rate in St. Ignatius is \$40 per month for a post-project combined rate of \$60.74 (\$20.74 + \$40.00). The combined DOC target rate is \$32.13.

Detailed cost estimates were provided in the PER for the selected alternatives to support the project cost. The cost estimates appear adequate for the proposed project. Costs for bonding, loan reserves, audit fees, legal fees, and other administrative costs have been included. The estimated costs for each line item in the budget form appear accurate for the scope of the proposed project.

The applicant states that if the town is unsuccessful in obtaining either the RRGL grant or the TSEP grant, the budget would require further consideration with possible deletion of project components, particularly distribution system improvements.

Benefit Assessment

The primary benefit to renewable resources is resource conservation. The proposed project provides conservation benefits by replacing existing water mains which may be leaking. Improved fire protection with the installation of larger mains will improve fire protection to local structures. The project also intends to complete a study to identify leaking mains within the distribution system.

Environmental Evaluation

The applicant adequately addresses the environmental impacts associated with its proposed water system improvements project with no long-term, negative impacts noted. An environmental checklist was included with the application and appears complete. Short-term impacts associated with construction have been identified in the PER and environmental checklist. They include noise, traffic, dust, and energy consumption.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 58

Applicant Name	Missoula County
Project Name	Lewis and Clark Subdivision RSID Water System Improvements
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 262,300 RSID
	<u>\$ 329,417 TSEP Grant</u>
Total Project Cost	\$ 691,717
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Missoula County assumed responsibility for the Lewis and Clark Subdivision on September 16, 1994, from the Home Owner’s Association (HOA). The system was in disrepair and the HOA had neglected upkeep of the system. Missoula County has since conducted repairs or improvements as necessary. The county developed a maintenance RSID to ensure an adequate operation and maintenance (O&M) budget would cover routine system maintenance. Missoula County established an escrow account to address significant repairs in an effort to reduce fluctuation in assessments.

When the well house was replaced in December 2006, a master meter was installed. After installation, operations staff noticed that water usage exceeded that required for the average daily consumption of the 41 households connected to the system. In addition, the staff noticed that the wells were typically running at full capacity. Staff repaired leaks beneath dwellings, yet these repairs did not solve the water loss problem.

The system layout contributed to many of the issues. The distribution system runs below each residence. The vertical galvanized service line heaves up and down as the mobile home rocks from wind or other means, and cracks the plastic tee (vertical riser) at the main.

To eliminate the system leaks and resolve the system layout problems, the proposed project will replace the existing water distribution system.

In addition to replacing the water distribution system, the proposed project will install individual water meters and meter boxes at each residence. This will allow operations staff to monitor individual water usage to help avoid future significant water loss problems.

Technical Assessment

Project Background

The Lewis and Clark Trailer Park was constructed in 1976 and includes 46 lots, with 41 containing a single-family home. While the well house and water supply system are generally in acceptable working condition, the system currently does not have a valid water right. The distribution system faces several serious challenges. The pipelines have been noted as undersized, at two and three inches in diameter. More important, the system is in a serious state of disrepair, which has resulted in extreme water loss conditions and has placed the subdivision in jeopardy of adverse public health and property loss. Leaks in the system are believed to be beneath the homes in the subdivision at the vertical riser serving each unit. Since meters have been installed on the water supply system, pumping has averaged over 1.9 million gallons a month, which equates to well over 1,500 gallons per day (gpd) by each residential unit. According to Missoula's water supplier, average monthly demands for a typical residence should be closer to 500 gpd. Missoula County subsidizes the O&M budget and estimates a cost of over \$80 per month per connection. Primary O&M costs are associated with emergency repair of the pipeline. Not only are the leaks expensive to repair, they have also caused loss of pressure in the system, resulting in back siphoning and infiltration of sand and dirt into the pipeline. Earthen material in the system suggests the possible formation of sink holes. The potential for contamination of the drinking water is high since the subdivision's septic tank and drainfield are near the distribution system.

Technical Approach

The preferred alternative involves complete replacement of the distribution system. Although the only other alternative evaluated was no action, no other alternative exists under the current situation to effectively address system challenges, aside from abandoning the water system and leaving residents to either drill their own wells or haul potable water in from an outside source. Although a rehabilitation alternative could have been presented, this is essentially what is already being done. The deterioration is so widespread that the cost of completing emergency repairs is significantly greater than total system replacement. The project includes installation of four-inch water main in the streets and meters at each home. The project will correct system leakage, allow better access to the pipeline to correct repairs, allow for monitoring of both domestic usage and water pumped, and significantly improve system reliability in terms of the potential for water quality issues and potential property losses.

Construction is slated to begin in May 2009 and will extend for 10 weeks, with a target completion date of September 2009.

Specific tasks to be accomplished:

- Replacement of 1,150 feet of existing distribution system pipeline with four-inch water main; and
- Replacement of service lines and installation of meters at each service.

Project Management

The Missoula County Public Works director will manage the project, with assistance from the contracted project engineer, contractor, and local water system operator, as appropriate. Given the size of the project and anticipated administration needs, this project management approach appears reasonable.

Public involvement has already occurred regarding this project, and public support is well documented. As the project moves forward, the project engineer and contractor will work with the public to inform them of construction activities that will impact residents. Effective traffic control and temporary access provisions will be included, and a phased approach to connecting the users to minimize disruption of water service will be incorporated into the project plan.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$32,883	\$32,883
Professional & Technical	\$0	\$0	\$109,824	\$109,824
Construction	\$100,000	\$0	\$449,010	\$549,010
Total	\$100,000	\$0	\$591,717	\$691,717

The identified funding package consists of a TSEP grant, an RRGL grant, and a SRF loan obtained by Missoula County. The application suggests that the SRF loan has already been committed, but according to DEQ (administrators of the loan program) this is not the case. The TSEP program has confirmed that project funding will not be awarded as Missoula County removed the project from consideration so it could support a Seeley Lake project. DEQ noted that the project was not on the 2008 SRF program priority list. In fall 2007, Missoula County applied to CDBG for grant funding, but the application was not successful. Based on this, the proposed funding plan does not appear secure. However, Missoula County project representatives have indicated that regardless of funding, this project will move forward due to the emergency conditions facing the subdivision residents; the county will find some way to pay for it, even if it is through local avenues. Missoula County intends to fund the entire match from reserves. Users will contribute to the project as proposed in the following discussion. Project phasing to correct the issues is impossible given the immediate need of the proposed improvements.

After project completion, O&M costs would be lower given a reduction of pump house operations by two-thirds and elimination of emergency pipeline repairs. The current annual O&M budget is approximately \$39,500. Estimated annual O&M costs once the project is completed would be approximately \$8,000. While current O&M costs result in a per-user fee of over \$80 per month, Missoula County subsidizes this cost because residents are low-income (LMI = 60.9 % according to the 2000 U.S. Census) and cannot afford such rates. If the proposed project were completed without funding, the effective user rate would jump to over \$127 a month, with a combined utility rate of almost \$142 per month. Missoula County has proposed that upon project completion, the user rate would be \$55.50 a month, for a combined user rate of \$69.90. The target rate for the Lewis and Clark Subdivision is \$60.82.

Benefit Assessment

The major resource benefit of this project is resource conservation. Water losses in the subdivision result in 305% more water used in the system than a typical residential dwelling in the project area. A savings of about 1.4 million gallons of water per month is expected with implementation of this project. Water demand reductions beyond the expected rate may even be realized as meters will be installed on the services, which typically result in more responsible water use practices.

The project increases public safety by preventing further sink hole formation underneath people's homes, providing improved water quality, and significantly increasing the sustainability of the subdivision's ability to deliver its only drinking water supply. The project will also reduce dependency of the water system on the county, which will stabilize county expenses and benefit the entire region in terms of keeping county taxes affordable.

Finally, while a renewable energy source is not being developed, the proposed project will be considerably more energy efficient because taxing the water supply system to its maximum pumping capacity continuously will be unnecessary.

Environmental Evaluation

The proposed water distribution system improvements will have a net positive effect on the environment. Elimination of water losses will prevent the occurrence of sink holes and significantly reduce the chance of contamination of the water supply due to back siphoning which can cause drainfield infiltration into the distribution system in the event of a failure.

Short-term, negative environmental concerns associated with construction, e.g., noise and dust, could be averted by using best management practices during construction.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 59

Applicant Name: Bridger Pines County Water and Sewer District
Project Name: Bridger Pines Wastewater System Improvements

Amount Requested	\$ 100,000	
Other Funding sources	\$ 750,000	TSEP Grant
	\$ 1,235,000	SRF Loan
	\$ 8,500	Local contribution
Total Project Cost	\$ 2,093,500	
Amount Recommended	\$ 100,000	

Project Abstract (Prepared and submitted by applicant)

The Bridger Pines County Water and Sewer District wastewater treatment plant was built in 1975. The system serves 10 residences and 10 condominium units. An additional 20 residences and 18 condominium lots platted for the subdivision remain under a connection moratorium. The system was designed to provide interim service to the subdivision until a regional treatment plant to serve the subdivision and other base area developments could be built. The following conclusions were identified in the Preliminary Engineering Report (PER) analyzing the district's system:

- A regional system was never built for a variety of reasons including public opposition, ownership changes, and lack of enforcement by state agencies;
- The district's wastewater either overflows the aerated pond or seeps into the groundwater. Both pathways result in surface and groundwater contamination;
- These wastewater discharges are unpermitted;
- Primary sewage sludge that accumulates in the primary holding cell must be manually removed; this approach is not allowed by state regulations, is a threat to public health, a vector attractant, and a source of objectionable odors;
- The aerated cell leakage rate is 0.13 inches per day or eight times the allowable state standard;

- The pond aeration system has partially failed with only one functional static tube aerator. The aeration building is in poor condition;
- The lift station does not have emergency power systems and its electrical controls are not intrinsically safe; and
- The proposed project would enable construction of necessary sewer extensions, abandonment of the existing treatment system, and participation in construction of a new regional treatment system.

Technical Assessment

Project Background

The Bridger Pines County Water and Sewer District wastewater treatment system consists of a gravity collection system, lift station, primary settling cell, and aerated holding cell, all built in 1975 for the Bridger Pines Subdivision. The system was operated under the authority of the Bridger Pines Homeowners Association until 2005 when the county district was formed. The wastewater system is deficient in that the electrical equipment in the lift station building is not Class 1, Division 1 as required. The lift station lacks back-up power. The primary treatment cell frequently fills with sludge, with no acceptable method in place for managing the sludge. The clay liner in the lagoon cells leaks untreated wastewater to groundwater at a rate of 48 inches per year. The lagoons also frequently overtop and wastewater is discharged on the ground surface. The system does not have an MPDES discharge permit. Alternatives considered include: varied sizes of mechanical wastewater treatment and rapid infiltration groundwater disposal systems, an aerated treatment pond, and a storage pond with spray irrigation effluent disposal.

Technical Approach

Developers of a proposed subdivision plan a new regional treatment system. The treatment system would not be constructed by the district but would be annexed into the district one year after construction. The proposed project would connect residents of Bridger Pines Subdivision to the regional treatment system. The effluent would be disposed of under a state groundwater discharge permit not yet obtained. The project schedule depends on the developer's schedule; no written agreement about the schedule exists between the district and private developer.

Specific Tasks to be accomplished:

- Construct the necessary sewer main extensions to connect to the regional system; and
- Participate, on a prorated basis according to the district's wastewater flow rate, in the construction of a wastewater treatment plant and disposal system.

Project Management

The proposed project involves three funding agencies, SRF, DNRC, and TSEP. The district president will act as project manager and assure compliance with federal and state requirements with the assistance of the board of directors. No information concerning the past experience for the project manager or board of directors is provided. Also, no funding is appropriated in the budget for professional assistance for the project manager role. The district president is a volunteer position and with a total project cost of over \$2 million, additional assistance may be necessary. If required, contingency budget may be available to hire a professional consultant. The district advertised for engineering services in compliance with 18-8-203, MCA, to procure services for planning and engineering design relevant to the wastewater system upgrade. Because the district plans to connect to a regional system serving developments, the project engineer will work in cooperation with a development corporation and its engineer to coordinate the interconnecting sewer that is the responsibility of the district.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$105,873	\$105,873
Professional & Technical	\$0	\$0	\$285,000	\$285,000
Construction	\$100,000	\$0	\$1,602,627	\$1,702,627
Total	\$100,000	\$0	\$1,993,500	\$2,093,500

The budget form in the application reflects a total project cost of \$2,093,500. The project costs include those for abandoning the existing treatment system, constructing the necessary sewer extensions, and participating in construction of a new regional treatment system. The budget does not include bond counsel costs. Contingency funds are available and could be used to cover these costs. The funding package includes a TSEP grant of \$750,000. To qualify for TSEP funding, the user rate must be 150% of the DOC target rate. The target rate for the Bridger Pines County Water and Sewer district is \$110.37. After the proposed project is completed, the projected average monthly residential rate will be \$191.37. The combined water and sewer rate is 187% of the target rate. The funding package also includes an SRF loan for \$1,235,000. Both the SRF and TSEP programs have stipulations for use of their money in completing a project in cooperation with a private entity. SRF funds cannot be paid to a private entity. This SRF stipulation makes the proposed funding scenario infeasible under existing SRF policy because the district is paying a private entity to build the regional treatment system. Other loans may be available to the district for funding the proposed project.

Benefit Assessment

Implementation of this project will remove a significant source of pollution from local groundwater and the ground surface. Most of the district's wastewater either overflows the aerated pond or seeps into the groundwater. Both result in groundwater and surface contamination. The applicant states that the proposed project will conserve open space in the area since the regional water treatment system will take less space by providing a centralized treatment system rather than multiple systems.

Environmental Evaluation

The uniform environmental checklist included is complete. The applicant contacted the applicable agencies. The Montana Natural Heritage Program has identified five species of concern in the project. Impacts to these species are expected to be minimal and only during construction. The Army Corps of Engineers was unable to ascertain jurisdictional authority based on the information provided and has recommended considerations to the project design if fills are associated with the project.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 60

Applicant Name Ennis, Town of
Project Name Ennis Water System Improvements

Amount Requested \$ 100,000 Grant
Other Funding Sources \$ 188,800 DW SRF Loan
Total Project Cost \$ 288,800

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Ennis, in central Madison County, provides water service for 892 people. The population is expected to increase to approximately 1,093 by 2028 based on current growth rates. The water system must be able to meet current and future water usage demands.

The town last completed a water system analysis in 1991 to identify the condition and needs of the system. Based on these recommendations, many areas of the system were improved in 1995, including construction of a new water storage tank and significant upgrades to the distribution system.

Although these improvements greatly reduced the vulnerabilities of the town's water system, the increasing population has placed strain on the two water supply wells. They cannot meet the current DEQ-1 standard, which states that supply wells must meet the maximum day demand with the largest well out of service. This applies to both current and projected populations.

The proposed project will construct a new water supply well on property donated by a local developer. This new well will allow Ennis to meet the current DEQ-1 standards for water supply sources and serve the population throughout the 20-year planning period.

Construction of a new water supply well will develop and expand utilization of a natural resource. These improvements will also preserve renewable resource benefits that the water system provides.

The project will enhance the common well-being of Montanans through development and preservation of resource benefits from water, a renewable resource.

Technical Assessment

Project Background

Ennis is an incorporated town with 386 households (population of 892) in Madison County along State Highway 287. The town's water system consists of two groundwater wells; a 530,000-gallon, on-grade steel storage reservoir; and approximately 10.5 miles of four-inch through 14-inch diameter water distribution main. Hydraulic modeling and empirical data show that the current system largely meets the town's needs after major improvements were implemented in 1995. However, the supply wells cannot meet maximum daily demand with the largest well out of service (a DEQ design requirement). The water system also has several dead-end mains. Since the town does not own the property upon which its storage tank is located, it is negotiating to acquire the property.

Technical Approach

The applicant has evaluated many alternatives to address water system deficiencies and has prioritized its needs. The preferred alternative is to construct a new supply well and bring the water system into complete compliance with the state's design standards in Circular DEQ-1. Deficiencies with the dead-end mains and tank property acquisition will be addressed in future projects as they are not now considered acute. Implementation of the recommended alternative will provide the required redundancy and supply

capacity required by the state, and will result in further development of the groundwater resource in Ennis. This alternative was chosen for its simplicity, high probability of success, and low anticipated environmental impact.

Construction is slated to begin in late summer 2009 and end in October of the same year.

Specific tasks to be accomplished:

- Construct new well to approximately 150-foot depth;
- Conduct necessary well development and testing;
- Construct new wellhouse building; and
- Implement telemetry control system for new well.

Project Management

The project engineer has been selected and has considerable experience in administering grants and designing and constructing water system improvements such as those proposed for Ennis. The town clerk, who has managed previous grant- and loan-funded projects, will be the fiscal contact. The town council and mayor will retain ultimate responsibility for the project. The project management plan spells out clear duties for each member of the management team.

The town will continue to conduct public meetings and council meetings open to the public. Attendees can voice concerns about the project during a comment and question period. Residents will be notified when construction is going to begin. No water service interruptions are anticipated project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$4,000	\$0	\$22,700	\$26,700
Professional & Technical	\$0	\$0	\$38,900	\$38,900
Construction	\$96,000	\$0	\$127,200	\$223,200
Total	\$100,000	\$0	\$188,800	\$288,800

Three funding scenarios were considered for each of two project scopes: (1) new well and looping several mains and (2) the new well only. The chosen funding package consists of an RRGL grant, and a DW SRF loan. This funding package was chosen because the applicant does not qualify for general CDBG funds and would likely not be a good candidate for TSEP funds (no critical needs). The funding package is considered feasible. If the applicant does not secure the DNRC grant, the combined water and sewer user rate in Ennis would be 125% of DOC's target rate based on the town's median household income.

After project completion, the projected monthly water rate for each user in Ennis will be \$32.55, a moderate increase from the current rate of \$29.80. The new rate includes \$2.75 monthly cost for water debt repayment and no additional charge for O&M costs. Addition of a new well is not expected to increase the town's overall O&M cost since the project will not increase usage or pumping rates.

Benefit Assessment

Major resource benefits are in resource development. The town will drill another drinking water well to provide redundancy and dependability for the water system. The additional well will enhance the town's ability to handle future growth and accommodate residential and commercial development. Demand for drinking water will likely increase and further the use of the groundwater resource.

Secondary resource benefits result in resource preservation. By drilling a new well and fulfilling its obligation to update the town's source water protection plan, it will provide further protection to the local aquifer.

Environmental Evaluation

The proposed water well project will have a net neutral effect on the environment. Although additional groundwater may be extracted from the aquifer, spreading the supply over three wells instead of two will reduce the likelihood of overpumping the two existing wells and possibly damaging the aquifer near the wells.

Short-term, negative environmental concerns associated with construction, e.g., noise and dust, can be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 61

Applicant Name Laurel, City of
Project Name Laurel Water System Improvements

Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 500,000	Applicant
	\$ 625,000	TSEP Grant
	<u>\$ 1,942,710</u>	DWSRF Loan
Total Project Cost	\$ 3,167,710	

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The city's current filters and two high-service pumps are 52 years old. Throughout the system frequent surges have damaged the rigid AC pipe and 100-year old corroded cast iron pipe.

The city recently replaced the failing intake system (\$2 million).

The city's treatment system barely meets peak demand and cannot meet peak day demand if either of the following occurs:

- Loss of either of two low-lift pumps; and
- Loss of either of two filters.

The one-ton cylinders, which are actually "dropped" onto the holding cells, are difficult to handle. Also, no chemical mixing occurs.

A booster station exists with no storage and no back-up power.

The city proposes to provide a flash mixer, completely rebuild the two filters and repair the pipeline from the sedimentation basins to the filters, provide a third low-lift pump, provide a dual-speed hoist and minor improvements to the chlorination room, and provide variable frequency drives (VFDs) for the high-service pumps. In addition, the city has begun a leak detection program to establish pipe replacement priorities, with two years of replacement included in the proposed project.

The city will conserve water by replacing the most severely leaking pipes, and make the Yellowstone River water usable by achieving a firm peak day demand. The project will sharply reduce water wasted through the daily "fluffing" and backwashing required because of failed underdrains and old filters.

Technical Assessment

Project Background

The Laurel water system serves approximately 6,800 people and one industry (which use approximately 20% of the treated water capacity). The WTP was constructed in the 1950s and has been through a number of rehabilitations since. The processes include flocculation, sedimentation, filtration, and chlorination. Portions of the pretreatment processes are located outdoors, and the concrete basins are in very poor condition. The filters must be backwashed frequently to maintain turbidity standards. There is operational evidence of a crushed underdrain system and worn media. With only two filters, the frequent backwashing (multiple times a day) leads to water shortages, particularly evident during high water demands and poor source water quality conditions. The WTP has been well operated and, to date, has not had violations of the SWTR. However, this is primarily the result of diligent efforts by system operators. Arguably the city has reached a point where it has a probable chance of catastrophic failure at its WTP that could present a public health risk and/or result in serious water shortages.

In the distribution system, challenges include pressure problems, surges, a lack of storage for fire protection to portions of the service area, and the potential for back siphonage. Frequent leaks and relatively high rates of water loss also occur.

Technical Approach

The preferred alternative primarily involves comprehensive rehabilitation of the two filters, with other minor improvements, including limited pretreatment optimization, miscellaneous process piping improvements, improvements in the chlorine room to reduce safety hazards, the addition of a third low-lift pump that transfers water to the clearwell, and installation of VFDs at the high-service pumps. Subsequent project phases would be necessary to thoroughly rehabilitate the water treatment plant for long-term sustainable operations. Repair of the filters will result in less frequent backwashing, more reliable and consistent water quality and quantity, increased treatment capacity (more than double the current capacity), and elimination of sand particles in the effluent, which appear to be the reason for operational difficulties with the low-head pumps. Adding VFDs to the high-service pumps will decrease the potential for surges in the distribution system that could contribute to the high number of pipeline breaks.

The PER focuses on rehabilitation of the existing WTP only, and does not consider other alternatives for serving Laurel. Given the age and condition of the Laurel WTP, considering a new water treatment plant would not have been unreasonable. Furthermore, given the proximity of Laurel to Billings, teaming with Billings on water treatment improvements for both entities should have been evaluated. The proposed rehabilitation project does not consider the possibility that Laurel would have to meet increased disinfection requirements under the Long-Term 2 Enhanced Surface Water Treatment Rule (LT2). Proposed work in this current project phase would not preclude the city from reconsidering these options later. The filter rehabilitation is a critical and immediate need for the community.

For the distribution system, the project recommends addition of an on-site generator at the booster station, which will reduce the potential for back siphoning and loss of pressure during a power outage. The project also includes two years of a capital program for proactively replacing leaking distribution system piping. A leak detection project is currently under way to help identify the worst areas in the system and develop a prioritized replacement program. By eliminating causes of surges and pressure variations, the city will likely reduce the number of leaks in the distribution system.

Construction is slated to begin in the fourth quarter of 2009 and end in the second quarter of 2010. Distribution system pipeline replacement will span two years (2009 and 2010) of capital improvements.

Specific tasks to be accomplished:

- Rehabilitation of the filters;
- Installation of a flash mixer;
- Investigation and repair of the pipeline from the sedimentation basin to the filters;
- Installation of a third low-head pump;
- Installation of VFDs on the high-service pumps;
- Installation of an on-site generator at a booster station; and
- Rehabilitation of leaking pipeline within the distribution system.

Project Management

The project engineer has been selected and has considerable experience in designing and constructing water system projects. The city has hired a project engineer to complete project administration related to grant and loan program coordination, overall project budget management, and communication of all related project management issues to city staff.

Public interfacing will be accomplished in the form of notification to MBEs of project bidding opportunities; a project overview and updates will accompany community water bills.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$195,830	\$195,830
Professional & Technical	\$0	\$0	\$478,820	\$478,820
Construction	\$100,000	\$0	\$2,393,060	\$2,493,060
Total	\$100,000	\$0	\$3,067,710	\$3,167,710

The proposed funding strategy included RRGL and TSEP grant funding, along with a loan from the DWSRF program, and a significant commitment of local funds. Given the emergency nature of the filter rehabilitation project and the need to proactively rectify probable causes of distribution piping failures, the proposed funding strategy shows Laurel's commitment to completing this project immediately. If grant funding were not awarded, the city would move forward with nearly all proposed improvements, with some delayed or included in future project phases. The city would either commit additional local funds (currently reserved for future phases of water system improvements discussed in the PER) or borrow additional DWSRF loans. Rate increases would range from \$4.42 to \$5.71, depending on the level of grant funding.

With completion of this project, combined utility rates will be 140% of the community's target rate. Given the additional water system work discussed in the PER, both at the water treatment plant and in the distribution system, the already very high rates will continue to rise significantly in the future.

Benefit Assessment

The major resource benefits associated with this project include resource preservation and conservation. The project will significantly reduce the amount of water necessary for backwashing filters and also reduce the amount of water treatment residuals discharged into the Yellowstone River. By eliminating factors contributing to pipeline breakage and replacing the most critically deteriorated sections of the distribution system, this project will also likely result in conservation of water by reducing the rate of water loss.

The proposed project has considerable economic impact since the water treatment plant provides water to an industrial user; halting operations due to a failure at the water treatment plant would likely mean temporary layoff.

Finally, although this project does not include development of renewable energy infrastructure, proposed improvements will reduce energy needs at the water treatment plant by including VFDs on the pumping systems and reducing backwash pumping needs.

Environmental Evaluation

The environmental checklist, a required form for consideration for grant funding, was submitted for the wrong project as part of this application. The applicant’s representatives were contacted and a revised form was requested, but not received. It appears this was an inadvertent oversight; however, it impacted this project’s ranking considerably as the review team was unable to consider possible environmental impacts. Despite this deficiency, all project activities will take place within the existing WTP or in areas of the distribution system impacted by past efforts. Therefore, environmental impacts are not anticipated. Letters received during the environmental comment period by various agencies confirm this is likely the case. These letters reference the appropriate project.

Short-term, negative environmental concerns associated with construction, e.g., noise and dust, could be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 62

Applicant Name Fort Smith Water and Sewer District
Project Name Fort Smith Water System Improvements

Amount Requested \$ 100,000 Grant
Other Funding Sources \$ 450,000 CDBG Grant
 \$ 500,000 TSEP Grant
 \$ 532,757 DWSRF Loan
Total Project Cost \$ 1,582,757

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Yellowtail and Fort Smith Trailer parks were constructed in the 1960s to house workers employed in construction of nearby Yellowtail Dam. Each included a municipal water system; both are operated and managed by the Fort Smith Water and Sewer District. No major improvements to the system have been made since the original construction.

Improving the water system is vital to the community: A power outage for three days in spring 2006 resulted in the complete loss of pressure in the southern half of the district; a devastating fire destroyed two businesses and resulted in the loss of three lives in August 2006; and the district had to pass a moratorium on new service connections due to concerns over insufficient supply.

The Water System PER documented numerous deficiencies in the water system, including:

- Insufficient supply and water quality concerns;
- Insufficient storage for recommended fire protection;
- Distribution system solely two-inch and four-inch diameter mains, which is not in compliance with Circular DEQ-1 and unable to provide fire flows;
- Lack of valves for isolating sections of the system for repairs; and
- No meters (meters would be difficult to install).

Phase 1 of the proposed improvements includes:

- A new well and well house;
- A highway crossing and booster station to share storage between the halves of the district;
- Priority 1 and 2 distribution system improvements; and
- Installing curb boxes and meters on services adjacent to new main lines.

The most significant benefit of the proposed project is preservation of public health and safety. The project also provides conservation and management of renewable resources through installation of meters on service connections.

Technical Assessment

Project Background

The Fort Smith Water and Sewer District is a newly formed district serving two adjacent trailer parks, including the Fort Smith Trailer Park and the Yellowtail Trailer Park. The district serves just over 100 permanent residents and nearly 600 seasonal residents, including a few recreational lodging facilities. Neither system has enough water supply to meet water demands during summer months, which is only exacerbated by the potential loss of one well. A moratorium on new services has been put into place. DEQ noted radium levels and positive coliform tests in recent years, which indicate water quality issues. Letters of support for the project from residents have identified a persistent sulfur taste in the water, along with iron levels high enough to cause discoloration of laundry, fixtures, and surfaces that come in contact with the water supply. Maintaining system pressures in the Yellowtail system has been a problem. And finally, after a fire took the lives of three people, the district considers fire protection a major priority for the community. Major alternatives considered to remedy this problem included maintaining two separate systems, combining the systems to collectively address the problems, and finding an outside source from which to purchase water (not available).

Technical Approach

A PER was completed, recommending a phased plan for addressing the challenges. Phase 1, the focus of this funding request, consists of constructing a new well in Fort Smith and connecting the two systems with a booster station. Both systems will be able to access Fort Smith's existing 100,000 gallons of storage. The project also includes upgrading portions of both distribution systems to include appropriately sized piping to transfer fire flows, looping, and installation of services and meters to individual services throughout the system. The second and third project phases would include construction of an additional 100,000 gallons of storage in the Yellowtail area of the system, along with remaining distribution system piping improvements and service connections not completed in Phase 1.

The proposed project will correct pressure challenges in the Yellowtail system and provide 500 gallons per minute (gpm) of fire flow pumping capacity to Yellowtail. Connecting the systems will also increase access to viable water supplies, since the combined district would have four wells, instead of each entity having only two. The proposed distribution system improvements would eliminate dead ends and provide pipeline capacity to transfer fire flows throughout most of the two systems.

Since joining the systems gives both systems access to four water supply wells, the immediate need for a new well in Fort Smith was evaluated as part of the application review. With four wells, considerably more water is supplied than necessary to support the permanent population of the district. Even in the event of a fire, with the largest well out of service, the remaining three wells and the proposed 200,000 gallons of storage could sustain the peak monthly demand (which could be considered the temporary population average day demand). This meets DEQ C-1 design standards for fire flow and brings the need for a new well into question. Project representatives noted that they preferred a new well because water quality would be significantly better than that of the smaller Yellowtail wells, where radon tests have exceeded regulatory standards in the past, and taste, color, and odor problems persist. The PER failed to consider not developing a new well or putting in a treatment system capable of removing taste, color, and odor-causing compounds. Further, only one year of well meter data are available, so it is difficult to

ascertain whether the water demands used for planning in the PER are appropriate. The decision to install a new well may have been more defensible if the PER had provided more history of district water use, or had considered alternatives that did not develop a well or included treatment.

Design of Phase 1 is slated to begin in May 2010, with construction beginning in May 2011. Phase 1 would be operational in September of the same year. Subsequent phases of the project will likely seek funding in 2010 so that construction can actively continue until all proposed improvements are completed.

Specific tasks to be accomplished:

- Construct a new well and well house;
- Construct a highway crossing and booster station to share storage between the halves of the district;
- Make Priority 1 and 2 distribution system improvements; and
- Install curb boxes and meters on services adjacent to new mainlines.

Project Management

The project engineer has already been selected and has considerable experience in designing and constructing water system projects. The project engineer will complete project administration duties related to grant and loan program coordination, overall project budget management, and communication of project management issues to the district board via attendance at monthly board meetings. Public communication will be a combined effort by the project administrator and district board and occur on an as-needed basis. The project administrator will attend meetings with concerned citizen groups as needed throughout the process.

The project engineer will also complete construction management services. A pre-bid conference will prepare potential contractors to competitively and thoroughly bid the project. The engineer will outline wage and civil rights requirements of the project to minimize bidding inefficiencies and encourage competitive bidding. During construction, a preconstruction conference will outline responsibilities of project team members. In addition, weekly progress meetings will be conducted among the various project representatives to manage on-going progress, public coordination, and unexpected conditions. District board members will be encouraged to attend the progress meetings.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$94,658	\$94,658
Professional & Technical	\$0	\$0	\$226,998	\$226,998
Construction	\$100,000	\$0	\$1,161,101	\$1,261,101
Total	\$100,000	\$0	\$1,482,757	\$1,582,757

The proposed budget appears reasonable to fund the project. A comprehensive discussion of unit costs based on recent projects with components similar to those proposed for the project was provided to support cost estimates. Likewise, administrative fees appear acceptable. The project impact to users appears adequately calculated as well, and would result in rates slightly over the target rate for the district. Once the total project is complete, the user rates (\$37.44 for water, \$47.87 combined water and wastewater) would be 101% of the target rate (\$47.55). Without the proposed funding package, user rates could reach as much as \$84.15, 177% of the target rate. This level of funding places a considerable burden on the district. If funding cannot be generated, the district will scale back the project, eliminating distribution system pipeline work first, to keep the project within affordable limits.

Additional funding beyond the RRGL grant includes a TSEP grant of \$500,000, which is consistent with allowable funding limits based on the proposed rate increase per EDU beyond the district's target rate. A CDBG grant application will also be completed in May 2009 by Big Horn County. The county cannot apply for the grant earlier since it is receiving a CDBG grant on behalf of Crow Agency. At least 75 % of

the current CDBG grant must be spent before application for a new grant. Based on low to moderate income (LMI) requirements of the CDBG program (the LMI must exceed 50%), the district would be eligible for grant funding, with a current LMI of 59.4%.

Other funding sources were considered for this project, but they were eliminated due to eligibility concerns and the competitive climate of federal funding programs.

Benefit Assessment

The resource benefits related to this project include resource development and conservation. The development is associated with constructing a new well. However, the well is in an aquifer already developed, and service will not significantly change once the well is constructed, making this benefit small in its overall impact to the resource.

Resource conservation will ultimately be realized with installation of meters and new distribution system piping. Per user, metered water systems typically use much less water than unmetered systems, since users pay on volume used basis and excessive rates of unaccounted for water can be identified and addressed. However, water demand data suggested lower than typical water use for an unmetered system throughout the district, so the resource conservation benefit is anticipated to be small. Further significant water leakage in the distribution system was not documented in the PER. Even with distribution system repairs, conservation benefit resulting from this project will be minimal.

From an economic perspective, the project would allow for removal of the moratorium on system connections and allow growth to continue in the area. The project would sustain existing jobs in the district, as the commercial sector depends heavily on availability of a reliable water supply. The project may even create new jobs if growth is no longer stifled and recreational opportunities in the area continue to grow in popularity.

Environmental Evaluation

Possible impacts associated with this project were evaluated. The proposed work primarily involves improving and upgrading existing infrastructure and will occur in developed areas. Minimal short-term, construction-related impacts are anticipated, but would be temporary and controlled through implementation of proper construction methods.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 63

Applicant Name	Troy, City of	
Project Name	Troy Water Distribution Improvements	
Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 750,000	TSEP Grant
	\$ 236,000	STAG/WRDA Grant
	<u>\$ 450,000</u>	CDBG Grant
Total Project Cost	\$ 1,536,000	
Amount Recommended	\$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

This project is a public facilities project consisting of improvements to the water distribution system for Troy. The proposed project will solve several serious problems. The city has consistently replaced leaking and undersized mains and addressed other concerns with the water system. The mains proposed for replacement with this PER amendment consist of the remaining leaking mains in the city. Some areas lack system redundancy and users have only one avenue through which to receive water. One 4,800-foot, dead-end main serving the southern portion of Troy has no supply or storage available. If a main breaks or requires maintenance, many users could be without water for domestic or firefighting purposes.

Approximately 3,500 lineal feet of leaking, undersized mains must be replaced. Pressures are inadequate for domestic and firefighting needs and pose a threat to public health and safety. The leaking lines also create an avenue for bacteria to enter mains and contaminate the distribution system. During peak use, the potential for negative pressures exists which can cause pipe collapse and allow bacteria into the system. The areas proposed for looping include approximately 3,700 lineal feet of new pvc mains with hydrants and other appurtenances.

Troy has been proactive in dealing with its water system and bringing it up to state standards. Due to numerous deficiencies, the city plans to phase the various projects to coincide with the funding cycles.

Technical Assessment

Project Background

Troy uses a centralized public water supply to supply domestic and irrigation water to residents and businesses within the city. The water system, installed by the railroad in the early 1900s, originally relied on surface water from O'Brien Creek. In the 1950s, a well was drilled and a storage tank constructed to supplement the surface water supply. In the 1980s, Champion Lumber Company donated a second well to the city. The well is shallow with a high static water level. The surface water component of the system was disconnected some time between the 1950s and the 1980s. In 2007, a second storage tank was constructed at the south end of the city.

The water distribution system constructed in the early 1900s had wooden mains. In the 1950s many of the wooden transmission and distribution lines were replaced with wrapped steel, and the galvanized services connected to the wrapped steel mains with copper goosenecks. During the 2007 project, which included construction of the second water tank, many of the leaking wrapped steel mains were replaced with pvc pipe. The original water tank was also refurbished during this first phase of Troy's water system improvements project.

Much of the city is still served by wrapped steel water mains and galvanized services. Furthermore, although improvements made during the first phase of the project alleviated some of the leakage problems, many leaks still exist in the system as evidenced by the higher than normal water usage in the

city. The Troy water system lacks looping and contains a significant number of dead-end mains of varying lengths.

Since 2000, the city water system has had 14 results positive for bacteria within the system. The cause of the contamination is not known. However, the shallow well (well #2) and the old water mains likely coated with biofilm are two probable sources of contamination.

Technical Approach

To address the old and deteriorating water mains, approximately 3,500 linear feet of water main will be replaced with eight-inch and 10-inch pvc pipe. During replacement, any service connections not yet metered will have meter installation. This should help alleviate the excess water use attributable to leaking water mains.

Approximately 3,700 feet of six-inch and eight-inch pvc pipe will be installed to provide looping and eliminate some of the more lengthy and potentially troublesome dead-end mains. This will provide redundancy throughout the system in case of a main failure, decrease the likelihood of contamination, and increase fire flows and pressure throughout the system.

To address the chance of contamination within the distribution system, a hypochlorination system will be installed at each of the two wells.

Twenty-three fire hydrants will be replaced or installed to increase fire protection capabilities of the local fire department and increase protection of life and property within Troy.

Specific tasks to be accomplished:

- Install two hypochlorination systems, one at each of the wells;
- Install or replace 23 fire hydrants;
- Replace 3,500 linear feet of wrapped metal water main with pvc; and
- Install 3,700 feet of pvc water main to loop existing water system in three locations.

Project Management

Along with city staff a civil engineering firm will be responsible for project management. The contracted engineer appears well qualified to assist the city with grant administration, project design, construction management, inspections, and closeout. The City of Troy has worked on projects funded through the same sources applied for on this application.

The project management plan details public involvement thus far in the process but does not provide information about public involvement once funding is secured.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$37,550	\$37,550
Professional & Technical	\$28,000	\$0	\$157,000	\$185,000
Construction	\$72,000	\$0	\$1,241,450	\$1,313,450
Total	\$100,000	\$0	\$1,436,000	\$1,536,000

The city is seeking an RRGL grant, TSEP grant, CDBG grant, and WRDA / STAG grant. The city's debt obligations totals \$4,149,109, and the current user rate in Troy is 183% of the TSEP target rate. The city's current debt and current user rate prohibit it from looking at any nongrant-related funding.

Benefit Assessment

Excessive leaking from the current water distribution system not only wastes vast amounts of water but also requires pumps to cycle more frequently, thus using excessive power. The proposed project will replace many of the leaking water mains and address both the excess power draw and waste of water. The increase in fire flow and system pressure will benefit all users by better protecting life and property.

Environmental Evaluation

The proposed project consists of installation and replacement of water mains, installation or replacement of fire hydrants, and construction of two hypochlorination systems. Most construction takes place within already paved areas. Negative environmental impacts will be short term and construction related, such as dust and noise. Overall, the project will have positive environmental impacts by replacing old, deficient water mains and improving fire flows.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 64

Applicant Name	Montana Department of Natural Resources and Conservation (DNRC) Water Resources Division (WRD) State Water Projects Bureau (SWPB)
Project Name	Nevada Creek Canal Design and Construction
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 19,102 DNRC, In-Kind \$ 10,000 Nevada Creek Water Users, In-Kind
Total Project Cost	\$ 129,102
Amount Recommended	\$ 100,000 Grant
Project Abstract	(Prepared and submitted by applicant)

Nevada Creek Dam is a "high-hazard" earthen embankment near Helmville in Powell County. The dam is classified "high hazard" under the Montana Dam Safety Act guidelines because of the potential for loss of life below the dam, should the dam fail. Nevada Creek Dam was completed in 1938; it is 105 feet high and 1,083 feet long. At normal full pool, the reservoir storage is 11,152 acre-feet. The dam has two associated canals, the North Canal and the Douglas Canal.

The delivery canals at this project are in poor condition. The Douglas Canal is 12.6 miles long and the North Canal is 13.4 miles long. Stream channel migration and undercutting at the toe of the North Canal has raised concerns with stability. Other major items that must be addressed are excessive seepage, over-steepened canal sections resulting in erosion and sedimentation, and site access. The Douglas Canal has several locations with severe seepage. The section proposed for lining under this grant is very close to Nevada Creek. The canal bank has shown some sloughing in the past. If the canal bank were to fail, all of the canal water would dump into Nevada Creek, potentially causing extreme damage. The overall condition of the canals promotes loss of water, making operations and maintenance increasingly harder, and is becoming a safety hazard at certain locations.

Technical Assessment

Project Background

Nevada Creek Dam is a high-hazard, state-owned dam in Powell County east of Helmville. Constructed in 1938, the dam has undergone recent upgrades and improvements and is structurally sound. The delivery canals for the project, however, are in poor condition. Stream channel migration and undercutting at the toe of the North Canal has raised concerns over embankment stability. Seepage, embankment erosion, and sedimentation are problems that must be mitigated for both the 12.6-mile-long Douglas Canal and the 13.4-mile-long North Canal. The poor condition of these delivery canals is resulting in water losses due to seepage, the threat of canal embankment failure which would affect adjacent Nevada Creek, and access difficulties necessary to the operation and maintenance of the canal system.

Technical Approach

This project includes the hiring of a consultant to determine hydraulic requirements for drop structures in both canals through computer modeling. Additionally, a currently identified 1,500-foot reach of the Douglas Canal will be lined with an industrial-grade rubber liner to alleviate seepage in that critical section, and two drop structures will be constructed by the Nevada Creek Water Users Association in the North Canal. Computer modeling may indicate that more drop structures are necessary to control flows and maintain the integrity of the canal. Canal lining and the construction of two drop structures is scheduled for fall 2009.

Specific tasks to be accomplished:

- Procurement of engineering services to perform a computer analysis to determine requirements for drop structures in the canal system;
- Preparation of a design and bid package by SWPB staff for the lining of 1,500 feet of the Douglas Canal in fall 2009;
- Construction of two drop structures by the Nevada Creek Water Users Association; and
- Construction of additional drop structures in fall 2009 and spring 2010, as determined by computer modeling.

Project Management

SWPB will provide management resources necessary to manage this project. Additionally, SWPB staff engineers will design and prepare bid documents for the Douglas Canal lining project to be constructed in fall 2009. Once a contractor has been selected, SWPB will execute and manage the construction contract. SWPB will also be responsible for coordinating the procurement of engineering services to model the canal system and for managing the construction by the water users of two drop structures already identified for the North Canal.

SWPB will prepare an environmental assessment (EA) for the project as well as apply for and obtain the required construction and environmental permits

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$19,102	\$19,102
Professional & Technical	\$17,000	\$0	\$0	\$17,000
Construction	\$83,000	\$0	\$10,000	\$93,000
Total	\$100,000	\$0	\$29,102	\$129,102

The funding package for this project consists of an RRGL grant, \$19,102 in engineering services provided by SWPB staff engineers at an average rate of \$33.50 per hour, and \$10,000 of in-kind construction services by the Nevada Creek Water Users Association.

The Nevada Creek Water Users Association purchases 8,440 acre-feet of water annually under agreement with DNRC at a cost of \$8 per acre-foot.

Benefit Assessment

The primary benefits of this project are preservation of a state-owned irrigation facility that provides for development and maintenance of irrigated crop and pasture land and conservation of water lost through canal system seepage. Preservation of fish and wildlife habitat, the groundwater aquifer, recreation, and other significant economic benefits to agriculture and the local area are also provided by the Nevada Creek project. Montana relies heavily upon storage reservoirs such as Nevada Creek Reservoir to collect and store rain and snow runoff each spring, thus enabling maintenance of late-summer flows in its streams and rivers.

Environmental Evaluation

Environmental impacts associated with this project were evaluated, and no apparent adverse long-term impacts will result. The beneficial results are preservation and maintenance of the canals and delivery system associated with Nevada Creek Dam and Reservoir. Temporary construction impacts will be controlled through permitting and proper construction techniques.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon the development and approval of the final scope of work, administration, budget, and funding package.

Project No. 65

Applicant Name	Granite County
Project Name	Granite County Solid Waste District Improvements
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 197,000 TSEP Grant
	<u>\$ 106,700</u> Montana Board of Investments-Loan
Total Project Cost	\$ 403,700
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The Granite County Solid Waste District comprises two roll-off container sites, one in Philipsburg and one in Drummond, and serves 2,460 households and businesses throughout this county of 2,830 residents. Each site is equipped with 40-cubic yard, open-top roll-offs and a stationary 32-cubic yard compactor. Each site offers waste diversion opportunities and is staffed by a Granite County employee. A contract is in place with a Missoula company to haul compacted waste to its landfill near Missoula. The 2006 landfill tonnage hauled to Missoula was 1,894 tons, or 4.37 lbs./person/day of waste generation. Granite County residents divert approximately 16% of their waste through recycling and composting.

A PER evaluated current and long-term adequacy of the solid waste system; identified deficiencies and made recommendations for correction of those deficiencies, and made recommendations for changes to ensure the system is equitable in terms of access and fee assessment for Granite County residents. The PER identified some safety concerns on the part of the Montana Association of Counties (MACO), the insurer of the waste sites, and of DFWP officials. Additional inadequacies in the system include an

inequitable assessment, inconsistent practices between the two sites, and a desire for more waste diversion.

The PER recommended immediate attention for the safety concerns identified by MACO and DFWP. The recommendations include new fencing and paint around the containers and complete perimeter fencing around both sites with bear-proof wiring. Recommendations also included a computerized recording and accounting system to update the hand-written ledger system currently used by the county. In examining long-term district success and taking into account the desire to increase waste diversion practices, the PER recommended transitioning from an estimated, volume-based disposal system to a calculated, weight-based disposal system. Studies have demonstrated that weight-based disposal systems result in more waste diversion and offer a more equitable means of charging users. This change involves installation of scales at each site to weigh vehicles coming into and out of the yard. The complete upgrade that includes all of the above-mentioned components is estimated to cost \$403,700.

Technical Assessment

Project Background

The Granite County Solid Waste District operates two roll-off solid waste container sites, one in Philipsburg and one in Drummond. The district serves 2,460 residential and commercial customers throughout Granite County. Recycling opportunities exist at each site, and each site is staffed by a full-time operator. Collection of solid waste is contracted throughout the county, and waste from the containers is hauled by a Missoula company to its landfill near Missoula. Each site uses 40-cubic yard containers and is equipped with a 32-cubic yard compactor.

Granite County has taken a proactive approach in management of its container sites. To meet the requirements of its expanding population, an engineering firm was hired to study and produce a PER identifying deficiencies at the sites and recommendations for a more efficient solid waste handling and disposal operation. In addition to miscellaneous improvements including painting and bear-proof perimeter fencing at each site, the report recommended the district computerize its accounting and billing system and change from an estimated volume-based disposal system to a calculated weight-based system. This change requires installation of platform scales at each of the sites.

Technical Approach

The district proposes to upgrade container sites at Philipsburg and at Drummond. Safety and environmental concerns by the MACO, the insurer for the sites, and by the DFWP has prompted installation of perimeter fencing as well as painting and miscellaneous site improvements. The district also wants to enact an equitable method of tracking quantities of solid waste and billing its customers accordingly. To facilitate this, the district is converting from a volume-based method of estimating weight to actually weighing materials as they are disposed of at the container sites.

Specific tasks to be accomplished:

- Make miscellaneous improvements at the Drummond and Philipsburg container sites including perimeter fencing, gates, painting, and signage;
- Install single-phase power at the Philipsburg site;
- Install platform scales at both the Drummond and the Philipsburg locations; and
- Purchase and install a computerized billing system.

Project Management

The Granite County Solid Waste District has been in operation for over 15 years with the support of the Granite County Commissioners and the Solid Waste Board. The district has been successful in the operation, maintenance, and financial management of its facilities. This project will be managed by the Headwaters Resource Conservation and Development (RC&D) Area, Inc., a nonprofit regional development organization serving seven southwestern Montana counties. This group has a strong history

of project and grant management success specializing in complex projects involving multiple funding sources.

The Solid Waste Board has sought public input and participation during development of this project. Efforts to keep the public informed have included progress meetings while the PER was being prepared and two advertised public meetings.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$43,200	\$43,200
Professional & Technical	\$0	\$0	\$84,500	\$84,500
Construction	\$100,000	\$0	\$176,000	\$276,000
Total	\$100,000	\$0	\$303,700	\$403,700

The funding package for this project consists of an RRGL grant, a TSEP grant for \$197,000, and a Montana Board of Investments INTERCAP loan for \$106,700. Solid waste customers currently pay \$122 annually to fund the operation and maintenance of the container sites. Because an existing loan has recently been retired, rates will not increase as the result of the loan associated with this project.

Benefit Assessment

Recent and projected population increases in Granite County emphasize the need for a proactive approach in solid waste management within the county. Recycling is encouraged and facilitated at each container site in the county, and efforts are made to encourage composting and the efficient re-use of composted yard waste. The protection of resources such as Granite County’s streams and aquifers is important if communities and ranches within the county are to succeed. Although growth is anticipated and encouraged, it is paramount that sanitary facilities be constructed and maintained to handle it efficiently and benefit the general public and the environment. This project will bring the solid waste handling facilities in Granite County up to required and recommended standards for the next 20 years.

Environmental Evaluation

Environmental impacts associated with this project were evaluated, and no apparent adverse long-term impacts will result. The beneficial are the preservation of Granite County’s water and land resources through proper handling and disposal of solid waste, maintenance of solid waste facilities to allow for managed growth, and conservation of resources through recycling. Temporary construction impacts will be controlled through permitting and proper construction techniques.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon the development and approval of the final scope of work, administration, budget, and funding package.

Project No. 66

Applicant Name Harlowton, City of
Project Name Harlowton Water System Improvements, Phase 1

Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 18,500	Applicant
	\$ 9,000	PER Grant
	\$ 450,000	CDBG Grant
	\$ 500,000	TSEP Grant
	\$ 331,278	WPC SRF Loan
Total Project Cost	\$ 1,408,778	
Amount Recommended	\$ 100,000	Grant

Project Abstract (Prepared and submitted by applicant)

Harlowton's concerns with its water system include:

- Deteriorating water storage tank with inadequate elevation;
- Inadequate fire flow and fire protection;
- Poor distribution system pressures (less than 35 psi in more than half of the distribution system under normal operating conditions; less than 20 psi during fire flow);
- Deteriorating, undersized, and aging water mains;
- Deteriorating Pritchard Well; and
- Metering system not complete and condition of meters unknown.

The primary concern is the aging water storage tank. It is the original concrete ground storage tank built in the mid-1940s. The tank is in very poor structural condition. The roof has been repaired several times and mineral deposits on the outside clearly indicate seepage problems. Another problem with the tank is inadequate elevation, resulting in poor system pressure at higher elevations.

The proposed solution is to complete improvements in phases. Water meter evaluation, well improvements, and distribution system improvements will be completed in subsequent phases. Due to immediate health and safety threats resulting from the existing tank, this grant application includes the first phase of improvements:

- New 575,000-gallon standpipe storage tank; and
- New pressure zone with booster station and generator.

The proposed project will alleviate the water storage problem and conserve water since the new water tank will not leak. The proposed project will give the citizens of Harlowton peace of mind concerning fire protection in their community.

Technical Assessment

Project Background

Harlowton is in Wheatland County at the intersection of U.S. Highway 191 and U.S. Highway 12 and has 496 households. The city's water system consists of three wells, a distribution system, and a 500,000-gallon concrete water storage tank. The city installed water meters in 1999 but has never read the residential meters. Commercial meters are read and used for billing.

The city's primary concern is its water storage tank. The tank is in poor structural condition and its elevation is too low to maintain adequate pressures in the distribution system. Fire flows in the city are limited due to low system pressures and undersized mains in the distribution system. The city's three wells provide an adequate water supply. However, Pritchard Well is producing small fragments of casing

and sand due to corrosion of the well casing. The PER states that at least one-third of the water meters are not functioning and that the remaining meters have lost 10% to 15% of their accuracy.

The city's PER evaluated various types of storage tanks to replace the aging tank, replacement or rehabilitation of Pritchard Well, total replacement of water meters to a radio-read meter system, partial replacement of the meters, partial replacement and upgrading existing water meters to a radio-read meter system, and various water distribution system improvements.

Technical Approach

The PER proposes a 3-phase solution for upgrading the water system. Phase 1 consists of construction of a new 575,000-gallon steel standpipe and new booster pump station. The booster pump station will serve a new high-pressure zone adjacent to the standpipe. Phase 2 consists of replacing Pritchard Well and replacing existing water meters. Phase 3 includes improving distribution to increase fire flows, replacing undersized and leaking mains, and looping dead-end mains. The current project consists only of the Phase 1 improvements. The project approach will reduce system leakage, promote water conservation with the use of water meters, and develop additional storage and system capacity. The PER did not adequately document why the residential meters are not used nor discuss why one-third of them are not operating properly.

All reasonable alternatives were evaluated for the proposed storage improvements, including tank materials and locations. The preferred storage tank alternative (steel standpipe and booster pump station) is the most cost effective, will address the low pressure problems, and provide adequate volume for fire protection. The standpipe will be in town and a booster pump station will serve the high-pressure zone. This alternative was more cost effective than locating the new tank outside of town and constructing a long transmission main. Construction of the new water storage tank and booster pump station is scheduled for completion by August 2010.

Specific tasks to be accomplished, Phase 1:

- Construct a new 575,000-gallon steel standpipe (water storage tank); and
- Construct a new booster pump station.

Project Management

The project management plan provides for adequate staff to manage the project. The mayor will serve as the main contact for funding agencies. The clerk-treasurer will be responsible for managing funds from the various agencies. The project engineer will provide design and construction administration and inspection services. The project engineer will also serve as the grant manager. The city attorney will review contractual agreements and provide other legal assistance. The grant manager will monitor the contractor selection process and review the construction contract for compliance with agency provisions.

The project management plan states that "the city has utilized a public awareness and input strategy in developing the project to this stage. The project has been discussed at several city council meetings. The city intends to continue utilizing these venues to inform the public and solicit input during design and implementation of the project."

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$ 72,592	\$ 72,592
Professional & Technical	\$0	\$0	\$227,130	\$227,130
Construction	\$100,000	\$0	\$1,009,056	\$1,109,056
Total	\$100,000	\$0	\$1,308,778	\$1,408,778

The proposed funding package consists of a CDBG grant, a TSEP grant, an RRGL grant, and an SRF loan. The RRGL grant will be used to partially fund the construction phase. The funding package proposed by the applicant is realistic. No funding sources are committed for the project. If a particular funding source is not obtained, the applicant will re-evaluate its grant applications and consider re-applying to the grant programs during the next funding cycle. The applicant also may consider applying to the Montana Coal Board and evaluate the potential of a grant/loan package from Rural Development (RD). The longer loan period from RD will reduce the impact to user rates. If the proposed funding package is not successful, the project may be postponed until the next funding cycle or until results of future loan and grant applications to RD and the coal board are known.

The city recently passed a water rate increase because of a deficit in its annual O&M budget. The current water rate is \$20.17 and the current sewer rate is \$25.50. The projected water rate with the proposed funding package is \$27.04 (projected rate increase of \$6.87). The projected combined water and sewer rate will be \$52.54 which is 116% of the DOC target rate. The estimated annual O&M costs for the project appear adequate for the storage tank and booster station project. If the applicant is successful in obtaining the proposed funding, the project will be affordable.

Benefit Assessment

The major resource benefit is conservation of the water supply. Conservation will occur by replacing the existing storage tank which leaks (current project), installing new water meters (Phase 2) and replacing leaking distribution mains (Phase 3). Construction of the new storage tank and installation of a new control system will enhance the management of the water system. Failure of the existing tank could result in chlorinated water entering and contaminating the Musselshell River. Construction of the new tank will preserve the water quality of the river. A new groundwater well will be developed to replace an existing well. Over 10 letters of public support were provided. Copies of minutes from public meetings and council meetings documenting public support were included with the application.

Environmental Evaluation

No significant environmental impacts are associated with this project. Some visual impact will occur with the new 74-foot tall standpipe. Shape and color selection can help mitigate visual impact. An environmental checklist was completed and the appropriate agencies contacted in preparing the list. Short-term impacts associated with construction such as dust and noise will occur, but can be mitigated with appropriate best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 67

Applicant Name Jette Meadows Water and Sewer District
Project Name Jette Meadows Water System Improvements

Amount Requested \$ 100,000 Grant
Other Funding Sources \$ 300,000 RD Grant
\$ 1,075,000 RD Loan
\$ 750,000 TSEP Grant
Total Project Cost \$ 2,225,000

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

This project is a public facilities project involving improvements to the water supply, storage, and distribution systems for the community of Jette Meadows. Jette Meadows is a new district with a 30-year old water system experiencing multiple infrastructure deficiencies.

Existing wells do not meet DEQ requirements for design daily maximum flow or design daily average flow when the largest well is out of service. This has led to water restrictions for the community. The two storage reservoirs are cracked and leak. This not only wastes water, but also it provides an avenue for bacteria to enter the distribution system. The system has no means of providing fire protection, for an area that contains dry native grasses and forested lots. Distribution mains are old and undersized and have been breaking frequently. The undersized mains do not provide adequate pressure for domestic uses and are too small to provide fire protection. The system has numerous dead end lines and few valves, which means many homes could be without water if the main breaks. The pressure-reducing stations and booster stations are in disrepair and must be upgraded. Existing meters are nonuniform and are in places difficult to access for readings. Accurate water use data will alert the operator to leaks in the system as well as encourage conservation.

The above problems with the supply, storage, and distribution system demonstrate a failing infrastructure in need of rehabilitation. The district has been proactive in its pursuit of bringing the water system into compliance. Due to numerous deficiencies in the system, the district has chosen to phase the construction to coincide with funding cycles.

Technical Assessment

Project Background

The Jette Meadows Water and Sewer District is approximately five miles northwest of Polson and east of U.S. Highway 93 in Lake County. The existing water supply and distribution system serves 120 residential users, but no commercial/industrial users. The majority of the existing water system was constructed in the late 1970s and early 1980s. The system includes four groundwater wells, two storage tanks (84,000 gallons total storage) and approximately 12,000 feet of four-inch and six-inch distribution piping. The storage tanks are undersized and both have extensive cracking and leakage. The distribution system includes several dead-end mains and no fire protection (i.e., no hydrants and undersized mains). Alternatives considered to remedy system deficiencies included: new and replacement distribution mains, rehabilitation of existing tanks, increasing the capacity of the existing tanks, constructing a new larger tank to replace the existing tanks, installing fire hydrants and truck fill stations, and replacing existing water meters.

Technical Approach

The preferred alternative includes construction of a new 250,000-gallon above-ground storage tank, a transmission main to connect the new tank to the distribution system, an upsized main from the tank

transmission main tie-in to the location of a proposed fire station, fire hydrants along the upsized main, and looping of dead-end mains in three critical areas of the distribution system. The new tank would be sized to provide the average day demand (at full-buildout) plus fire flow, thus meeting the requirements of Circular DEQ-1. The PER identified several other distribution system improvements, but due to budget and funding restraints, recommends those improvements be completed in a future phase.

The proposed project should have no significant environmental impacts, other than standard short-term impacts associated with construction. The proposed project was selected based on several criteria including technical feasibility, environmental impacts, financial feasibility, public health and safety, O&M, public comments, district preferences, and compatibility with long-range plans. Construction is slated to begin in the spring of 2010 and end in the fall of the same year.

Specific tasks to be accomplished:

- Abandon the two existing water storage tanks;
- Construct a new 250,000-gallon water storage tank;
- Construct 750 feet of 12-inch transmission main connecting the new tank to the distribution system;
- Construct 9,500 feet of new eight-inch distribution piping;
- Construct new pressure reducing vault (PRV), truck fill station, and booster pump station.

Project Management

The project management plan spells out clear duties for each member of the management team. The project engineer has been selected to complete the project design, construction management, and inspection tasks. The engineer has considerable experience in administering grants and designing and constructing water system improvements. The board secretary/treasurer will be responsible for project administration such as file management, draw-down processing, and district accounting records. The district board will retain ultimate responsibility for the project.

The district will continue to conduct board meetings open to the public. The project engineer will attend the board meetings to keep the board and the public informed throughout the project.

The project will be ready for implementation in the next two years, contingent on funding availability.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$55,000	\$55,000
Professional & Technical	\$0	\$0	\$220,000	\$220,000
Construction	\$100,000	\$0	\$1,850,000	\$1,950,000
Total	\$100,000	\$0	\$2,125,000	\$2,225,000

The budget form in the application is complete and reflects a total project cost of \$2,225,000. The proposed funding strategy appears sound and realistic and includes a \$100,000 RRGL grant, a \$750,000 TSEP grant, a \$300,000 RD grant and a \$1,075,000 RD loan. The proposed funding package is considered feasible. Current water rates in the district are \$45 per month, with a projected water rate of \$55.65 per month associated with the proposed project. All users would be assessed the rate increase. The DOC target rate is \$32.13. Because the projected rate exceeds the target rate, the district will likely be successful in obtaining the TSEP grant, as well as the RD grant and loan.

Detailed cost estimates were provided in the PER for the selected alternatives to support the project cost. The cost estimates appear adequate for the proposed project. Costs for bonding, loan reserves, audit fees, legal fees, and other administrative costs have been included. Estimated costs for each line item in the budget appear accurate for the scope of the proposed project. The district water system has 120 active connections, all residential. At full-buildout, the district will provide water to 180 users.

The applicant states that if the district is not successful in obtaining either the RRGL grant or the TSEP grant, the budget would require further consideration with possible deletion of project components.

Benefit Assessment

The applicant addressed all questions contained in the application. The primary benefit to renewable resources is resource conservation. The proposed project provides conservation benefits by installing a new water storage tank to replace two failing and leaking tanks. Also included is replacement of existing leaking water mains, which should result in water conservation. Improved fire protection with installation of fire hydrants and larger mains in the heavily wooded areas in and surrounding the district will enhance the potential to preserve area timber resources in the event of a wildfire.

Environmental Evaluation

The applicant adequately addresses the environmental impacts associated with its proposed water system improvements project with no long-term, negative impacts noted. A positive environmental impact will be the conservation of groundwater by eliminating leaking storage tanks and distribution piping. An environmental checklist was included with the application and appears complete. Short-term impacts associated with construction have been identified in the PER and environmental checklist. They include noise, traffic, dust, and energy consumption.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 68

Applicant Name Homestead Acres County Water and Sewer District
Project Name Homestead Acres Water System Improvements

Amount Requested \$ 100,000 Grant
Other Funding Sources \$ 573,325 TSEP Grant
\$ 473,325 RD Loan
Total Project Cost \$ 1,146,650

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The Homestead Acres County Water and Sewer District operates a public water system which serves the subdivision of Homestead Acres, approximately three miles north of Great Falls. The district provides water service to 195 residences serving approximately 500 Montanans.

The water system serving Homestead Acres was constructed in 1976 and much of it has outlived its useful life. The district completed a Preliminary Engineering Report in 2008 which identified deficiencies in the water system. To address these system deficiencies, the district desires to add two new wells and 50,000 gallons of additional storage, install new water mains to eliminate dead ends, and standardize and relocate water meters to prevent future unmetered uses, thereby conserving water.

The proposed project will increase supply to the district and eliminate the need for water rationing. Elimination of rationing and development of new water wells will expand utilization of a natural resource. Elimination of rationing will allow district residents to irrigate lawns, trees, parks, and other landscaped areas that would otherwise not be planted or sustained as “green” areas. The project will provide increased water service for domestic use in the district. These improvements will also protect the aquifer and preserve renewable resource benefits that the water system provides.

The project will solve serious health and safety problems and enhance the common well-being of Montanans through conservation, development, and preservation of resource benefits from water, a renewable resource.

Technical Assessment

Project Background

Homestead Acres County Water and Sewer District lies approximately three miles north of Great Falls. The district serves potable water to 195 residences in an area over three square miles. The district was formed in 1976 with the water system constructed in 1979. The water system consists of two wells, three 50,000-gallon concrete water reservoirs, and approximately 95,000 lineal feet of water mains ranging from four to eight inches in diameter.

One of the wells (Well #1) has a separated/misaligned casing; on two occasions the pump has sheared off when trying to remove it for maintenance. Without this well, the district is left with only one supply source. Two of the storage tanks sit about 70 feet lower than the highest tank, resulting in manual operation of gate valves to regulate flows to these tanks. Consequently, these two tanks only service a few residences. The distribution system has several dead-end mains requiring extensive manual labor to prevent stagnant water. Also, one crossing of Bootlegger Trail is in place which would result in over half the district without water if it was damaged or required repair. The system is metered. However, many of the meters are inside homes making maintenance and reading difficult.

The major alternatives considered were repair and upgrade of the system or connection to the Great Falls water system.

Technical Approach

Based on overall enhancement to the system, the PER recommends prioritizing improvements as follows:

- Drill two additional wells to replace deteriorating Well #1;
- Install a new 50,000-gallon on-grade concrete storage tank;
- Relocate water meters; and
- Improve distribution system.

The preferred alternative making improvements to existing systems rather than extending to the Great Falls water system, was chosen based on the present worth analysis showing alternative #1 (new wells) cost approximately \$800,000 less than alternative #2 (connection to Great Falls).

Steel and concrete water storage tanks were compared. Costs were relatively close and the concrete tank was chosen based on less O&M.

Relocation of water meters in homes (140) to pits at the property line was recommended based on the following advantages:

- Access and repair can be done without entering private property;
- Users would be encouraged to repair service leaks "behind" the meter;
- Increased backflow prevention; and
- Decrease unmetered flows.

Specific tasks to be accomplished:

- Drill two new wells and remove Well #1 from service;
- Install a new 250,000-gallon concrete water reservoir;
- Relocate water meters that are inside homes (140); and
- Install 4,400 lineal feet of six-inch water main loop.

The technical and secondary reviewers expressed concern about past system problems and associated health issues due to inadequate main looping. They did not consider meter relocation to be a greater priority than main looping. Average water use in the system is already under the average for metered systems; the application did not adequately explain why relocating meters is a greater priority than addressing dead end mains. The PER system analysis showed operation pressures lower (17 to 24 psi) than pressures considered minimally desirable (35 psi). The application did not address system operation pressures.

Project Management

Homestead Acres County Water and Sewer District has contracted with a design professional for management and administration of this project. The design professional and Homestead Acres personnel appear well qualified to manage and administer the project, including grant administration, project design, construction management, inspections, and closeout. The management plan details public involvement thus far and lists a rough plan of how the public will be informed and involved through the remainder.

This project is ready to go to construction within the next two years.

Public support for the project is strong. The district used public awareness and input for developing the project, including public meetings, board meetings, and newsletters. The district intends to continue using these venues during project design and implementation.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$42,000	\$42,000
Professional & Technical	\$0	\$0	\$169,900	\$169,900
Construction	\$100,000	\$0	\$834,750	\$934,750
Total	\$100,000	\$0	\$1,046,650	\$1,146,650

The funding strategy includes: a TSEP grant of \$573,325, RD loan for \$473,325, and an RRGL grant for \$100,000.

The monthly residential rate is \$49.95, which is projected to increase to \$62.04. A funding options chart in the PER identifies two scenarios, scenario #1 included TSEP and DNRC grants with a 20-year SRF loan at 3.75 % interest. Scenario #2, the preferred scenario, identifies TSEP and DNRC grants with a 40-year RD loan at 4.5% interest. No back-up plan was provided should one of the funding sources fail to be awarded.

Benefit Assessment

Resource benefits include water conservation and development. A summary assessment of resource and citizen benefits is as follows:

- Natural resource conservation will reduce unmetered water loss, estimated at 15% of water produced over a three-year period; however, water use is already under the average for metered systems.
- New wells will develop and expand the use of a natural resource and eliminate the need for water rationing;
- System improvements will allow for growth in the district, contributing to the economy; and
- Promoting adequate water supply systems is consistent with the Cascade County Growth Policy Plan.

Environmental Evaluation

All work is within the general confines of the existing system and environmental impacts will be minimal and short term.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 69

Applicant Name	South Chester County Water District
Project Name	South Chester County Water District Water System
Amount Requested	\$ 100,000 Grant
Other Funding sources	\$ 131,000 TSEP Grant
	\$ 13,072 Local Resources
Total Project Cost	\$ 244,072
Amount Recommended	\$ 100,000

Project Abstract (Prepared and submitted by applicant)

The South Chester County Water District (SCCWD) consists of an intake structure, main pump house, two booster stations, and transmission piping. The system stretches from the Marias River in southern Liberty County to within five miles of Chester.

DEQ has issued a system boil water order for the following reasons:

- The district's source water has been classified as groundwater under the direct influence of surface water. The district has been unable to comply with the filtration avoidance criteria because of the consistently high levels of turbidity; and
- The system is unable to achieve contact time (CT) inactivation ratios of 1.0 or greater for the first two users. The CT issue occurs only during winter.

The district determined that the most appropriate long-term solution is joining the Rocky Boy's/North Central Montana Regional Water System. However, it is uncertain when the district will receive water from the regional system and DEQ is mandating compliance with the surface water treatment rule.

The proposed project, as it relates to the RRGL application, involves the following:

- Development of a new infiltration gallery for in-bank filtration;
- Conservation of water through installation of water meters. It is anticipated that water consumption will be reduced by 40% once the meters are installed, with a potential water savings of 271,620 gallons per year; and
- Preservation of the water system by providing water that meets the Safe Drinking Water Act.

Technical Assessment

Project Background

The SCCWD is a rural water system with 26 services near Chester. The water system includes an intake structure on the Marias River, a main pump house, two booster stations, and miles of transmission piping. The water system is not in compliance with state and federal regulations for water quality.

The source water is classified as "groundwater under the direct influence of surface water" and requires filtration or a filtration waiver. Filtration is not provided and the district has not met requirements to obtain

a filtration waiver due to water turbidity. The water system also does not meet chlorine contact time requirements at two services during winter. DEQ issues a boil order for these two users.

Other needs include:

- Water meters at the main pump station and user services to allow the district to record and monitor water production and usage; and
- A chlorinator at the main pump house to allow the district to maintain consistent chlorine residual levels within the system.

Alternatives considered included:

- Relocate the water system intake away from the Marias River to obtain greater in-bank filtration to meet turbidity requirements to obtain a filtration waiver; and
- Install a cartridge filtration system with ultraviolet (UV) disinfection.

Technical Approach

A water system analysis was completed, various alternatives considered to remedy needs, and the following improvements are recommended:

- Relocate the Marias River intake to obtain additional in-bank filtration;
- Replace the chlorinator at the Marias River pump house;
- Install UV disinfection equipment;
- Install a flow meter at the Marias River pump house;
- Install water service meters;
- Replace a section of pipe in two service lines to provide required chlorine contact time; and
- Replace 2.3 miles of undersized line.

The new intake at the Marias River pump house will be constructed to obtain additional in-bank filtration to allow the district to meet turbidity standards required for obtaining a nonfiltration waiver. Metering the system will give the district the capability to accurately monitor water use and manage the natural resource. The service line modifications will help the district comply with chlorine contact time requirements.

The applicant provided several letters of support from community members. Construction of proposed improvements is slated for August through September 2010.

Specific tasks to be accomplished:

- Relocate the Marias River intake to obtain additional in-bank filtration;
- Replace the chlorinator at the Marias River Pump House;
- Install UV disinfection equipment;
- Install a flow meter at the Marias River pump house;
- Install water service meters;
- Replace a section of pipe in two service lines to provide required chlorine contact time; and
- Replace 2.3 miles of undersized line.

Project Management

The district board of directors will be responsible for the project management. The district has secured the assistance of legal counsel from Chester and the district's secretary/auditor will administer accounts, disbursements, and supporting documents. The professional engineer who prepared the PER for Chester, is the operator/general manager for the district. The engineer will assist the district and consultants in issues about the project.

The district will hire a project manager/grant administrator and engineer for the proposed project. The district has involved the public throughout this process, as evidenced by letters of support. The applicant will continue to keep the public involved with direct mailers, bill inserts, public hearings, and meetings.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$2,900	\$0	\$4,900	\$7,800
Professional & Technical	\$13,822	\$0	\$40,033	\$53,855
Construction	\$83,278	\$0	\$99,139	\$182,417
Total	\$100,000	\$0	\$144,072	\$244,072

The budget also does not include funds for the district to complete testing required by DEQ to show compliance with water quality standards once the Marias River intake is relocated. The budget includes funds for legal services, but the amount budgeted appears understated due to the land acquisition required for the project. Based on these issues, the proposed budget is likely not sufficient to complete the proposed project and additional funds will be needed. The proposed funding strategy is composed of RRGL and TSEP grants and district matching funds. The applicant has requested a waiver for the 50% match required for TSEP grants. The TSEP program manager indicated that the district will likely meet the three TSEP criteria for obtaining the waiver.

The project is proposed with grant and reserve funds so there is no associated rate increase for debt retirement with the project.

Benefit Assessment

The project has resource development and conservation benefits. The project goal is to reduce turbidity in the source water by relocating the Marias River intake away from the river. Lower turbidity levels may allow the district to meet DEQ requirements for obtaining a non-filtration waiver for the water supply. Obtaining a nonfiltration waiver will result in significantly lower operation costs. Without a filtration waiver the district will need to update the supply system with a water treatment plant, which is costly for both the capital improvements and for long-term operation and maintenance. The project also includes installation of water meters that will allow the district to monitor water usage and manage the natural resource.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse, long-term impacts will result. Minimal short-term, construction-related impacts will be controlled through permitting and proper construction methodology.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 70

Applicant Name Bigfork County Water and Sewer District
Project Name Bigfork Wastewater Treatment System Improvements, Phase 2A

Amount Requested \$ 100,000 RRGL Grant
Other Funding Sources \$ 14,000 Applicant
\$ 750,000 TSEP Grant
\$ 4,770,000 WPC SRF Loan
Total Project Cost \$ 5,634,000

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Since 2006, district efforts have focused on issues associated with the capacity of the WWTF. Phase 1 of the project, replacement of the headworks facility and WWTF lift station, is under way. Phase 2A mid-term improvement (the subject of this grant application) includes installation of an advanced treatment MBR system that will be constructed parallel to the existing trickling filter treatment process. This upgrade will essentially double the capacity of the treatment facility. Future improvements to the WWTF include abandoning the existing trickling filter and constructing a second-membrane bioreactor (MBR) system (when required by a future MPDES discharge permit, in about 10 years).

The renewable resource that will be preserved as a result of this project is Flathead Lake. Flathead Lake has been listed as an impaired body of water under the federal CWA, section 303(d). As a result, TMDLs have been established for the lake and call for a 15% reduction in nutrient loads and an additional 10% reduction for margin of safety. The Bigfork WWTF must be updated and improved to help meet these federal regulations. Through completion of this project, wastewater will be treated responsibly and water resources will be protected and preserved.

Technical Assessment

Project Background

The Bigfork County Water and Sewer District is on the northeastern shore of Flathead Lake; it includes the communities of Bigfork, Eagle Bend, and Harbor Village, close to the Lake County-Flathead County line. The district has operated a central wastewater collection and treatment system for many years and the existing treatment plant is over 20 years old. The collection system has over 47,000 lineal feet of sewer main and 11 lift stations. Flathead Lake is not meeting water quality standards due, in part, to excessive point sources of nutrients. To control nutrients and restore beneficial uses in the lake, the state regulatory agency will likely issue more stringent discharge limits to the district in the future. Estimated population of the district is 2,849 during the summer. Significant future population growth in the area has been projected.

While not identified in the proposed future service area for Bigfork, three sewer districts in the Woods Bay area are scheduled to connect to the Bigfork system within two to three years.

Technical Approach

The existing wastewater treatment plant is an advanced wastewater treatment facility which utilizes a fixed-growth synthetic media trickling filter followed by chemical precipitation, filtration, and ultraviolet disinfection to remove conventional secondary pollutants, phosphorous, and pathogenic bacteria. Portions of the plant are approaching the end of their useful design life. Also, the district is anticipating a more stringent wastewater discharge permit requiring yet-to-be-specified additional effluent limits to help ensure that water quality standards in Flathead Lake are addressed. As a result of these pending issues, the district has initiated the planning process to upgrade the plant through a series of phased

improvements. Improvements to the headworks of the existing plant and the control system are under way. The PER submitted in the application evaluated various treatment options as well as relocating the plant to a more remote location. Upgrading the existing plant on site was found to be the most cost-effective treatment alternative. This grant application was written to seek financial assistance for the phase 2A improvements which include one of two treatment trains to replace the existing trickling filters with an MBR system. The Bigfork plant is taking on the role of a regional wastewater treatment plant, particularly if the Woods Bay districts connect to the facility. The probable connection of the Woods Bay districts was not addressed in the application and it is difficult to tell if the Bigfork plant will have capacity for the service areas identified in the Bigfork PER plus the Woods Bay area. Additional phases of the plant are planned for the future, costing several million dollars.

The project construction schedule in the PER indicates notice of grant award in October 2008 and construction initiation in 2009, which is not likely given the schedule for legislative review of the funding applications. Future project phases were identified as necessary to complete the upgrade of the Bigfork treatment facilities.

Specific tasks to be accomplished:

- Construct an MBR treatment plant which will operate parallel with the existing plant, allowing a partial upgrade of the plant.

Project Management

The project engineer has already been selected and has considerable experience in administering grants and designing and constructing wastewater improvements. The district manager will be the fiscal contact and has prior experience in managing the district, including other capital improvements projects. The district has experienced legal counsel and bond counsel.

The district has had an active public involvement program to consider the project including public meetings, websites, publications, and other activities. Additional efforts are planned. Several letters of support were included in the application.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$358,000	\$358,000
Professional & Technical	\$0	\$0	\$880,000	\$880,000
Construction	\$100,000	\$0	\$4,296,000	\$4,396,000
Total	\$100,000	\$0	5,534,000	\$5,634,000

The budget addresses the first part (Phase 2A) of the Phase 2 improvements identified in the PER as needed to upgrade the existing wastewater treatment facility. Future user costs for the system are estimated to be \$71.45 per month. The estimated costs are based on obtaining various grants and low interest loans outlined in a viable financial plan. The combined water and sewer rate is projected to be \$108.27, 156% of the "target" user rate. Consequently, the affordability of the project must be considered, particularly if grant assistance is less than projected. Future project phases will be needed to complete the project and meet the projected design capacity, requiring additional user costs in the future. Expansion of the district and use of capital investment fees may offset some of the future cost.

Benefit Assessment

The proposed project should help preserve the water quality of Flathead Lake, a highly valued water quality resource, but actual benefits have not been specifically quantified. The DEQ has identified the lake as an impaired water body with nutrients from near-shore development identified as one of the sources. The project, through an improved treatment system capable of producing high-quality effluent, should preserve existing water quality and not allow degradation to continue. The lake is a very important recreational resource and protection of the resource will contribute to economic development throughout

the area, allow for an increase in tourists, and provide support for many businesses tied to the recreational industry. Until ongoing water quality studies are completed and new effluent standards imposed in the MPDES discharge permit, it is difficult to specifically measure the benefits of the new treatment system against desired gains in improved water quality. The proposed plant should be capable of producing a very high quality effluent.

If outlying districts are connected to the system, groundwater resources will benefit through implementation of the project, including protection of public water supplies impacted by septic tank effluent.

Several letters of support for the project were provided in the grant application; the project appears to have very strong local support.

Environmental Evaluation

The proposed wastewater treatment system improvements should have a net positive effect on the environment presuming that the new facilities comply with future effluent standards. The growth that will be enabled by connecting peripheral development to the plant may have adverse impacts that could be controlled through appropriate planning and zoning. These impacts were not fully evaluated. The U.S. Fish and Wildlife Service indicated that the bull trout, a threatened species, may be adversely impacted by the proposed project. The agency suggested that a wastewater reuse alternative is preferred to reduce these impacts. While the reuse option may not be practical, this concern was not addressed in the grant application or associated planning documents. Odor production from the proposed facilities was identified as a potential environmental issue, although it is not addressed in the proposed project.

Short-term negative environmental concerns associated with construction, e.g., noise and dust, can be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 71

Applicant Name: Greenacres County Water and Sewer District
Project Name: Greenacres County Water and Sewer District Water System Improvements

Amount Requested	\$ 100,000	Grant
Other Funding sources	\$ 184,962	SRF Loan
Total Project Cost	\$ 284,962	

Amount Recommended \$ 100,000

Project Abstract (Prepared and submitted by applicant)

The Greenacres County Water and Sewer District public water system consists of three wells/pump house facilities, approximately 12,400 lineal feet of transmission main, and serves 163 residential users.

Water system deficiencies:

- No existing flushing structures;
- Inadequate storage in both pump house facilities #2 and #3;
- Structural/functional problems relating to pump house #2 requiring rehabilitation of building;
- No existing control/communication system;
- Sixty-five inoperable curb stops;

- Ten inoperable main valves;
- No back-up power source; and
- Majority of water system users not metered.

Alternatives evaluated:

- Upgrade the existing district public water system to correct all DEQ design deficiencies and continue to supply domestic flows;
- Upgrade the existing district public water system to correct all DEQ design deficiencies and supply domestic and fire flows; and
- Annex to the city of Kalispell and connect to the city's public water supply system (supplying both domestic and fire flow capacities).

Since annexation discussions between the district and the city of Kalispell are just beginning, the district is planning proactively to perform repair work in phases while attempting to pursue grant assistance, address DEQ design standard deficiencies first (these corrections will be mandated as part of annexation), while proceeding with annexation discussions until a memorandum of understanding is established.

For this grant application the following work will be completed:

- Install a control/communication system linking all three wells/pump house facilities;
- Install adequate storage in pump houses #2 and #3;
- Rehabilitation/expansion of pump house #2;
- Replace 10 nonfunctioning main valves;
- Replace 65 nonfunctioning curb stops;
- Install five blow-off structures at dead-end mains;
- Install 85 residential meters; and
- Install back-up power source at pump house #2.

Technical Assessment

Project Background

The Greenacres County Water and Sewer District serves 163 households and 465 residents of Kalispell. The water system was designed and constructed in the early 1970s and expanded multiple times to incorporate additional homes. The distribution system has several dead-end mains, the water system has no working flushing or sampling points, and over half of the residences are not metered. The system has 10 water main valves that no longer function. Inadequate storage is provided in two of the three pump houses. The system does not have a control/communication system linking the three pump house facilities. One of the existing pump houses has structural and functional problems that require rehabilitation. No back-up power exists for the water supply. The district is served by the South Kalispell Volunteer Fire Department one-half mile away.

Technical Approach

Ultimately, annexation to the City of Kalispell and connection to the city's water supply is the district's goal. The connection would supply both domestic and fire flow capacities. Discussions began in 2002 with the city and are ongoing. The district is taking steps to correct the existing water system deficiencies while pursuing annexation discussions with the city. The district plans to perform the repair work in phases, addressing DEQ design standard deficiencies first. Some of the improvements proposed under this grant application would be required for annexation and the other improvements will assist the district users in the meantime.

Specific tasks to be accomplished:

- Install a control/communication system linking all three wells/pump house facilities;
- Install adequate storage in pump houses #2 and #3;
- Rehabilitate and expand pump house #2;
- Replace 10 nonfunctioning main valves;
- Replace 65 nonfunctioning curb stops;
- Install five blow-off structures at dead end mains;
- Install 85 residential meters; and
- Install back-up power source at pump house #2.

Project Management

The proposed project management plan identifies adequate staff to successfully administer and manage the proposed project. The district will hire a grant administrator. The district's secretary/treasurer, president, and accountant will also assist with the project.

The district engaged proper procurement procedures. The schedule anticipates construction beginning in May 2010 and construction completed in August 2010.

The district has conducted regular public meetings throughout the project to inform the public as documented in the application. The district will continue to use this forum as well as monthly reminders in user's bills and word of mouth for additional public involvement.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$10,713	\$10,713
Professional & Technical	\$15,000	\$0	\$23,566	\$38,566
Construction	\$85,000	\$0	\$150,683	\$235,566
Total	\$100,000	\$0	\$184,962	\$284,962

The project budget appears reasonable and is likely sufficient to fund the proposed project. The application does not include a sufficient amount for the one annual payment reserve required with the SRF loan program. The budget lists \$1,000 for the reserve, but the uniform application indicates that the annual payment will be \$16,637. This equates to approximately \$15,000 not included in the project budget. The budgeted contingency of \$21,000 would cover this oversight but would leave little flexibility for any overrun on the project. The district's funding strategy appears reasonable with an RRGL grant and SRF loan.

The applicant is a local government and has the ability to collect charges for debt and operation. Current residential charges for water service are \$32 per month. The monthly rate was recently increased from \$20 per month. No additional increase to the existing rate is anticipated as the rate is sufficient to cover the additional debt. The application does not give any detail of the increased O&M costs so it is difficult to determine if this estimate is accurate and whether this would impact the user rate. Adequate and detailed costs were provided for all of the alternatives and a 20-year present worth analysis was performed which included salvage value and O&M costs for each alternative. The estimated construction costs appear accurate.

Benefit Assessment

The improved use of the water system efficiently uses the renewable resource and positively benefits the local aquifer in the area. Less pumping will be required due to installation of an efficient control system; therefore, energy use and costs will decrease. Installation of water meters will promote conservation. The application included sound evidence of public support for the project.

Environmental Evaluation

The application included a complete uniform environmental checklist. No potentially adverse impacts are anticipated. The appropriate agencies were contacted for comment and no concerns were received.

Funding Recommendation

DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 72

Applicant Name: Livingston, City of
Project Name: Livingston Anaerobic Digester Improvements and Composting Facility

Amount Requested	\$ 100,000	Grant
Other Funding sources	\$ 500,000	TSEP Grant
	\$ 868,856	SRF Loan
Total Project Cost	\$ 1,468,856	

Amount Recommended \$ 100,000

Project Abstract (Prepared and submitted by applicant)

A PER prepared for Livingston in 2001 presented a recommended course of action and design for wastewater improvements to meet the needs of the city and requirements of state and federal regulations for 20 years. The PER detailed a project priority list of 19 projects for the city to accomplish. Since the PER was prepared, the city has accomplished the following three additional treatment plant projects on the list: rehabilitated the primary anaerobic digester, improved handling of solids, and constructed a new sludge thickening facility.

The wastewater treatment plant generates approximately 220 metric tons of sludge a year. The city spreads the sludge, a mixture of dry and wet, on property owned by the city or property the city has contracted with private landowners to use. This current biosolid land application program may not comply with DEQ permitting regulations in the future.

The existing anaerobic digesters at the wastewater treatment plant have been in service for 48 years. No major modifications have been made to them. In the early 1980s, some modifications were made to the digester heating system and sludge-pumping facilities.

The city has operated a yard waste-only composting system since 1999. The system is best described as having an adequate collection system, but an ineffective composting process. The current windrow composting system raises some health concerns that may affect the surrounding neighborhood, such as odor and vector controls. These problems increase during the hotter summer months.

The city proposes to implement a communitywide composting system to integrate green waste (yard waste and food scraps) and biosolids (treated sewage sludge). To effectively carry out the project, the city proposes to rehabilitate the primary anaerobic digester and construct a composting facility.

Technical Assessment

Project Background

Co-composting is the term used to describe the composting of a mixture of materials such as treated wastewater sludge (biosolids) and green waste (grass clippings, woody debris, food scraps) to provide a

sustainable and cost-effective disposal method for the co-composted material. Livingston seeks to reduce transportation and labor costs associated with the current land application program for the Class B biosolids produced at the Livingston Wastewater Treatment Plant as well as produce a Class A compost that can be used by the city as a soil conditioner and a potential revenue source. The city also seeks funding to replace the cover on the existing primary digester. To achieve these goals, the city proposes to rehabilitate the primary anaerobic digester and construct a composting facility. Composting system alternatives considered were: covered windrow composting, in-vessel composting, indoor aerated static pile composting, and hybrid composting. The PER addendum did not explore alternatives and associated costs for replacement of the cover on the primary digester and other miscellaneous digester improvements. These digester improvements account for over 50% of estimated construction costs.

Technical Approach

The PER recommends in-vessel composting and all of its components, including the preferred gravity filter dewatering container, as the preferred alternative for the co-composting facility project. Construction of the facility will be completed within the bounds of the existing wastewater treatment plant. The in-vessel composting system was chosen because of its flexibility and operational ease. The gravity filter dewatering container was the most favorable of the dewatering technologies because it had the most flexibility for dewatering supernatant. Construction is slated to begin in the first quarter 2010 and conclude the fourth quarter 2010.

Specific tasks to be accomplished:

- Construct co-composting facility at the wastewater treatment plant;
- Install gravity filter dewatering container; and
- Install cover on the primary digester and other miscellaneous digester improvements.

Project Management

The project management plan includes the city manager, director of public works, finance director, engineer, and a project manager (to be hired). Two formal public hearings were conducted to discuss the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$8,754	\$0	\$50,000	\$58,754
Professional & Technical	\$0	\$0	\$235,017	\$235,017
Construction	\$91,246	\$0	\$1,083,839	\$1,175,085
Total	\$100,000	\$0	\$1,368,856	\$1,468,856

The budget supplied in the uniform application reflects a total project cost of \$1,468,856, but may not be adequate. The applicant used smaller amounts for digester improvements than were estimated in a previous report. The applicant believed the previously estimated cost was too high, but provided no other justification. No reserve loan payment is included in the budget for the SRF loan reserve. The budget also reflects no allocation for bond counsel and related costs. The applicant has budgeted contingency to cover costs and has also stated that additional loan dollars would be used to cover unaccounted costs, if necessary. Funding sources include local funds, RRGL and TSEP grants, and an SRF loan. Other funding agencies were considered and the applicant has arrived at the best possible funding package.

Benefit Assessment

Composting benefits include helping regenerate poor soils, cleaning up contaminated soil, and preventing pollution by diverting materials from landfills that produce methane gas and leachate. Using compost will benefit several community projects such as parks, soccer fields, community gardens, etc. The composting process will ultimately create a new product that can be sold to the public.

Environmental Evaluation

The PER included a completed uniform environmental checklist with no adverse environmental effects anticipated. The applicant contacted four appropriate agencies and no letters of concern.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 73

Applicant Name Eureka, Town of
Project Name Eureka Water System Improvements

Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 625,000	TSEP Grant
	\$ 450,000	CDBG Grant
	<u>\$ 610,000</u>	RD Loan
Total Project Cost	\$ 1,785,000	

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Eureka proposes to expand and improve its distribution system to provide public water services to the Mountain View Trailer Court, a residential living area in the town's planned growth area. The trailer court is north of the current town limits and west of Highway 93. The area is served by a private public water system with a documented record of water quality violations, primarily bacteriological violations. Development is fairly extensive and utilizes on-site wastewater disposal systems. Groundwater wells have elevated nitrates, supporting the contention that the water supply problems at the trailer court are related to the sewer drainfields.

Extension of the water system to the Mountain View Trail Court includes placing new water mains along a portion of the Highway 93 commercial corridor. The main extension will provide fire protection to a portion of this existing commercial area.

Improvements include replacing two blocks of existing distribution system on fifth Street with 14-inch pipe, extending 14- and 12-inch water main north along Highway 93 approximately 4,300 linear feet, extending eight-inch water main approximately 900 linear feet west into the Mountain View site, and constructing a looped six-inch water main to serve the trailer court. These improvements will provide a safe water supply for residents and fire flows to the development.

Improvements will include safety upgrades to the chlorination room of the town's water system.

The proposed project results in resource conservation, resource management, and citizen benefits:

- Resource conservation benefits--improved efficiency and utilization by installing water meter pits for each of the trailer court users;
- Resource management benefits--replacing an existing water supply plagued with bacteriological problems with the Eureka public water system; and
- Citizens benefits--a safe drinking water supply for the residents of the Mountain View Trailer Court and fire protection where it does not exist in the trailer court and the Highway 93 corridor.

Technical Assessment

Project Background

Eureka is in Lincoln County in northwestern Montana. The town is served by both public water supply and public sanitary sewer systems. The town's growth plans include the area north of Eureka to Highway 37. This area includes much of the community's business base, U.S. Forest Service (USFS) facilities, the fairgrounds, and some residential development. The town may ultimately choose to annex the Midvale water and sewer district north of town (served by a public water system).

In 2007 the town elected to complete a preliminary engineering report (PER) to analyze the town's water system. The purpose of the PER was to evaluate Eureka's water system to determine its capacity to serve the town, the Midvale water and sewer district, and the planned growth area north of Eureka to Highway 37.

Results of the PER are a three-phased water system improvement project:

- Phase 1-distribution system provide public water supply system services to Mountain View Trailer Court, a residential living area within the town's planned growth area. This main extension will also provide fire protection to a portion of the commercial area on Highway 93;
- Phase 2-storage facilities, construct a new 404,000-gallon water storage facility within Eureka; and
- Phase 3-distribution system, provide fire protection capabilities to downtown and school areas in Eureka.

Only Phase 1 improvements are part of this grant application.

Technical Approach

Mountain View Trailer Court is served by a private public water supply system with documented records of water quality violations, primarily bacteriological.

Improvements proposed as part of this funding package include: replacing two blocks of water main with 14-inch pvc pipe, extending 12- and 14-inch pvc water main approximately 4,300 feet north along Highway 93, extending eight-inch pvc water main west into the Mountain View Trailer Court, installing a six-inch pvc pipe loop through the trailer court (approximately 1,800 feet), and installing safety upgrades to the town's chlorination room.

Specific tasks to be accomplished:

- Install 3,100 lineal feet of 14-inch pvc water main;
- Install 2,100 lineal feet of 12-inch pvc water main;
- Install 1,000 lineal feet of eight-inch pvc water main;
- Install 1,800 lineal feet of six-inch pvc water main; and
- Install safety upgrades to the town's chlorination room;

Project Management

Along with city staff, a civil engineering firm will manage the project. Once funds are secured, the town will go through a full procurement process to hire a grant administrator. The contracted engineer appears well qualified to assist the city with project design, construction management, inspections, and closeout. Eureka's city staff have experience working with projects funded through grants and loans.

The project management plan details public involvement thus far in the process and lists a general plan of how the public will continue to be informed and involved through the remainder of the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$70,500	\$70,500
Professional & Technical	\$0	\$0	\$272,500	\$272,500
Construction	\$100,000	\$0	\$1,342,000	\$1,442,000
Total	\$100,000	\$0	\$1,685,000	\$1,785,000

The city is seeking an RRGL grant, CDBG grant, TSEP grant, and an RD loan. The town's current user rate is 128% of the DOC target rate.

Benefit Assessment

The area served by this project has a history of poor water quality and water quality violations. Extension of the town's water service to this area will greatly improve the quality of water for these residents. Adding water meters will help conserve water. The increase in fire flow and system pressure will benefit all users by better protecting life and property.

Environmental Evaluation

The proposed project consists of installation of new water mains. All proposed construction takes place within already paved areas. Negative environmental impacts will be short term and construction related, such as dust and noise. The project will have positive environmental impact by replacing old, deficient water mains and improving fire flows.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 74

Applicant Name Manhattan, Town of
Project Name Booster Station Transmission Main Replacement

Amount Requested \$ 100,000 Grant
Other Funding sources \$ 43,000 SRF Loan
Total Project Cost \$ 143,000

Amount Recommended \$ 100,000

Project Abstract (Prepared and submitted by applicant)

This project incorporates replacing and relocating the horizontal alignment of approximately 2,000 lineal feet of aging asbestos cement water transmission main with pvc. This section of transmission main is Manhattan's sole source of water supply from the spring line booster station, which is also the town's largest water supply. The booster station is fed by a spring south of town. Manhattan's water conservation efforts have diminished over the years because of the poor condition of the aging transmission mains. Numerous breaks have not only lowered conservation efforts, but also increased the water system's susceptibility to contamination. The Booster Station Transmission Main Replacement project will enhance reliability of the town's largest water supply, and will allow the town to continue reliance on this source to supplement capacity to supply peak domestic and fire flow demands.

This project also includes relocating the horizontal alignment of the transmission main to pass under Interstate 90 at the bridge overpass of Manhattan South Road. The current transmission main alignment is in the fill abutment of Interstate 90 which makes maintenance, repair, or replacement lengthy and difficult. Considering the importance of this supply source, a break in the water main under Interstate 90

requiring a lengthy repair process could be disastrous. A prolonged loss of pressure and capacity could lead to inadequate fire flows or backflow incidents exposing the water system to contamination. Relocating the main to the Interstate 90 bridge overpass of Manhattan South Road and within an easement will allow easy access and timely repair in the event of pipe failure.

Technical Assessment

Project Background

Manhattan's original water system, consisting of a developed spring 3.5 miles south of town and wood stave transmission and distribution system piping, dates to 1912. The system has had numerous upgrades and improvements.

The current water supply includes four water supply wells and the spring. The town has no water storage, meters, or back-up power for its water supply wells. The town is implementing a major capital improvements project with financial assistance from developers who want to annex to the town. This project includes construction of an elevated water storage tank, installation of water meters, water main looping for better fire protection, hookup of a new water supply well, and installation of back-up power for each of the wells. This project is already partially funded by the 2006 cycle of TSEP and RRGL as well as an SRF loan. The project scope is discussed in detail in the 2006 Water System PER. The town and the developers have been working on addressing some water rights issues before beginning construction.

The town updated the PER in 2008 to provide technical documentation for the project proposed in the 2008 RRGL application. The PER concludes that the highest remaining priority for the water system is replacement of the water transmission main which delivers spring water from the booster station across Interstate 90 into town. The main is an old asbestos cement line plagued with leakage and periodic breaks. The existing main is uncased and crosses Interstate 90 within a deep fill. If a significant leak occurred within the Interstate fill, it would be very difficult and expensive to repair and could damage the highway. The main carries water from the spring, one of the town's primary drinking water sources, so interruption of service would temporarily reduce the amount of water available to residents.

Technical Approach

The PER investigated several alternatives for replacement of the transmission main; the recommended alternative includes replacement of the main on a new alignment under the existing Interstate overpass which crosses South Manhattan Road. The applicant did not provide calculations or model results so that the relative performance of the alternatives were available for technical review. Replacement of the existing main with a new main of the same size should meet the town's long-term performance requirements from this water main and is the most obvious and cost-effective alternative for addressing the deficiency with existing pipeline. The only potential environmental impact identified is crossing of Warm Springs Canal and the potential impact to wetlands. Although wetlands were not identified during preliminary reconnaissance of the canal crossing, the applicant has committed to obtaining the necessary permits before construction. The applicant anticipates beginning design on the project in July 2009 and having the construction completed by the end of September 2009. This schedule is very aggressive and will be difficult to achieve.

Specific tasks to be accomplished:

- Replace approximately 2,000 feet of existing asbestos cement water main with pvc water main along a new alignment under the South Manhattan Road Interstate underpass.

Project Management

The proposed project involves only two agencies: an RRGL grant and SRF loan. The town has hired an engineer as project manager. The project manager will be responsible for keeping each funding agency informed of progress. The project management plan outlines the duties for the project manager, engineer, attorney, bond counsel, clerk-treasurer, town council, and mayor. The plan provides for a sound

staff of specialists to perform duties important to the project within their areas of expertise. The project manager and town council will keep the public informed through regularly scheduled council meetings. There is no specific public involvement plan.

The project management plan provides for thorough and well-organized contract management with regulatory and funding agencies, consultants, contractors, and other involved parties. Roles of the project manager are clearly defined in the grant application and are appropriate given the budget allocations and project approach. The project budget allows for funding to support the financial and administrative aspects of the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$6,000	\$6,000
Professional & Technical	\$0	\$0	\$16,008	\$16,008
Construction	\$100,000	\$0	\$20,992	\$120,992
Total	\$100,000	\$0	\$43,000	\$143,000

The project budget is complete and includes adequate detail to show that the proposed budget is sufficient to complete the proposed project. The applicant plans to obtain SRF for \$43,000 of the project budget. The town and the proposed project are eligible for SRF loan funding. If the town receives RRGL grant funding, the entire funding package will be in place and the project ready to proceed. If the town does not receive DNRC funding, the contingency plan is to fund the entire project through an SRF loan. The application does not include the one annual payment reserve required with the SRF loan program. This equates to approximately \$4,000 not included in the project budget. The budget also does not include bonding costs for the loan of approximately \$6,000. The budgeted contingency of \$15,782 covers this oversight, and the project is so small the town would be able to cover a small overrun on the project.

The applicant is a local government with the ability to collect charges for debt and operation. Current residential charges for water service are \$27 per month. The projected residential rate is \$28.44 per month, including the debt service for this project plus a 4% increase for inflation. The new rate will affect 595 households. The new residential utility bill (water and sewer) would be \$73.64, 100.004% of the DOC target rate.

Cost estimates provided for the options considered for project components were used to help determine preferred alternatives. Engineering costs are within the typical range for a project of this magnitude.

Material, labor, and equipment costs used to develop the budget appear reasonable and adequate.

Benefit Assessment

The project has quantifiable resource conservation benefits by reducing leakage. However, the applicant was unable to quantify the exact amount of water conserved by the project. Replacement of the leaky water transmission main will conserve local groundwater. The project does not provide development or preservation benefits. The project also does not provide any multiple-use benefits. The project is consistent with the town’s updated capital improvements plan and is well supported as shown by multiple letters from Manhattan residents.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse long-term impacts will result. Potential impacts to wetlands will be addressed by obtaining necessary permits before construction. Minimal short-term, construction-related impacts will be controlled through permitting and proper construction methodology.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 75

Applicant Name	Stevensville, Town of
Project Name	Stevensville Water System Improvements, Phase 3
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 255,000 Applicant
	\$ 450,000 CDBG Grant
	\$ 700,000 STAG Grant
	\$ 700,000 WRDA Grant
	\$ 750,000 TSEP Grant
	<u>\$ 1,015,000</u> SRF Loan
Total Project Cost	\$ 3,970,000
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

- 1) Water losses are estimated at over 350,000 gpd or an annual average of nearly 40%. Average annual water use based on production is over 1,000 gpd/edu, or about twice what should be expected;
- 2) Water production is marginally adequate for peak summer use given current water losses. Leakage must be reduced;
- 3) The existing rapid sand filter cannot meet EPA requirements for treatment of the collected water and a slow sand filter is recommended as the best option if the surface water source continues. The PER recommends eventual abandonment of the infiltration source and development of groundwater wells instead;
- 4) Over 40% of the system is unmetered and billed quarterly. Services should be metered and billed monthly; and
- 5) The distribution system requires replacements and upgrades to provide fire flows and adequate capacity for maximum day use.

Since the June 2006 PER, the town has tested and replaced the pump in well # 1, but found sand filter limits well production to 275 gpm. Some water leaks have been identified and repaired. On May 29, 2007, the town adopted a new water rate structure to cover complete costs of operating and maintaining the system.

The selected alternatives in the 2006 PER conclude with the following recommendations:

- Identify and repair sources of "lost" water;
- Identify and secure a location for a consolidated well field and additional water storage;
- Fully meter town water services;

- Improve distribution capacity and circulation;
- Develop an adequate groundwater well supply and construct additional storage volume; and
- Decommission the subsurface water collection system and treatment plant.

The PER proposes a three-phase solution.

Technical Assessment

Project Background

Stevensville, a town of 652 households, is in Ravalli County adjacent to U.S. Highway 93. The town's water system consists of a water treatment plant that treats groundwater from an infiltration gallery and surface water and three groundwater wells. Well #1 pumps sand at high flows. Wells #2 and #3 lack a protective grout seal, have no easement or land area for protection, have no disinfection equipment, and have a high potential for contamination as evidenced by elevated nitrate concentrations (1.5 to 2.7 mg/l). None of the three well sites have room to install chlorine disinfection and contact chambers which may be required to meet requirements of the Environmental Protection Agency's (EPA) upcoming groundwater rule. The water treatment plant does not meet DEQ design standards and requirements of EPA's Long-Term 1 Enhanced Surface Water Treatment Rule (LT1). Leakage of up to 350,000 gallons per day occurs. The town will require an additional 367 gpm in the next 20 years. The distribution, transmission, and storage system require upgrades to provide adequate fire protection and adequate capacity for maximum day demands.

The town's PER evaluated upgrading or replacement of the existing water treatment plant, construction of a new well field, alternatives for a new water storage tank, and upgrading the existing distribution and transmission system.

Technical Approach

The PER proposes a three-phase solution for upgrading the water system. Phase 1 includes installation of a pump in well #1 (completed), installation of a telemetry control system, identification and repair of leaking mains and service lines (under way), and a hydrogeological study to identify a location for a new well field. Phase 2 consists of the installation of water service meters for the remaining unmetered services, and installation of 4,500 feet of 20-inch transmission main. Phase 3 consists of development of a new well field to replace existing wells and water treatment plant, construction of a 1 million gallon storage tank and booster pump station, and distribution system improvements to improve fire flow. The project approach will reduce system leakage, promote water conservation with the use of water meters, and develop additional storage and system capacity.

Remaining Phase 1 improvements include completing the hydrogeological study to identify a well field site and continuing the leak detection and repair program. The study will have to be completed before starting Phase 3. The Phase 2 improvements are scheduled to be complete by summer 2009. Phase 3 improvements are scheduled to start in summer 2009 and finish by mid-2010. The overall project will produce no adverse environmental impacts other than temporary construction impacts.

The PER did not justify abandoning the existing wells and did not fully document why the treatment plant will not comply with the EPA LT1 Rule. The proposed well field may not meet DEQ's requirement for groundwater sources to provide maximum day demand with the largest producing well out of service. To meet this requirement, an additional well may be needed, increasing project costs. The design of Phase 3 cannot proceed until the hydrogeological study is complete and a well site is purchased. Cost estimates presented in the alternative analysis section of the PER are inconsistent with the detailed cost estimate from the preferred alternative.

Specific tasks to be accomplished:

- Develop production wells to 1,500 gpm;
- Construct a new 1 million-gallon storage tank and booster pump station;

- Improve fire flows;
- Replace transmission and distribution system piping; and
- Decommission the existing water treatment plant.

Project Management

The grant and loan administrator, not yet identified, will be the overall project manager. The town clerk/treasurer will be responsible for financial aspects of the project. The public works director will assist the project engineer with construction administration and coordinate activities between the engineer, contractor, and grant administrator. The project engineer will assist with funding applications, complete project design, and provide construction administration services. Overall staffing appears adequate. The project management plan addresses procurement procedures and requirements and public involvement. Public meetings and hearings have been conducted to discuss the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$265,000	\$265,000
Professional & Technical	\$0	\$0	\$435,000	\$435,000
Construction	\$100,000	\$0	\$3,170,000	\$3,270,000
Total	\$100,000	\$0	\$3,870,000	\$3,970,000

Phase 1 improvements are being funded with local monies and a WRDA grant. The proposed funding package for Phase 2 improvements includes a CDBG grant, RUS grant and loan, and \$74,000 in local funds. The Phase 2 funding sources are not yet committed.

This RRGL grant will be used to fund a portion of Phase 3 project improvements. The proposed funding package also includes a CDBG grant, TSEP grant, WRDA grant, STAG grant, SRF loan and \$255,000 in local funds. The funding sources are not yet committed. The budget form is complete and the administrative costs appear accurate. The loan amounts in the budget forms and the loan amounts used to calculate the projected average monthly residential water rates do not coincide. The loan amounts used to calculate the projected water rates are lower by approximately \$64,000 than amounts provided in the budget form, which could result in an error in the projected rates.

The town's average monthly water rate is \$20.03 for flat-rate customers and \$19.27 for metered customers. The projected water rate at the end of Phase 3 is \$29.14. The current combined water and sewer rate is \$54.61 for metered customers; the projected combined water and sewer rate at the end of Phase 3 is \$66.39 (121% of the DOC combined target rate of \$53.57). All three phases of the project are relying on approximately 67% grant funding, which may not be realistic. However, the applicants have indicated that they are willing to raise rates up to 150% of the combined target rate, \$81.91. The project can also be broken into additional phases.

The applicant has applied to CDBG for the 2008 funding cycle for the Phase 2 improvements and is proposing to apply to CDBG in the 2009 funding cycle for Phase 3 improvements. The town will not be able to submit a second application in 2009 unless the 2008 CDBG funds are at least 75% expended, which will be very difficult to accomplish. If a second CDBG application cannot be submitted and the Phase 2 work is not funded, a shortfall in the funding for Phase 3 may result which could lengthen the schedule.

Benefit Assessment

Major resource benefits are resource conservation and improved system management. Water will be conserved through installation of water meters, reduced leakage, and more efficient management of the water system. System management will be enhanced with construction of a 1 million-gallon storage tank,

reduction in system leakage, and installation of a telemetry control system. At least three new groundwater wells will be developed.

Environmental Evaluation

The proposed water treatment system improvements will have a net positive effect on the environment. Less water will be required by promoting conservation and reducing leakage. Contamination of groundwater from water containing chlorine and phosphates (used for corrosion control) leaking out of the distribution system will be reduced.

Short-term, negative environmental concerns associated with construction, e.g., noise and dust, can be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 76

Applicant Name	Buffalo Rapids Project District 1
Project Name	Conversion of Laterals 2.9/7.6 to Pipeline
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 194,711 NRCS Environmental Quality Incentives Program (EQIP)
	\$ 158,852 Buffalo Rapids District 2
	\$ 18,398 Landowners
	<u>\$ 53,448</u> NRCS Planning
Total Project Cost	\$ 525,409
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Buffalo Rapids District 1 is in eastern Montana, beginning at Fallon and terminating in Glendive, approximately 39 miles as the river flows. District 1 contains 16,170.91 irrigated acres. All irrigation water is diverted through two pumping plants, at the beginning of the canal across the Yellowstone River from Fallon (330 cfs) and in the second division near the Crackerbox Exit (80 cfs). Division three of the Glendive unit is the subject of this proposal.

This proposal encompasses two laterals, 2.9 and 7.6 and their conversion to pipeline. Both have been funded by the NRCS EQIP program. Lateral 2.9 delivers water to 887 acres while 7.6 supplies 423 acres. Twelve landowners are involved, six on lateral 2.9 and six on lateral 7.6. Five pipelines will replace lateral 2.9, while three pipelines will replace lateral 7.6. The purpose of this grant is to provide supplemental funding to assist with the 50% cost share provided by NRCS for the lateral replacement portion of the project.

Total cost of the lateral portion of this project is \$525,409, with Buffalo Rapids District 2 contributing \$158,852 of in-kind services and cash outlay, landowners contributing \$18,398, NRCS contributing \$194,711, and NRCS contributing another \$53,448 in planning. The \$100,000 RRGL grant, if successful, will make this project manageable. The project will be done in fall 2009 (and spring 2010 if needed) after the irrigation season is completed; it is expected to require a total of 16 weeks, likely over a period of approximately two years.

Technical Assessment

Project Background

Buffalo Rapids District 1 is serviced by two pumping plants (330 cfs and 80 cfs) from the Yellowstone River. This project is part of the Buffalo Rapids "Improving Irrigation Efficiency and Water Quality" project funded as an EQIP priority area in 1998. This project will conserve water through replacement of open laterals with underground pvc pipe for five sections of lateral 2.9 and three sections of lateral 7.6. Subsequent on-farm efficiency projects will take place due to this lateral upgrade to replace on-farm open ditches with gated pipe, surge irrigation, and sprinklers. In total, 199 acre-feet/year of water will be conserved through this project and 809 acre-feet/year will be conserved through subsequent measures (total would be 1,008 acre-feet/year, 5.6 cfs assuming a 91-day irrigation year based on Bergantine calculations, 1998).

Alternatives included the no-action alternative, management measures (for pest control, nutrient management of fertilizer and manure, conservation crop rotation, and irrigation water management), and management plus enduring irrigation system improvements. All three alternatives were presented for the EQIP priority area project (the recommended plan costs \$8.3 million) and were not specific to this project. Canal lining; implementing center pivots; and increasing the capacity of pumps, main canals, and lateral were minimally mentioned and were rejected.

Technical Approach

The preferred alternative includes:

- Lateral 2.9: replace 10,900 feet of open lateral with pvc pipe (134 acre-feet/year conservation)
- Lateral 7.6: replace 6,900 feet of open lateral with pvc pipe (65 acre-feet/year conservation)

Water conservation and reduced O&M can be achieved with the pipeline installation. Additional benefits would be improved weed management, reduced electrical consumption and CO₂ emissions from reduced pumping, and nutrient reduction. The alternatives presented were evaluated based on capital costs, economic impacts, and environmental benefit; however, the alternatives encompassed additional projects outside the scope of this project. No major environmental impacts were associated with this project.

Construction is slated to begin in September 2009 and to end in November 2009. The tentative start date is August 2009 through the anticipated completion date of May 2010 for planning, material fabrication and orders, and final site work, including revegetation.

Specific tasks to be accomplished:

- Design pipelines, determine costs, and confirm landowner NRCS long-term land treatment contracts (task complete);
- Order material and prepare sites for construction;
- Install equipment (Lateral 2.9: replace 10,900 feet of open lateral with pvc pipe and Lateral 7.6: replace 6,900 feet of open lateral with pvc pipe); and
- Check for leaks, prepare sites for revegetation, and revegetate.

Project Management

Buffalo Rapids will perform project management in conjunction with an NRCS technician and engineer. Buffalo Rapids will provide the labor for installation and has extensive experience with installing pvc pipe. NRCS will inspect the installation. Planning and engineering were completed by a professional engineer in the Glendive NRCS office. Based on information provided in the application, adequate staff will administer and manage the project. Appropriate planning has been done, the project is ready to proceed, and will be implemented by May 2010. The applicant has no specific plan for public involvement; however, 12 landowners have made agreements with NRCS and are involved in the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$16,140	\$16,140
Professional & Technical	\$0	\$0	\$53,448	\$53,448
Construction	\$100,000	\$0	\$355,821	\$455,821
Total	\$100,000	\$0	\$425,409	\$525,409

The budget appears reasonable to fund the project. The applicant provided a detailed breakdown of costs. No budget or funding irregularities were found. The unit costs used to develop the budget appear reasonable and adequate. Costs were provided for other alternatives; however, the scope was more extensive than detailed in the application. The project applicant provided matching funds.

The project will directly serve 12 landowners and will indirectly serve many landowners by conserving Yellowstone River water and through economic stability in the agricultural-based counties. Upgrades to lateral 2.9 will serve 887 acres and upgrades to lateral 7.6 will serve 423 acres.

Benefit Assessment

The primary resource benefit is water conservation. This project will conserve 199 acre-feet/year of water and will replace the constant head orifice meters with McCrometer water meters on all new pipelines. Subsequent on-farm efficiencies may occur as a result of this project and will provide water conservation estimated at 809 acre-feet/year, although these benefits were not documented. An indirect benefit is an increase in water in the Yellowstone River and economic stability in the agricultural-based counties. The project will increase safety by replacing open lateral with underground pipe. Additional secondary benefits would be improved weed management, reduced electrical consumption and CO₂ emissions from reduced pumping, and nutrient reduction; however, these benefits are unsubstantiated in the application. Reduced electrical consumption and CO₂ emissions are quantified for the entire Buffalo Rapids project (laterals and canal efficiency improvements for 220 cfs conservation) versus the project benefit (199 acre-feet/year, 0.11 cfs). Nutrient reduction is currently under study and a reduction is unsubstantiated at this time.

All of the questions were addressed in the application; however, alternatives analysis was outside the scope of the project, the specific comments and source for entries in the environmental checklist were vague or incomplete, and the quantity of some of the benefits were unsubstantiated. The main benefit, water conservation, is quantifiable through metering devices.

Environmental Evaluation

Area-wide environmental impacts were evaluated in detail; a wetland assessment, cultural resources assessment, and mitigation plans have been developed for the greater EQIP priority area and thus encompass the project area. No major environmental impacts were associated with this project. However, the environmental narrative was not pared down to the specific project scope and several items mentioned in the report (cultural resources, wetlands, and wildlife) were listed as no-impact on the checklist. Minor effects from construction were also listed as no impact (such as dust control, noise pollution) and should be included in the assessment. Short-term negative environmental concerns associated with construction, e.g., noise and dust, can be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 77

Applicant Name	Flathead Basin Commission (FBC)
Project Title	Mapping the Impacts of Septic Systems
Amount Requested	\$ 100,000 Grant
	\$ 15,590 Applicant, In-kind (committed)
Other Funding Sources	<u>\$ 20,000</u> EPA (uncommitted)
Total Project Cost	\$ 135,590 more than actual cost of project (\$115,590)
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

This project addresses a significant water quality issue in some of the most populated regions of the Flathead Basin. Unfortunately, due to other high-priority concerns and lack of funding, groundwater resources have not been afforded the attention they deserve. However, due to rapid population growth, particularly in suburban and rural areas with shallow groundwater, these issues command a higher level of interest among a broad range of local, county, and state agencies and citizens.

The Flathead Basin Commission's "Mapping the Impacts of Septic Systems: A Shallow Groundwater Study" is highly compatible with the goals of the RRGL program. Shallow groundwater systems are an important but particularly vulnerable renewable resource, subject to a variety of sources of potential contamination.

The rapid population growth in this region of the Flathead Basin in the past two decades—consistently among the fastest growing areas in the state—has resulted in a concentration of residences in areas not served by wastewater collection and treatment systems. The proliferation of individual septic systems has alarmed local public health officials who recognize that the risk of contamination is elevated with every new septic installation.

Via their routine introduction from households into septic systems, pharmaceuticals and personal care products (PPCP) in groundwater systems pose a considerable water quality threat. This threat has made efforts to broaden local understanding of the interaction between septic systems and nearby groundwater systems all the more urgent. The information produced by this study can be put to use by local planning boards, environmental health agencies, and concerned citizens to proactively address groundwater protection where the potential impacts are the greatest.

Technical Assessment

Project Background

Flathead Lake is the largest freshwater lake west of the Mississippi and is the crown jewel of the Flathead Basin. The Flathead Basin Commission was created by state statute in 1983 to protect the existing high quality of the Flathead Lake aquatic environment; the waters that flow into, out of, or are a tributary to the lake; and the natural resources and environment of the Flathead Basin. The Montana Bureau of Mines and Geology provides a substantive hydrogeologic framework for the Kalispell Valley and Flathead Lake perimeter. Additional studies have examined the shallow groundwater of the Flathead Basin and analyzed nutrient concentrations from 1983 to 2000. This project proposes to add to the body of information and fulfill Phase 2 of an existing FBC effort to delineate shallow groundwater in the basin.

Technical Approach

This project addresses the problem of septic and storm water contributions of volatile organic compounds (VOC), semivolatile organic compounds (SVOC), and PPCPs by delineating groundwater quality in the upper Flathead Basin and defining contributions from the shallow aquifer to the surface and subsurface

waters of the watershed and lake. The project goals are to collect and evaluate groundwater samples from existing wells to delineate which pollutants, and in what quantities, are present in the shallow alluvial aquifer in the areas of the Flathead Basin experiencing the highest levels of development. Pollutants are suspected to include septic and storm water contributions of VOCs, SVOCs, and PPCPs. Funds from this grant would be used to initiate development of a basin-wide groundwater monitoring plan to track known contaminants, implement the updated plan, and produce an annual water quality monitoring report.

Specific tasks to be accomplished:

- Summarize existing shallow groundwater data;
- Provide updated and new GIS information including discrete layers for shallow groundwater, septic system location and age, soils data, and potentiometric data;
- Collect 30 shallow groundwater wells samples and seven surface water samples during stormwater runoff event;
- Analyze samples for suite of physical, biologic, and chemical parameters;
- Prepare a summary of the broad-spectrum analyses conducted for groundwater pollutants/contaminants;
- Identify locations of high-level contamination/pollution, or “hot spots” within the shallow alluvial aquifer that require management actions and long-term monitoring; and
- Undertake public education and outreach that capitalizes on the existing activities of the FBC.

Results from this study would be posted on the State’s Groundwater Information Center (GWIC) and delivered to stakeholders and decision makers in useful and available formats. Results would include groundwater quality and contaminant concentrations, GIS map layers characterizing the shallow alluvial aquifer of the basin, reports summarizing existing conditions, and recommendations for protecting groundwater quality. Information gathered from the study may be used to identify and prioritize projects and programs that will improve or sustain water quality and natural resources and will facilitate actions that result in positive ecological outcomes in the Flathead Basin.

Project Management

The FBC Monitoring Committee (including representatives of DNRC, EPA, DEQ, and Confederated Salish and Kootenai Tribes) will oversee the project. This committee will manage the work completed by the principal investigator, will coordinate activities to implement the project, and will communicate with local entities such as the cities of Kalispell, Whitefish, and Columbia Falls, and Flathead County. The FBC executive director will administer the project. The project will be managed on a daily and weekly basis by a part-time manager, not yet procured. Roles of the project manager are defined in the grant application and are appropriate given the budget allocations and project approach. The project manager will be the liaison between all parties. Scientists from the Flathead Lake Biological Station would likely be used for field work, GIS mapping, and data interpretation. The project budget allows funding to support the financial and administrative aspects of the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$7,500	\$0	\$2,115	\$9,615
Professional & Technical	\$92,500	\$0	\$33,475	\$105,975
Construction	\$0	\$0	\$0	\$0
Total	\$100,000	\$0	\$35,590	\$135,590

The budget appears sufficient and reasonable to fund the proposed project. The applicant provided a detailed breakdown of unit cost. Material, labor, equipment, and analysis cost used to develop the budget appear reasonable and adequate.

The applicant has indicated the potential for pro bono laboratory analysis by the EPA laboratory in Denver. The financial assessment included with this application accounts for full cost of sample analysis

on the range of parameters proposed. If EPA provides low-cost or no-cost analyses of surface and groundwater samples (noted in budget as \$20,000 uncommitted). Under such conditions, the number of samples obtained and analyzed throughout the basin may be increased and would provide greater resolution of delineated contamination.

Benefit Assessment

The primary benefits to renewable resources are resource management and resource preservation. The proposed project would result in the benefits of better understanding groundwater and groundwater/surface water interaction and implementing this understanding toward informed decisions regarding land use, development, and water resource management. This study will allow identification of areas of critical concern vulnerable to water quality impacts and focused management in protecting the water resource in these areas

Secondary benefits from the proposed project include addressing resource conservation and resource development issues. As continued growth and development throughout the Flathead Basin occur in areas away from municipal sewer and water systems, the threat of contamination of shallow groundwater from individual septic systems becomes more likely. Since the high water quality of Flathead Lake supports bull trout, public health, and the local economy, degraded ground and surface water quality could have a potentially devastating effect on the native ecology and economy. This study plans to identify and evaluate potential non-point source pollution within the shallow alluvial aquifer providing recharge to Flathead Lake.

The above benefits are relatively long term and would be quantified through use of data collected as part of the development and initiation of a basin-wide long-term monitoring plan for the Flathead Basin. The data will be used for further groundwater modeling in the area. If this data were not obtained, modeling would not be as effective.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse short-term or long-term impacts will result. The groundwater samples will be collected from existing wells, thus eliminating the need for additional well excavation. Beneficial results are primarily related to the increased understanding of groundwater quality throughout the Flathead Basin and the guidance of land use decisions based on sound scientific data. The data and information collected as part of this study will be available to stakeholders, planners, regulators, and the general public for use in future decision making.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 78

Applicant Name Daly Ditches Irrigation District
Project Name Hedge Canal Diversion Dam Replacement

Amount Requested \$ 100,000 Grant
Other Funding Sources \$ 12,805 Applicant
 \$ 52,850 Future Fisheries
 \$ 158,150 FRIMA
Total Project Cost \$ 323,805

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Replacement of the Hedge Canal Diversion Dam will sustain and preserve a water supply to existing homes, ranches, and farms. Without this project, 700 of the 1,700 district users encompassing 5,993 acres are at risk of losing their water supply. Farmers and ranches rely on irrigation water to irrigate crops and water livestock, the economic livelihood for these residents. The success of the ranchers and farmers affects the availability and cost of locally provided goods to Bitterroot Valley residents. Several homes rely on irrigation water to irrigate lawns and gardens.

Replacement of the diversion dam reduces escalating maintenance costs of repairing the outdated structure. Increased downstream shifting of the structure results in numerous emergency repairs. The planks on the dam are failing as documented by Daly Ditches in August 2006. At an age of 100+ years, the Hedge Canal Diversion Dam is significantly past its design life of 60 to 75 years. Improvements are proposed in two phases and include replacement of the diversion dam using reinforced riprap; replacement of abutment walls, canal intake structure, and headgates; and installation of a fish screen, fish passage, and a flow measurement device. Replacement of the diversion dam preserves the supply of irrigation water to the users.

Without this resource, these landowners will be forced to develop another water supply, which has an associated cost affecting the disposable income that may otherwise have stimulated the local economy. Inclusion of a fish screen prevents fish entrainment and inclusion of a fish passage enhances the migratory component of a fish population, thereby boosting fisheries and recreation associated with favorable fisheries. Protection of this renewable resource enhances the ecological vitality of the Bitterroot River system.

Technical Assessment

Project Background

The Daly Ditches Irrigation District (DDID) is near Hamilton in Ravalli County. The DDID was formed in the early 1900s. The Hedge Diversion Dam and canal were constructed in approximately 1908. The canal has a capacity of about 140 cfs, is about 23 miles long, and serves approximately 5,993 acres with about 700 farms, ranches, or households. This project (Phase 1) would reconstruct the headgate structure, replace the north or east abutment of the diversion dam, replace the headgates, install a flow-measuring device, and install a fish screen. Phase 2 (to be constructed at a later date) would reconstruct the diversion dam and the south or west abutment of the diversion dam. Loss of the canal headgate structure and diversion dam would result in the loss of water for about 40% of the DDID water users.

Technical Approach

The preferred alternative in Phase 1 is to replace the deteriorating headgate structure with a new reinforced concrete headgate structure, install new cast iron irrigation gates, replace the deteriorating north or east diversion dam abutment with a new reinforced concrete abutment tied to the headgate

structure, install a flow-measuring device, and install a louver fish screen. Phase 1 is the first of two phases to reconstruct the Hedge Diversion Dam. The key project component is the future diversion dam reconstruction, but Phase 1 is the necessary beginning point. A diversion dam failure would cause loss of irrigation water, economic loss to the irrigators and the local community, potential damage to the Bitterroot River channel, and potential fisheries loss. Three other alternatives were considered for all of the components of this project (Phase 1), including no action. Some of the rejected alternatives were less costly to construct, but had a potential for increased maintenance or a shorter service life.

Past maintenance of the project has been on an as-needed and preventative basis, with a number of emergency repairs over the years. Overall, the headgate structure is in fair condition and the diversion dam is in poor condition, with both structures nearing the end of their useful lives. In 2007 an engineering firm inspected the diversion dam and headgate structure and recommended rehabilitation of both. The report recommended that the headgate structure be rehabilitated first, followed by the diversion dam. Phase one, the replacement of the headgate structure is a stand-alone project. The application did not contain a lot of details regarding this phase, but addressed more of phase II the replacement of the diversion dam.

Construction is slated to begin in July 2009 and end in December 2010.

Specific tasks to be accomplished:

- Hire a consulting engineer to design the project;
- Design final project;
- Prepare construction bid package and advertise for bids;
- Obtain necessary permits;
- Award construction contract;
- Construct project (replace headgate structure, install new gates, replace dam abutment, install flow-measuring device, install louver fish screen); and
- Complete project.

Project Management

DDID has some experience in managing construction projects, but does not have the proper engineering staff to design and provide for the construction inspection. DDID will be the project principal and the project manager, and provide some of the construction inspection. DDID will hire an engineer for design, construction administration, and construction inspection. DDID will also hire a grant administrator. The engineering firm will provide assistance to the DDID for grant administration and overall project administration and make recommendations to the DDID for final decision making.

Water users and county officials provided a number of letters in support of this project. No plan is presented for public involvement.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$12,805	\$12,805
Professional & Technical	\$23,000	\$0	\$60,000	\$83,000
Construction	\$77,000	\$0	\$151,000	\$228,000
Total	\$100,000	\$0	\$223,805	\$323,805

The applicant presented a complete cost estimate for all of the alternatives. Some parts of the preferred alternative have the lowest construction cost, some parts have higher costs, but the preferred alternative has the longest predicted service life of all the alternatives. Should the purchased materials or construction costs increase considerably, then DDID would increase the amount of its contribution to the project. The project can proceed without federal grants, but the fish screen component would not be included. The construction estimate used about a 13% contingency for potential cost increases. The

project is stand-alone; Phase 2 does not need to be completed for Phase 1 to succeed. The project will be completed within one construction season.

The fish screen for this portion of the project will be financed by grants from Future Fisheries and Fisheries Restoration and Irrigation Mitigation Act (FRIMA). There were no letters of support or any other indication in the application that the Montana Department of Fish, Wildlife and Parks supported this project.

The DDID will not raise its current annual assessment. No additional O & M costs would occur because of the project, and maintenance costs for this portion of the project will probably decrease.

Benefit Assessment

The major resource benefits of this phase of the project are conservation and preservation. The proposed project includes addition of a flow-measuring device for water conservation and the fish screen for preservation of fish. A secondary benefit of this phase of the project is the increased reliability of the canal intake structures. If either the headgate structure or the diversion dam were to fail, it would cause environmental harm to the Bitterroot River, destroying fisheries and habitat that would take years to recover. This stretch of river was identified as bull trout (a threatened species) habitat. Irrigation water to about 5,993 acres of land served by the project would be lost. Loss of the irrigation water would have a severe impact on the local economy.

Environmental Evaluation

The proposed Phase 1 portion of the project will reduce the chance of the headgate structure failing. Bull trout were identified as inhabiting the river near the construction site; some construction at the edge of the river would require mitigation. Work in the river may require environmental analysis under Montana Environmental Policy Act.

Using best management practices can avert short-term negative environmental concerns associated with construction, e.g., noise and dust.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 79

Applicant Name	Fort Shaw Irrigation District (FSID)
Project Name	Water Quality and Quantity Improvement
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 78,200 Applicant
	\$ 4,800 Sun River Watershed Group
Total Project Cost	\$ 183,000
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The FSID is the second largest irrigation project on the Sun River. The district distributes water to approximately 11,600 acres on 177 farms between Simms and Sun River. The irrigation project was originally completed in 1908 with very few upgrades until recently. Much has been accomplished over the past 12 years. But because of neglect of this aging system, 12 miles of canal, 89 miles of laterals, hundreds of turnouts, and cement structures still need to be repaired. Maps depicting past work, work-in-

progress, and proposed projects demonstrate how much needs 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. The project included installation of a remote operated headgate, canal lining, flow-monitoring devices, and a water conservation study.

This project continues the FSID's aggressive improvements which include:

- Continuing to improve overall irrigation efficiency;
- Reducing losses from delivery systems; and
- Improving water quality and quantity in the Sun River from these improvements. This will be accomplished by:
 - Replacing irrigation turnouts to effectively monitor on-farm consumption;
 - Replacing open eroding canal with pipeline;
 - Continuing the ditch-lining program to reduce the significant seep problem; and
 - Monitoring improvements. These improvements will increase efficiency of the system, divert less water and allow more water to remain in the Sun River, and improve water quality by reducing erosion, chemicals, and salinity in the return flows.
- Reducing FSID water consumption by 5%. Water quality improvements of 5% should be achieved in the return flows. An active monitoring program to document actual improvements is in place.

Technical Assessment

Project Background

The Fort Shaw irrigation project was originally completed in 1908 with upgrades in 1961. The FSID and Bureau of Reclamation identified key irrigation improvements in 1982 and estimated 46% efficiency for the 12 miles of canals and 89 miles of lateral canals.

Water quality and water conservation are the drivers for the project. Elimination of seepage will reduce saline seeps and prevention of high-velocity scouring in an open canal will reduce sediment in return flows. The project will conserve 1,290 acre-feet/year of water from existing seepage and improve water quality (sediment and specific conductivity) 5% in return flows. The proposed project would have three parts, including:

- Replacing two turn-outs to conserve 30 acre-feet/year;
- Replacing 2,800 feet of open canal to reduce erosion and to conserve 180 acre-feet/year; and
- Lining 1,400 feet of canal to conserve 1,080 acre-feet/year.

Alternatives were minimally assessed in this report and did not address all three parts of the proposed project. No alternatives were assessed for turnouts, concrete drop structures were assessed for the erosion issue, and concrete lining and SEAL-IT™ temporary lining were assessed for the seepage issue. No cost benefit analysis was performed.

Technical Approach

The preferred alternative is (1) replacement of the two turnouts with new precasted concrete turnouts; (2) replacement of the 2,800 feet of canal with buried schedule 80 pvc pipe, and (3) lining of the 1,400 feet of canal with a 0.041-thick ditch liner and geotextile. Other alternatives were rejected due to capital cost. Environmental impacts were not part of the alternatives analysis process.

The project construction is slated to begin in October 2009. The 2,800 feet of pipeline will be installed from October to December 2009, the 1,400 feet of canal will be lined from March to April 2010, and the turnouts will be installed October 2010. The Sun River Watershed Group will monitor the project from July 2009 through December 2011.

Specific tasks to be accomplished:

- Advertise for materials specific to each of the three project parts and award bids;
- Prepare and install new pipeline (includes trenching, gravel base, and mobilization);
- Prepare and install ditch liner with excavator; and
- Install two cement turnouts.

Project Management

Based on information provided in the application, FSID staff will administer and manage the project. Appropriate planning has been done, the project is ready to proceed, and will be implemented by October 2010; however, engineering and construction details on proposed infrastructure improvements were not provided. The FSID has a capable and qualified work force that has successfully implemented many projects since 1996 and has assisted with other water management projects in other irrigation districts. The applicant's public involvement plan is through the Sun River Watershed Group which will continue to conduct public meetings, group board meetings, and distribute newsletters.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$5,800	\$5,800
Professional & Technical	\$0	\$0	\$4,800	\$4,800
Construction	\$100,000	\$0	\$72,400	\$172,400
Total	\$100,000	\$0	\$83,000	\$183,000

The budget appears reasonable to fund the project. The applicant provided a detailed breakdown of costs. No budget or funding irregularities were found. The unit costs used to develop the budget appear reasonable and adequate. Financial concerns from secondary reviewers included: gravel bedding may be difficult to obtain per specification, the entire project must be reviewed by a licensed professional engineer, field and laboratory testing and on-site inspection may be required, and any equipment delays could affect the projected construction timeline. A few alternatives were investigated; however, the costs were presented as capital costs and do not account for the projected lifetime of equipment. Matching funds were indicated by the applicant and the Sun River Watershed Group through in-kind work.

The applicant indicated that 11,600 acres would be served by the project; however, the amount of land affected through construction and the amount of land affected by seeps was not noted in the report.

Benefit Assessment

Benefits from this project would be in resource conservation and preservation. The project would conserve 1,290 acre-feet/year of water from existing seepage and improve water quality (sediment and specific conductivity) 5% in return flows to the Sun River. Water quality would be improved by reducing infiltration of chemicals from canals through seeps to Two Buttes water system and individually owned drinking water wells. Also, specific conductance and sediment would be improved by 5% in the Sun River [or the return flow]. There is also a potential benefit of reducing saline seep resulting in more land in production.

The conservation of 1,290 acre-feet/year was based on continuous gauges, random monitoring, and historical measurements; however, data were not provided. After conversations with the applicant, supporting documentation was provided for the 5% water quality improvement for specific conductance (SC) and sediment for a similar canal lining project. SC has an improvement by month of 5% or greater, but sediment improvement was erratic and would require statistical analysis.

All of the questions were addressed in the application; however, alternatives analysis was minimal and several of the benefits were unsubstantiated by additional data. Multiple benefits will be accomplished with this project such as reducing saline seeps, improving water deliveries, increasing production for crop

usage, increasing economic support in the community, and protecting adjacent landowners from excessively saturated soils.

Environmental Evaluation

The proposed irrigation system improvements will have a net positive effect on the environment. The effect on wetlands was unsubstantiated and a few construction issues were not included in the environmental checklist provided by the applicant. Short-term negative environmental concerns associated with construction, e.g., noise and dust, can be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 80

Applicant Name	East Bench Irrigation District (EBID)
Project Name	EBID-Sweetwater Seepage Area Canal Lining
Amount Requested	\$ 100,000 Grant
Other Funding Sources	<u>\$ 104,400</u> Applicant
Total Project Cost	\$ 204,400
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The EBID is near Dillon. EBID is requesting funds through the RRGL program for design and construction of canal lining in the main irrigation canal for the Sweetwater Seepage Area. The goal of the project is to provide EBID with an irrigation infrastructure improvement that will conserve water resources, decrease seepage to adjacent property, and increase crop yields. This project was conceptualized by EBID as a major step in the district's long-range planning and modernization efforts.

In compliance with the RRGL program, a Preliminary Engineering Report (PER) investigated the existing infrastructure and operational controls of EBID and evaluated irrigation system alternatives. The primary recommendation is to install Pond-Gard liner for 2,000 feet of the East Bench Main Canal in the Sweetwater Seepage Area so EBID can conserve water resources, reduce canal seepage, eliminate property damage to adjacent property, maximize the beneficial use of available water, and increase crop production. The seepage loss is about 10 cfs or 20 acre-feet/day, or 3,600 acre-feet annually.

A direct consequence of the seepage is a reduction in crop yields over 1,800 acres with an estimated annual revenue crop loss to the community of approximately \$270,000. In addition to the water resource benefit of 3,600 acre-feet/year, the project is expected to have significant economic benefit. As shown in the present worth analysis of proposed alternatives, if installation of the canal lining and improved resource management reduce crop losses by only 25% (from 50% to 25%) on 1,800 acres of irrigated land, those irrigators would realize a direct annual economic benefit of \$135,000, or \$2,008,395 over the next 20 years (assuming an inflation rate of 3%). This would generate an additional \$472,500 to \$945,000 in annual economic activity. Assuming that for every dollar generated from crop production, an additional \$7 is added to the economy from other sources (i.e., freight), then the net impact to the economy is nearly \$14.1 million over 20 years. In addition, if the East Bench Main Canal were to fail in the Sweetwater Seepage Area due to seepage, then adjacent homes would be destroyed with a property loss estimated at \$1 million.

Implementing programs such as canal lining to reduce seepage maximizes the multiple-use benefits of the natural flow diversions of the Beaverhead River and storage water from Clark Canyon Reservoir. The

multiple-use resource benefits that EBID will be able meet through water conservation of 3,600 acre-feet/year are fish and wildlife benefits in the Beaverhead River watershed and Clark Canyon Reservoir, additional irrigation water, increased recreational benefits, and increased available water supply to meet minimum fish releases.

Another benefit with canal lining is improved community awareness; EBID is implementing measures to maximize the benefits of limited available water resources. Installation of canal lining to conserve 3,600 acre-feet/year of the water resource is EBID's first step in establishing a long-term management and operational strategy to improve irrigation service to existing members.

Technical Assessment

Project Background

The EBID is located near Dillon in Beaverhead County. The EBID canal system was completed in 1964. Approximately 22,960 acres and 155 farms or ranches are served by the approximately 53-mile-long canal. EBID identified approximately 4,320 feet of the main canal as having significant seepage problems, but only the most critical 2,000 feet were selected for lining by this project.

Technical Approach

The preferred alternative is to line 2,000 feet of the main canal with Pond-Gard geomembrane. The lining of the canal will significantly reduce seepage, improve the canal bank stability, and save about 3,600 acre-feet of water annually, which will be used to increase crop production. The decrease in seepage will help to reduce damage to adjacent property. This alternative was also chosen because EBID crews can do the installation. Three other alternatives were considered, including no action, a concrete canal liner, and use of CANAL SEAL, but these alternatives were rejected because of cost and long-term results. Unit volumes and costs were not provided for the rejected alternatives.

Construction is slated to begin in October 2009 and end in January 2010.

Specific tasks to be accomplished:

- Hire a consulting engineer to design the project;
- Bid construction;
- Shape and grade 4,320 feet of canal;
- Process gravel ballast;
- Install 4,320 feet of canal liner; and
- Obtain certificate of substantial completion.

Project Management

EBID lacks the proper staff and experience to successfully administer the grant, develop the construction contract documents, and perform the construction administration. EBID will hire an engineering firm to provide assistance to its board and manager for grant administration and overall project administration. The engineer will make recommendations to the board for final decision making.

Water users from the EBID canal provided letters of support, although they did not present a public involvement plan.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$0	\$0
Professional & Technical	\$23,000	\$0	\$0	\$23,000
Construction	\$77,000	\$0	\$104,400	\$181,400
Total	\$100,000	\$0	\$104,400	\$204,400

Only one funding scenario was considered. If the concrete lining alternative had been selected, the EBID would have needed a loan and grant to complete the project. If cost of purchased materials increases, the EBID would construct a scaled-down version or increase its contribution to the project. Costs may be understated. The project will not be phased since it will be completed within one construction season.

The project will not result in a cost increase to the water users. No additional O & M costs are expected, and maintenance in the lined section may even decrease.

Benefit Assessment

The major resource benefit is conservation of approximately 3,600 acre-feet of water each year. This is the amount of water estimated to be lost to seepage within boundaries of the proposed project. The water conserved can be used to increase crop production. The reduction in seepage will eliminate damage to adjacent property, help conserve irrigation water, increase carry-over storage in Clark Canyon Reservoir, and increase available water to meet minimum fish releases in the Beaverhead River. Most benefits were estimated.

Environmental Evaluation

The proposed canal lining project will allow an increase in instream flows, which will potentially benefit the threatened bull trout. Other threatened species in the project area include the bald eagle and Ute ladies-tresses (an orchid). Since the work is in the canal, no adverse environmental impacts would occur to the threatened or endangered species. The canal area was not discussed in the environmental narrative, but the environmental checklist was specific to the project area.

Short-term, negative environmental concerns associated with construction, e.g., noise and dust, can be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 81

Applicant Name	Montana Watercourse
Project Name	Watershed Education for Real Estate Agents: An Online Program
Amount Requested	\$ 19,477 Grant
Other Funding Sources	\$ 2,041 MSU Extension
	<u>\$ 4,800</u> Participant time and review committee
Total Project Cost	\$ 26,318
Amount Recommended	\$ 19,477 Grant

Project Abstract (Prepared and submitted by applicant)

Montana Watercourse (MTWC), in partnership with Montana State University Extension Water Quality (MSUEWQ), proposes development and delivery of an online watershed education course for professional real estate agents. This audience is in a position to exert considerable influence concerning land development and the choices new landowners make. Real estate agents are often the first contact for new residents.

They typically lack background in water resources, water rights, permits and regulations, and connections between land use and growth that relate to water demands. Real estate agents need accurate science-based watershed information to promote watershed protection and to educate new landowners of their responsibilities.

Real estate agents are required to maintain their licenses through on-going educational training. Providing online watershed courses for real estate professionals will expose a critical audience to powerful watershed protection information and allow them to assist their clients with wise land use decisions. Course content will emphasize watershed basics, the importance of watershed protection, groundwater and surface water interaction, water rights, other water regulations, and incentives for sharing the information with their clients. An online course will offer flexibility and improved access to watershed education for many place-bound real estate agents and increase the number of new landowners with access to watershed protection information and tools.

MTWC has delivered many successful continuing education courses for this audience across Montana, while MSUEWQ has developed successful online water quality courses. The combined experience of these organizations will ensure a quality program is delivered.

Technical Assessment

Project Background

Montana's real estate agents are actively involved with new growth and development. Realtors need a solid background in watershed science and water regulation, including water rights, to pass on to their clients. The goal of the project is to increase the number of knowledgeable real state agents who share watershed information with new landowners. The desired outcome is that landowners will be more likely to participate in watershed conservation, restoration, and regulatory programs. The Montana Watercourse has an established relationship with the real estate community through past education outreach. Project partner MSUEWQ, has developed online courses.

Alternatives considered were: (1) no action-continue outreach to real estate agents in person, and (2) prepare an online course for real estate agents. No alternatives were considered for reaching landowners other than through a class for realtors.

Technical Approach

The selected alternative is to prepare an online course on watershed education for real estate agents. MTWC and MSUEWQ will work together to produce this education effort. Past education efforts by MTWC have positive course feedback and anecdotes about how the information was used on the ground. However, the expected course content, "watershed education," is very vague. What information would be covered, specifically, and how the information provided would actually be used by realtors and their clients is unclear. Anecdotal evidence of past course use does not clarify how realtors would convey the information to landowners to benefit resources. Realtors are once removed from the audience with the greatest potential to result in resource benefits: landowners. Past courses offered to real estate agents were presented in person. The applicant did not consider the value of face-to-face contact with realtors and landowners.

The online course was selected because it has the potential to reach a larger audience across the state; taking the course would be convenient and no travel costs would be incurred. Once the online course is developed, it would be more cost effective than in-person training.

Specific tasks to be accomplished:

- Research and investigate effective course format and essential content;
- Develop course materials;
- Convene a review team to ensure accuracy of final course content,
- Promote and implement the online watershed course for real estate agents;
- Evaluate the online watershed course after it is first offered;
- Offer the course at least three times the second year of the grant, arranging all necessary logistics to ensure that the course is offered, monitoring the course, answering participant questions, and compiling participant evaluations;
- Do a follow-up evaluation by phone, e-mail and/or mail several months after participants complete the course to measure how well they incorporated the information into their interaction with clients and how their advice contributed to permits and wetland projects on private land; and
- Prepare a report that evaluates successes, improvements, and future direction for online education for real estate agents. MTWC will distribute and share this report with the Montana Watershed Coordination Council (MWCC), Montana Association of Realtors, state agencies, and others interested.

The project is scheduled to begin in July 2009, completed in June 2011, and is realistic.

Project Management

MTWC staff will coordinate and lead all phases and tasks of the project, in partnership with MSUEWQ. MTWC will draw on technical resources at MSU. MTWC is familiar with state procurement requirements. Other local, state, and federal agencies will be consulted. Public outreach would occur directly to real estate agents, and indirectly to landowners.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$9,433	\$0	\$0	\$9,433
Professional & Technical	\$10,044	\$0	\$6,841	\$16,885
Construction	\$0	\$0	\$0	\$0
Total	\$19,477	\$0	\$6,841	\$26,318

Two different funding scenarios were considered. The application is unclear how the MTWC would continue in-person outreach for real estate agents if this project is not funded. The possibility of realtor fees for the course was not discussed in the application. MSUEWQ has committed to the project.

MTWC has offered 11 courses across the state, reaching about 500 realtors. Past response has been positive to the course content and anecdotal evidence of changes to landowner decisions was presented.

Benefit Assessment

The resource benefits for this project would be in resource conservation, development, and preservation; however, the benefits are not direct. An increased number of knowledgeable real estate agents may share information with new landowners, who may be more likely to participate in water resource stewardship, watershed conservation, restoration, and regulatory programs. Real estate agents also actively develop property as well as sell it. They may make wiser decisions about their own developments and educate others to make wise decisions as well. This course would have the potential to reach 30 to 35 realtors each time the course is offered. The second year the course would be offered three times and in subsequent years probably at a similar level. Realtors have contacts with many clients over the course of the year. The intended course content, "watershed education," is so vague as to make it hard to understand exactly what benefits might be realized. Past courses have received positive feedback from students, and students have provided anecdotal evidence of improved land management to protect resources.

The proposed study does not involve a regional project or measuring devices. Water quality would not be directly improved and an alternative energy source would not be involved. No new jobs or preservation of existing jobs would be directly associated. No tourism benefits are stated and no new agricultural practices are developed. No trade balance or restoration of resource would be directly associated. Some relationship to population growth and drought is presented.

Environmental Evaluation

The proposed course could indirectly impact water resources (surface water, groundwater) and other resources (wetlands, riparian areas) beneficially, depending on how the information is applied. No direct effects would be expected.

Funding Recommendation

The DNRC recommends grant funding of \$19,477 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 82

Applicant Name: Shelby, City of
Project Name: Shelby Wastewater Improvements

Amount Requested	\$ 100,000
Other Funding sources	\$ 750,000 TSEP Grant
	\$ <u>650,000</u> SRF Loan
Total Project Cost	\$ 1,500,000

Amount Recommended \$ 100,000

Project Abstract (Prepared and submitted by applicant)

Shelby's community leaders have had the foresight to address water-related issues efficiently and promptly before dire problems threatened the system. Line replacement is priority one for the Shelby wastewater system at this time. Approximately 47% of the system consists of vitrified clay pipe (VCP) installed between 50 and 90 years ago. Many of the lines have fractures, joint separations, and other problems threatening the health and safety of area residents and the potential for residential backups and surface contamination.

Aging lines also cause infiltration and inflow (I&I) into the system and affect the treatment facility cells adversely. A 2005 comparison of water use to wastewater generated indicated approximately 46% of existing wastewater flows attributable to I&I of surface and groundwater into the system. Additional flow monitoring in March 2008 along the trunk main identified and quantified I&I in these pipe segments. Data collected indicated that approximately 167 gpm or 240,000 gpd of the current wastewater flow can be attributed to I&I in the trunk main sewer.

Current wastewater flows into the existing wastewater treatment ponds do not meet current DEQ-2 standards for required detention times. Constructing a wetland to provide additional detention and treatment is estimated to cost \$3,549,000. Shelby believes this alternative is neither cost effective nor causal in addressing the lifespan of the system and critical maintenance issues. Engineering reports indicate eliminating the excessive I&I volume through line replacement will reduce wastewater flows. Such action would allow existing treatment ponds to hold longer than the required 180 days detention, saving the city and taxpayers over \$2 million and addressing the wastewater health and safety issues of the aging lines within the community.

Technical Assessment

Project Background

Shelby's wastewater collection system is aged. Approximately 47% of the system consists of VCP installed between 50 and 90 years ago. Flow monitoring in March 2008 indicated that 240,000 gallons per day of the current wastewater flow can be attributed to I&I in the trunk main sewer. Currently, the wastewater treatment ponds do not meet DEQ-2 standards for required detention times. Eliminating the excessive I&I will reduce the wastewater flows and allow treatment ponds to hold longer than the required 180 days detention. An alternative analysis provided three options: no action, treatment system capacity improvements, and I&I reduction. The treatment system capacity improvements would allow the treatment system to accommodate the excessive flows. However, costs for this option range from \$3 million to \$11 million dollars. Reducing I&I proved to be the most cost effective and sound option for the collection system.

Technical Approach

The proposed project would replace VCP pipe with pvc or rehabilitate existing VCP pipe with Cured in Place Pipe (CIPP). Portions of the VCP sewer main upstream from the treatment ponds are not beneath improved surfaces; the cost of surface restoration is minimal, and the main will be replaced with pvc pipe. Rehabilitating the remaining pipe segments will require CIPP as the VCP is beneath improved surfaces. New manholes will also be provided. The grades of the new pipes would be designed to provide optimum flow conditions to upstream and downstream invert elevations. The project schedule calls for construction to begin in spring 2010 and conclude in fall 2010. The PER for the project is missing much of the information required within the Uniform PER Outline for wastewater projects. According to flow-monitoring information provided by the applicant, only a portion of the proposed project actually reduces I&I in the collection system. Significant I&I in the remainder of the collection system was not quantified or addressed in the PER.

Specific tasks to be accomplished:

- Install 7,565 linear feet of 18- to 24-inch pvc pipe;
- Replace 2,511 linear feet of CIPP;
- Install 16 48-inch manholes; and
- Rehabilitate nine manholes.

Project Management

The project management team includes the city council, mayor, city chief financial officer, public works administrator, city attorney, and capable support staff. The mayor will act as project manager. The mayor is knowledgeable about loan and grant programs. The chief finance officer has extensive knowledge and

experience administering grant funds. The proposed project team is adequate to successfully manage the project from planning through completion and closeout. The city has involved the public through public meetings, newsletters, and newspaper articles. Letters of support from local businesses are included in the application.

The project management plan makes no reference to any additional public involvement with the project.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$67,000	\$67,000
Professional & Technical	\$23,000	\$0	\$119,000	\$142,000
Construction	\$77,000	\$0	\$1,214,000	\$1,291,000
Total	\$100,000	\$0	\$1,400,000	\$1,500,000

The funding strategy includes RRGL and TSEP grant funds and an SRF loan for \$650,000. Other funding sources were considered but dismissed for a variety of valid reasons. The city is utilizing CDBG funding for a neighborhood rehabilitation grant and economic planning grant. If the funding package is not awarded, the city will seek financing through the Rural Development loan and grant program.

The projected residential water and sewer rate includes debt service for this project plus the operation and maintenance costs. The new rate will affect 1,350 households. This will result in a residential utility bill (water and sewer) of \$84, 149% of the DOC target rate.

Cost estimates were provided for options considered for each project component and were used to help determine preferred alternatives. Engineering costs are within the typical range for a project of this magnitude.

Material, labor, and equipment costs used to develop the budget appear reasonable and adequate.

Benefit Assessment

The primary benefit to renewable resources is resource conservation and preservation. The proposed project may conserve land by eliminating the need for construction of an additional wastewater treatment cell in the future. Correcting the I&I problem will help protect water quality by improving the quality of effluent discharged from the treatment facility. The project will help preserve water quality but it is difficult to quantify the incremental improvement to the wastewater quality, discharged from the facility. The application included solid evidence of public support for the project.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse, long-term impacts will result. Minimal, short-term construction-related impacts will be controlled through permitting and proper construction methodology.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 83

Applicant Name	Buffalo Rapids Project District 2
Project Name	Increasing Pump Discharge Line Efficiency, Phase 2
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 69,340 Applicant, In-Kind
	\$ 1,500 NRCS, In-Kind
Total Project Cost	\$ 170,840
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Buffalo Rapids Project District 2 is in eastern Montana, beginning 17 miles east of Miles City and terminating at Fallon, approximately 30 miles as the river flows. District 2 contains 11,478.46 irrigated acres. All irrigation water is diverted through three pumping plants in the Shirley Unit, Terry Unit, and Fallon Unit. The Terry Unit is the subject of this proposal.

Buffalo Rapids District 2 has had a long-standing problem with the Terry discharge lines. The most pressing problems were addressed in 1998 through a successful RRGL proposal, Increasing Pump Discharge Line Efficiency: Phase 1. That proposal replaced the first 295 feet of discharge line and the connective piping inside the pump station. This project was prioritized by the Buffalo Rapids Watershed Working Group.

This proposal addresses the next 575 feet which traverse the old Milwaukee Railroad bed (abandoned) and the Burlington Northern Santa Fe (BNSF) railroad bed (in current use). This section requires attention because it leaks and has sunk under both railroad beds.

The proposed method of addressing the discharge line problems is to slip line the existing 30-inch cast-in-place monolithic concrete lines with HDPE slip liner. Since the coefficient of friction is less in HDPE than concrete, the flow rate will improve by about 10%.

The total cost of the project is \$170,840 with Buffalo Rapids District 2 contributing \$69,340 of in-kind services and cash outlay. The project will be done in the fall after the irrigation season is completed; it is expected to take a total of four weeks.

Technical Assessment

Project Background

The Buffalo Rapids Project District 2 (BRPD 2) is between the communities of Miles City and Fallon, with the town of Terry in the center of the project. The BRPD 2 consists of 11,478.46 irrigated acres that serve 55 farms and ranches and 70 households. This project is part of an ongoing effort to improve delivery efficiency in the irrigation system.

The three-barrel concrete discharge line from the Terry Unit Pumping Station has been an ongoing problem. The primary reasons for the problems experienced with the discharge line are the age of the system (built in 1945) and wear from multiple freeze/thaw cycles over the years. The discharge line has functioned long past the expected design life and is due for rehabilitation or replacement. Measurements of water loss through the 575-foot section of discharge line proposed for rehabilitation show the discharge line is losing approximately 1 cfs (450 gpm) during operation. The continual saturation due to this loss of water during the irrigation season has started to cause settling under the BNSF railroad bed. The settling has not yet caused problems with rail traffic, but is a cause for concern.

The most cost-effective alternative for Phase 2 of the Increasing Pump Discharge Line Efficiency Project is installation of an HDPE slipliner through the identified 575-foot section of discharge line. Other alternatives considered were repair or replacement of the line with different materials.

Technical Approach

The preferred alternative is continued use of the concrete discharge line, with installation of an HDPE slipliner through 575 feet of the discharge line. The existing discharge line will be breached downstream for access to install the HDPE slipliner in all three barrels. Because the concrete is still structurally stable, it will provide a solid encasement to support the slipliner. Installation of the slipliner will seal 575 feet of discharge line and preserve 1 cfs previously lost to leakage. Elimination of water lost in the discharge line will minimize soil saturation beneath the BNSF railroad bed, effectively mitigating a potentially dangerous situation for the surrounding areas. Installation of the HDPE slipliner will reduce the required operation and maintenance of the system and improve the water delivery for use by local farmers and ranchers.

The application evaluated only one technique to rehabilitate the discharge lines and did not investigate other possible alternatives such as applying spray-on sealants. In addition, the application did not include provisions for a 10% contingency to protect against budget overages. Recommending use of an oil-based product such as an HDPE slipliner without including provisions for product price increases does not provide sound budget development. The BRPD 2 will likely not be able to secure and install the full 575 feet of HDPE slipliner due to increases in product costs.

Construction is scheduled to begin in September 2009 and will be complete in November of the same year.

Specific tasks to be accomplished:

- Size the HDPE slipliner to fit the existing 30-inch diameter discharge lines;
- Purchase the slipliner and all appurtenances;
- Plan logistics and coordinate with involved organizations (i.e., USBR, NRCS, and BNSF); and
- Install the HDPE slipliner on 575-foot section of discharge line.

Project Management

The general manager of the BRPD 2 will provide project and grant administration, as well as act as the primary contact throughout the project. BRPD 2 and its general manager have successfully managed previous grant-funded projects through the DNRC. Limited technical support will be provided as needed by the NRCS area engineer throughout the project. The HDPE slipliner and all appurtenances will be put out for bid. Construction and installation of the HDPE slipliner will be done by the BRPD 2 staff, which will be overseen by the general manager. The BRPD 2 staff has experience in this type of work from the installation and completion of Phase 1 of the Increasing Pump Discharge Line Efficiency Project.

The application states that the general manager will be responsible for the majority of the technical design of the HDPE slipliner with oversight from the NRCS area engineer. The area engineer will have limited time to provide assistance with anything more than incidentals that occur during the process. Because the project is at the head of the Terry Unit, any error in design or installation will result in a complete shutdown of the system. For this reason it is recommended that the project have a final design developed and signed by a licensed professional engineer. Periodic construction oversight should also be conducted by the licensed professional engineer.

Upon award of this requested grant, final design will be completed to verify size of the HDPE slipliner. Following completion of the final design, the project will be ready to proceed.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$7,000	\$0	\$28,670	\$35,670
Professional & Technical	\$20,000	\$0	\$4,000	\$24,000
Construction	\$73,000	\$0	\$38,170	\$111,170
Total	\$100,000	\$0	\$70,840	\$170,840

Unit costs used to develop the cost estimate for construction were reviewed by the Bureau of Reclamation and were determined reasonable. The application provided justification for the proposed action as the most cost-effective remediation measure analyzed, but did not analyze all potential remediation measures. The project is Phase 2 of a three-phase project which will completely rehabilitate the Terry Unit pump discharge lines. The third phase of the project is not currently scheduled for implementation but will be addressed when funding becomes available.

A licensed professional engineer should be contracted to develop the final design and provide limited construction oversight. Because funding for a Professional Engineer was not included in the budget submitted with the application, \$20,000 will have to be shifted from Construction to Professional & Technical Services under the RRGL Grant portion of the funding to cover engineering fees. This shift in funding will not allow BRPD II to purchase all of the proposed 575 feet of HDPE slipliner as proposed in the application. To ensure the goals of the project are met, the BRPD II will have to either provide the additional \$20,000 to cover the total material costs proposed in the application, or provide defensible evidence that a scaled down version of the project will still accomplish the renewable resource goals stated in the application.

One hundred twenty-five users purchase water from the BRPD 2 at a cost of \$29.50 per acre. A total of 11,478.46 acres is currently under irrigation. Water user assessments will not increase through implementation of the project.

Matching funds for this project are secure. If awarded, the project will be in a position to start implementation in fall 2009.

Benefit Assessment

Water conservation is the primary renewable resource benefit associated with this project. Water losses in the discharge lines were measured and quantified, amounting to 1 cfs or 272 acre-feet per year. The water savings generated from implementation of the improvements will increase pumping efficiency and delivery efficiency. Both will help the BRPD 2 deliver full water shares to acres which previously only received a portion of their water share. Secondary benefits will include increased agricultural production, elimination of a potential BNSF safety hazard, and preservation of 11,478.46 irrigated acres.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse long-term impacts will result. Minimal short-term environmental concerns associated with construction, e.g., noise, dust, and vegetative disturbance, can be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 84

Applicant Name Sweet Grass County Water and Sewer District (SGCWSD)
Project Name Sweet Grass County Water System Improvements

Amount Requested	\$ 100,000	Grant
Other Funding Sources	\$ 10,000	Applicant
	\$ 461,230	RD Grant
	\$ 228,510	RD Loan
	<u>\$ 625,000</u>	TSEP Grant
Total Project Cost	\$ 1,424,740	

Amount Recommended \$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Sweet Grass, an unincorporated community in Toole County, sits on the United States/Canadian border, approximately 120 miles north of Great Falls. The original distribution system and booster station in Sweet Grass were constructed in 1963, with no major improvements since. The Sweet Grass water system is unique because its source (the Milk River), treatment facility, and storage facilities are in Canada. Sweet Grass purchases water from the village of Coutts by volume. The distribution system in Sweet Grass is administered, operated, and maintained by the SGCWSD.

The Sweet Grass water system has the following deficiencies:

- Lack of adequate water pressure and volume to meet fire flow requirements;
- Inadequate storage for fire flow;
- Dead-end distribution mains; and
- Existing booster station no longer operating correctly.

A comprehensive study of Sweet Grass's water system has been completed; the selected alternative will coordinate with the future North Central Montana Regional Water System (NCRMWS).

The proposed project would include:

- Installation of a 195,000-gallon steel storage tank;
- Installation of a transmission main to tank;
- Installation of a booster pump station; and
- Installation of piping to loop dead-end mains.

Approximate location of the potential new storage tank has been coordinated with designers of the NCRMWS, ensuring it meets requirements for the future system. The project will solve serious health and safety problems and enhance the common well-being of Montanans through development and preservation of resource benefits from water, a renewable resource.

The alternative selected will ensure an effective and efficient overall system that will enable the SGCWSD to meet state and federal water quality standards, as well as coordinate with the future NCRMWS.

Technical Assessment

Project Background

Sweet Grass, population 100 people, is on the United States/Canadian border in north-central Montana. It is home to the Port of Sweet Grass, the largest border crossing between Pembina, North Dakota, and Blaine, Washington. From July 2006 to June 2007, almost 1.5 million people crossed through the port. A business community consists primarily of customs brokerage firms. Due to a lack of available water on the U.S. side of the border, Sweet Grass obtains its water supply from the village of Coutts, directly

across the border in Alberta, Canada. Coutts is unable to provide Sweet Grass with an adequate quantity of water. Sweet Grass also lacks adequate fire protection. With Sweet Grass reliant on the sustainability of a border station (critical national infrastructure), the potential for a fire could be catastrophic on a local, state, and national basis. The lack of regulatory control, the relative ease of contaminating the water supply, and the absence of an alternative viable water supply make water quality challenges both a public health and also a national security threat. Finally, deteriorating infrastructure and dead ends in the distribution system have resulted in negative pressure in some areas of the system. Violations of the lead and copper rule and coliform rule have also been noted in the past (though not frequently or regularly). Chlorine levels in the distribution system, below requirements set by state drinking water regulations, may contribute to these violations.

To provide a long-term solution to remedy the water supply challenge, Sweet Grass has signed on to receive water from the NCMRWS. However, the delivery schedule of water from NCMRWS depends on project funding and would not include provisions for local fire flow storage. The challenges facing Sweet Grass warrant an interim solution that can be implemented until delivery of water from the NCMRWS.

Technical Approach

The preferred alternative presented in the PER involves installation of a pump station to transfer flows from the Coutts storage tank to a new 195,000-gallon storage tank approximately 1.5 miles south of the community, a 10-inch transmission pipeline sized to transfer fire flows of 1,500 gallons per minute (gpm), and distribution system improvements looping the west side of the system. This alternative will address water age, pressure, and dead-end issues in the western portions of the community. In addition to the no action alternative, several other alternatives evaluated included completion of a limited project to address only pressure and distribution system concerns, various projects that incorporated treatment provisions, and installation of a transmission pipeline from Sunburst to Sweet Grass. All alternatives were thoroughly explored and appropriately eliminated except for the Sunburst to Sweet Grass option, which was eliminated relatively early in the PER due to cost. But input from NCMRWS representatives suggests this may have been a feasible alternative to consider since infrastructure connecting the two systems is proposed as part of the NCMRWS.

The report also indicates that the selected alternative is consistent with NCMRWS infrastructure plans; however, NCMRWS is planning a 100,000-gallon water storage tank and six-inch transmission pipeline to the edge of Sweet Grass. The report is unclear if the proposed infrastructure would eliminate NCMRWS infrastructure, or be in addition to NCMRWS infrastructure. Additional coordination to determine how Sweet Grass and NCMRWS can work together seems appropriate.

Other issues the PER could have explored further include:

- Concern that the border station, which receives its water from the village of Coutts through a dedicated pipeline, was not connected to the district as part of the project;
- Exclusion of provisions for a chlorination system and a mechanism for addressing a past violation of the lead and copper rule; and
- The report did not include condition assessment of or provisions for rehabilitating the existing distribution system, which is aging and has never been maintained. Introduction of higher pressures and flows to an aging system can lead to operational challenges during fire-fighting.

Design of the project is slated to begin in July 2009, with construction from May to September 2010.

Specific tasks to be accomplished:

- Purchase land and secure easements for the storage tank;
- Install a 195,000-gallon steel storage tank;
- Install a transmission main to tank;
- Install a booster pump station; and
- Install piping to loop dead-end mains.

Project Management

The project management team appears to have the experience and ability to administer this project once a funding package is in place. The team consists of Sweet Grass community leaders and staff, along with Toole County administrative staff. These individuals have experience with past utility projects and administration of grant- and loan-funded projects. The project management plan spells out clear duties for each member of the project management team. The project management team will utilize local media to communicate project progress with the public and will also invite the public to attend monthly SGCWSD meetings.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$30,662	\$30,662
Professional & Technical	\$0	\$0	\$204,420	\$204,420
Construction	\$100,000	\$0	\$1,089,658	\$1,189,658
Total	\$100,000	\$0	\$1,324,740	\$1,424,740

The chosen funding package consists of a TSEP grant, an RRGL grant, an RD grant, and an RD loan. Local funding of \$10,000 has been contributed to the project. This funding package was chosen because initial discussions with the Department of Homeland Security and NCMRWS indicated that funding through of these entities would not be available. The proposed funding package would be the next most likely funding strategy. An RD loan is incorporated (as opposed to DWSRF) because Sweet Grass needs to maximize grant funding for this project and would be eligible (on a LMI basis) for the RD loan. Sweet Grass already has water and sewer rates above its target rate. With the funding level proposed here, future rates would be 125% of the target rate. Maximizing grant funding for the project is particularly important to keep the project affordable.

Further, maximizing the grant funding for this project is also justifiable, as the need for fire flow is primarily dictated by the border station and associated businesses, as opposed to residents of Sweet Grass. The border station is critical national infrastructure and the associated businesses would not exist in Sweet Grass if the border station were not there.

Sweet Grass should consider continued coordination for this project with the Department of Homeland Security and NCMRWS. Coordination between Sweet Grass and both of these entities is necessary to make sure that all avenues have been thoroughly and clearly exhausted before the proposed project is completed.

After project completion, the projected user rates are anticipated to increase by \$10.05 per EDU. With continued cooperation with the agencies noted above, local impact could be significantly less, and residents would continue to see benefits of that cooperation well into the future.

Benefit Assessment

Resource benefits for this project include conservation of a water supply. Conservation benefits are a result of eliminating the need to flush hydrants at dead ends in the distribution system once looping of the mains is completed.

Environmental Evaluation

Short-term, negative environmental concerns associated with construction, e.g., noise and dust, are the primary environmental considerations and can be averted by using best management practices. A limited impact on agricultural lands is anticipated to construct portions of the infrastructure. It was also noted that piping connections to the asbestos cement pipe could expose workers to asbestos fibers if not completed in accordance with recommended practices. Three leaking underground storage tanks sites in Sweet

Grass have contaminated soils in the project areas. Care will need to be taken during design of the project to eliminate the chance of encountering or disturbing these locations.

All other environmental considerations are beneficial, including improvement of water quantity, pressures, and fire-fighting capabilities. In addition, the project includes components that will allow preservation of jobs, existing facilities, and could support new housing and commercial development.

Funding Recommendation

The DNRC recommends grant funding of \$100,000, which will be contingent upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 85

Applicant Name	Gore Hill County Water District
Project Name	Gore Hill County Water District Water System Improvements
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 250,300 TSEP Grant \$ 545,600 WPC SRF Loan
Total Project Cost	\$ 895,900
Amount Recommended	\$ 100,000 Grant
Project Abstract	(Prepared and submitted by applicant)

The Gore Hill County Water District operates a public water system which serves numerous adjacent subdivisions. The area lies in Cascade County, approximately 1-½ miles south of the Great Falls International Airport, and covers approximately 500 acres. The district provides water service to 220 residences serving approximately 550 Montanans.

The water system serving Gore Hill was constructed in 1977 and has served the district well over the years. However, in 2001, the EPA lowered the maximum contaminant level (MCL) for arsenic. As a result, the district's water supply no longer meets drinking water standards. The EPA classifies arsenic as a human carcinogen. The water supply also has high levels of iron. The district completed a PER in 2008 to evaluate alternatives to address water system deficiencies. To address these deficiencies, the district intends to install a arsenic and iron removal treatment system on both of the wells. In addition, distribution system improvements will eliminate dead ends in the system and improve flows.

The proposed project will allow the district to provide improved water quality to system users and meet all drinking water standards. Implementing the proposed improvements will expand the utilization of a natural resource. Without the improvements, the district would be forced to abandon its source of supply. These improvements will also preserve the renewable resource benefits that the water system provides.

The project will solve serious health and safety problems and enhance the common well-being of Montanans through the conservation, development, and preservation of resource benefits from water, a renewable resource.

Technical Assessment

Project Background

The Gore Hill County Water District is in Cascade County just south of the Great Falls International Airport and provides water service to 220 households. The water system comprises two wells and four 50,000-gallon storage tanks. Samples from existing wells have exceeded the arsenic MCL of 10 parts per billion (ppb). Samples from the wells also have elevated iron levels which exceed EPA secondary

drinking water standards. Elevated iron levels cause staining and taste problems. The water system provides treatment for the iron. The PER indicated that hydraulic efficiency can be improved in two areas in the water distribution system.

The PER evaluated several alternatives for addressing the arsenic problem. The alternatives were narrowed in the screening process to three that were evaluated in detail: mechanical treatment using chemical coagulation and pressure filtration, household point-of-use reverse osmosis treatment units, and connection to the City of Great Falls. Overall ranking for the three alternatives was equal after evaluation. The district decided to let the residents of the district vote for the preferred alternative during a public meeting; residents voted to select the pressure filtration alternative. The PER also recommended installing two new sections of water main that would add new loops in the distribution system and improve hydraulic efficiency.

Technical Approach

The preferred alternative consists of installing a pressure filtration system at each well to remove arsenic and iron and installing two new water mains to improve distribution system efficiency.

No violations of EPA's new arsenic rule have yet occurred because violations are based on a running annual average at each sampling point. Samples collected from well No. 1 will likely violate the MCL once all of the quarterly samples are collected and analyzed. Two samples collected from well No. 2 in November 2007 exceeded the arsenic MCL. Previous samples were well below the arsenic MCL. Depending on the outcome of the quarterly sampling for well No. 2, arsenic removal may not be necessary. However, the filtration system will also provide iron removal and ensure that well No. 2 will not violate the arsenic rule in the future if arsenic levels remain elevated. The PER did not provide a detailed discussion of how the backwash from the arsenic removal system will be handled. The PER proposes to discharge the backwash into a septic tank and drainfield and discharge the backwash back into the groundwater. The PER did not discuss possible DEQ discharge permit requirements for the backwash water. The PER also did not adequately justify how the proposed new water mains will increase the hydraulic efficiency of the distribution system. The looping provided by the two new water main segments will not eliminate any of the dead-end water mains in the distribution system. The proposed project will not cause significant environmental impact as long as backwash water from the arsenic removal system is disposed of properly.

Construction is slated to begin in spring 2010 and complete by October of the same year.

Specific tasks to be accomplished:

- Installation of an arsenic and iron removal system at each of the two existing wells; and
- Construction of two new water main segments to improve hydraulic efficiency of the distribution system.

Project Management

Adequate staff have been assigned to the project. Overall responsibility will rest with the district board and the board chairman. The chairman will monitor project consultants and sign legal documents. The administrative consultant will be the funding agency liaison and the district's clerk/treasurer will transfer loan and grant funds to pay claims and expenses. The administrative consultant will perform day-to-day project management. A public involvement plan has been developed that will continue until the project ends. The involvement plan includes public board meetings, newsletters, and public meetings.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$70,600	\$70,600
Professional & Technical	\$70,000	\$0	\$55,000	\$125,000
Construction	\$30,000	\$0	\$670,300	\$700,300
Total	\$100,000	\$0	\$795,900	\$895,900

Four funding scenarios were considered. The chosen funding package consists of a TSEP grant, an RRGL grant, and a WPCSRF loan. This funding package was chosen to keep user rates at an acceptable level. The funding package proposed by the applicant is realistic. No funding sources for the project are committed. The applicant indicates that if a particular funding source is not obtained, grant applications will be re-evaluated and the applicant will reapply to the programs the next funding cycle.

The district's existing water rate averages \$39 a month (metered rate). With the proposed funding package, water rates will increase to \$60.09, essentially the target water rate for the district. The project will be affordable since projected rates will be near target.

Benefit Assessment

The installation of a water treatment system to remove arsenic will allow the district to preserve use of its groundwater supply. Preservation of the existing water supply is the main renewable resource benefit for this project. The proposed project will rehabilitate and preserve the existing water supply by providing arsenic and iron removal.

Nine letters of support were included with the application. One was from the Cascade County Commission, one from Sweetgrass Development, and one from the local state house representative. Public support was found in the letters and minutes from the public hearings for the project.

Environmental Evaluation

This project will not result in any adverse environmental impacts other than temporary construction impacts. Construction will occur in previously disturbed areas on land owned by the district (treatment system buildings) or in public rights-of-way (distribution system improvements). The treatment system backwash water may require a discharge permit.

Short-term, negative environmental concerns associated with construction, e.g., noise and dust, can be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 86

Applicant Name Whitefish County Water and Sewer District
Project Name Investigation of Septic Leachate to Littoral Areas of Whitefish Lake

Amount Requested \$ 70,000 Grant
Other Funding Sources \$ 0
Total Project Cost \$ 70,000

Amount Recommended \$ 70,000 Grant

Project Abstract (Prepared and submitted by applicant)

The Whitefish County Water and Sewer District Board of Directors is aware that some effluent from septic drainfields reaches Whitefish Lake. Extent of this pollution is unknown. Since the 1985 baseline study, extensive residential and commercial growth has occurred around the lake and throughout the Flathead Valley. Many developments have resorted to individual septic systems for treatment of wastewater, leading to the possibility that increased septic leachate is reaching Whitefish Lake. Is this prized water body jeopardized by a spin-off of human activity, or is it not? Does the resource merit protection, or are additional safeguards unnecessary?

This proposal will employ fluorometry technology similar to that used in the earlier study. However, sampling will also include *e. coli* fecal coliform. A portion of the *e. coli* samples will be submitted to differentiate between human and animal fecal coliform. In addition to determining the status of Whitefish Lake, the project will establish a protocol that may apply to other bodies of water in the Northwest. DNA analysis provides a primary indicator of human health risk potential, both enterococcus and bacterioidetes.

The potential value of the resource assessment reaches across multiple disciplines, educating the public, managing resources, preserving water quality, and raising recreational value and quality of life in general.

Technical Assessment

Project Background

Whitefish has been the second-fastest growing community in Montana since 2000. This growth, along with many older septic systems around Whitefish Lake, may cause permanent, long-term damage to the lake. A previous study, conducted in 1986, will provide baseline data to compare how increased population and aging septic systems have affected Whitefish Lake's water quality. Data collected during this project will be used to identify potential public health risks, to determine impacts to the aquatic ecosystem since the 1986 study, and to provide baseline water quality information that will aid future development in Whitefish. The project will use multiple techniques, first to identify the presence of septic leachate and then to identify the potential leachate sources. The application discussed alternative analytical methods and contaminant analyses rather than complete project alternatives.

Technical Approach

The project goal is to identify and quantify the extent of septic leachate to the littoral areas of Whitefish Lake. The preferred alternative is to collect data using numerous sampling and analytical methods, thus providing both qualitative and quantitative data. Other analytical methods and alternatives were evaluated, but discarded due to cost and other reasons. The project objectives are to identify potential public health risks due to septic leachate; to determine impacts to the aquatic ecosystem due to septic leachate; to provide supporting data and information to decision makers; and to provide pre- and post-implementation data for a communal septic field project. Project goals could be achieved using alternate methods and significantly reduced analytical costs.

Environmental impacts directly relating to implementation of the project would be minimal since data would be collected from a boat on Whitefish Lake. Results of the project have the potential to provide beneficial environmental consequences for Whitefish Lake. The applicant has proposed a fall 2009 start date and a completion date some time in 2010.

Specific tasks to be accomplished:

- Send out request for proposal/select analytical laboratory;
- Conduct fall 2009 sampling;
- Analyze data;
- Conduct spring 2010 sampling; and
- Analyze data and prepare final report.

Project Management

The Whitefish County Water and Sewer District will manage the project. Based on information provided in the application, adequate staff will administer and manage the project. Appropriate planning has been done and the project is ready to proceed and will be implemented by December 2010.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$4,838	\$0	\$0	\$4,838
Professional & Technical	\$65,162	\$0	\$0	\$65,162
Construction	\$0	\$0	\$0	\$0
Total	\$70,000	\$0	\$0	\$70,000

The budget appears reasonable to fund the project, although the budget for report preparation appears low. The applicant provided a detailed breakdown of costs. No budget or funding irregularities were found. The unit costs used to develop the budget appear reasonable and adequate, although the analytical parameters chosen are very expensive and constitute nearly 70% of the budget. The applicant did not indicate any matching funds.

The applicant did not provide data as to the number of citizens affected nor the number of acres affected. The project will provide information necessary to minimize environmental impacts from future housing developments in the area.

Benefit Assessment

The primary benefit to renewable resources is improved resource preservation. The proposed project would result in measurable future renewable resource benefits through preservation of surface water and groundwater. The project will contribute to enhancement of Montana's fisheries and wildlife habitat by providing a means of controlling and understanding nutrients resulting from on-site septic systems near Whitefish Lake.

Another resource benefit from the proposed project is resource management. By more effectively predicting nutrient loading, areas currently undevelopable may be open for future development, while still managing surface and groundwater resources. The primary citizen benefits from the proposed project are multiple uses and public support. At the conclusion of the project, recreation opportunities and fisheries and wildlife habitat will be enhanced. The benefits are long-term and would be quantified through use of data collected as part of this project.

Environmental Evaluation

Environmental impacts associated with this project were evaluated and no apparent adverse, long-term impacts will result. Beneficial results are primarily related to collection of significant hydrogeologic data

for use in developing a groundwater model that will be available to regulatory agencies and the general public for use in future decision making. Minimal, short-term impacts will be controlled through best management practices.

Funding Recommendation

DNRC recommends grant funding of \$70,000 upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 87

Applicant Name Richland County Conservation District (RCCD)
Project Name Lower Yellowstone Groundwater Reservation: Water Development Potential of Buried Channel Aquifers in Richland County

Amount Requested	\$ 100,000 Grant
Other Funding sources	\$ 9,091 Applicant, In-Kind
	\$ 15,000 DNRC Irrigation Development Program, Cash
	<u>\$ 33,050</u> Montana Bureau of Mines and Geology (MBMG), In- Kind
Total Project Cost	\$ 157,141
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

The purpose of this project is to define groundwater resources in buried-channel aquifers underlying parts of the Yellowstone River valley and nearby uplands in Richland County. Paleochannels were incised into the underlying Fort Union Formation bedrock and subsequently filled with coarse-grained sand and gravel. In the channels, the depth to bedrock is as much as 150 feet. Outside the channels, bedrock is generally less than 50 feet deep. The thick deposits of sand and gravel in the channels are saturated with water and form high-yield aquifers. The RCCD intends to define these groundwater resources by monitoring water levels in the aquifer in existing and proposed wells, constructing several production wells, conducting aquifer tests to estimate yield potential, sampling water, and refining maps of the aquifer. Work will be conducted from recently mapped areas near Fairview to unmapped areas from south of Crane to the Richland-Dawson county line. The aquifer is best defined near Sidney where it supplies the city with good quality water from seven high-yield wells. Another well field approximately 10 miles north supplies water to Fairview. Recent drilling and mapping has significantly increased understanding of the extent and boundaries of the aquifer.

The RCCD 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 is the largest user of water from the channel aquifer. Based on water-use records from Sidney, this aquifer has potential for additional development. 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, 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 potential for expansion. As a result, the city is interested in obtaining information on this aquifer system that would allow it to protect its water resource while promoting economic development through additional irrigation development.

The RCCD proposes to increase understanding of this aquifer by developing a groundwater monitoring network using existing and proposed wells, expanding exploratory test drilling to areas where the aquifer is poorly defined, installing test wells, installing production wells for aquifer testing, sampling water quality at many of these wells, and collecting additional groundwater data to define the extent of this aquifer. This information will provide the framework for future wise development of this resource and allow partnerships with state and federal agencies to manage groundwater development. The final goal is to develop a

groundwater reservation sponsored by the RCCD, allowing grass-roots control of the development of these water resources. 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 is in the Lower Yellowstone River Valley in east-central Montana. During development of petroleum reserves in the 1960s, some deep, high-yield wells were completed in the study area. Further investigation indicated presence of a buried channel aquifer about 100 feet below ground surface and at least one mile wide. A recent study sponsored by the RCCD, with work done by the Montana Bureau of Mines Geology (MBMG) using RRGL grant funds, has more specifically identified the aquifer extent but vertical and lateral extent and yield potential are still unknown. The quality of water produced from the aquifer is acceptable for irrigation. The applicant estimates the aquifer could potentially irrigate over 21,000 acres at an application rate of 18 inches per acre. The project goal is to establish a monitoring network to obtain baseline information about water level fluctuation, to expand exploration for potentially high-yield aquifers, and to define areas where high-yield wells could be constructed. The proposed work continues ongoing work started by the previous study. The district will use the information to decide whether to apply for a water reservation.

Alternatives considered were to proceed with monitoring wells and measurements or take no action and stop studying the aquifer.

Technical Approach

The preferred alternative involves establishing a well-monitoring network in the study area from which periodic water levels will be collected. Information will be used to develop groundwater flow maps. Additional areas will be tested using existing and newly constructed wells to map buried channel aquifers. A final report will provide estimates of total volume of water available and water quality for development associated with potential management areas. This effort is a continuation of an existing study.

The only other alternative briefly addressed was no action. No discussion of alternative study methods such as use of geophysics, i.e., seismic refraction, was provided for comparison.

If funded, the project would begin in September 2009 and end in July 2010.

Specific tasks to be accomplished:

- Establish a well-monitoring network;
- Expand exploration for potentially high-yield aquifers;
- Prepare a report and recommend action; and
- Investigate applying for a water reservation.

Project Management

The conservation district proposes to manage the project. A memorandum of understanding with MBMG will be prepared for technical work. The district will track project schedules, review invoices, and submit quarterly reports to DNRC. A technical advisory committee of district board members and interested residents will be established to provide guidance on the project, and to provide information to the public throughout. MBMG will conduct the technical portion of the project and assist the district with public meetings and reporting. If funded, the project will begin in September 2009.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$9,091	\$0	\$9,091	\$18,182
Professional & Technical	\$90,909	\$0	\$48,050	\$138,959
Construction	\$0	\$0	\$0	\$0
Total	\$100,000	\$0	\$57,141	\$157,141

The applicant provided a general estimate of project costs. One technical reviewer indicated administrative and equipment costs appeared high, while funds budgeted for well construction appeared low. Both should be reassessed before contracting. Other costs appear reasonable and adequate. No costs were provided for alternatives since only the no action alternative was considered.

The applicant does not assess fees. The applicant indicates the aquifer could potentially irrigate over 21,000 acres. Matching funds are identified and secure. Other costs will be covered by the grant. No other funds are required to implement the project.

Benefit Assessment

The primary benefit to the renewable resource (groundwater) is to identify the potential amount of available water to develop for irrigation in Richland County. The applicant indicates a potential 32,000 acre-feet of water could be available. If the aquifer is developed, the area economy would be enhanced through increased agricultural production.

Environmental Evaluation

Minimal, short-term, negative impacts from soil and vegetation disturbances may occur from monitoring well and production well construction. No long-term, negative impacts should occur.

Funding Recommendation

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

Project No. 88

Applicant Name MSU Montana Water Center
Project Name Decision-Maker's Guide to Montana's Water

Amount Requested \$ 99,463 Grant
Other Funding Sources \$ 0 Applicant
Total Project Cost \$ 99,463

Amount Recommended \$ 99,463 Grant

Project Abstract (Prepared and submitted by applicant)

The 1,400 elected officials who staff Montana's decision-making bodies--county commissioners, conservation district boards, the Legislature, city and town councils, and others--routinely grapple with water issues. Their decisions must be science-based and conform to state law and policy, yet these officials are not usually experts on hydrology or water law. Sources of water information are numerous and scattered, but seldom focus on the needs of elected officials.

Water decisions have become far more difficult in recent years because of growth and over-appropriation. The Montana Water Center will work with partner organizations to develop and deliver a science-based, nonadvocacy water curriculum for Montana elected officials.

The Water Center will:

- Seek input from audience representatives to identify the major topics to cover and the types of decisions that must be supported;
- Draft the course, including narrative, case histories, graphics, video, and related resources;
- Submit the draft for review by audience representatives;
- Finalize it as four to six modules, in both conference presentation form and for delivery over the Internet;
- Deliver the course at scheduled training for elected officials; and
- Evaluate audience satisfaction.

The course will then be made available for individual use. A preliminary survey of county commissioners suggests likely topics include water data interpretation, groundwater/surface water interaction, floodplain and riparian zone management, water quality impairment and protection, and recent changes to water law.

These benefits to Montana's water resources are anticipated: decisions favoring water-efficient developments, decisions that do not further tax overdrawn aquifers, projects that minimize pollution generation, new withdrawals fully offset by augmentation or other measures, and protection of the water-storage, flood-mitigation, and pollution-cleansing properties of natural water features. Conflict prevention at the county level will also be an outcome of this project.

Technical Assessment

Project Background

The Montana Water Center frequently receives requests for information and technical assistance from elected officials or their staff members. In 2005 all sitting Montana county commissioners were queried about their needs for water information. They expressed interest in a broad range of topics. Montana Water Center responds to requests and has helped to write the EQC's *Guide to Montana Water Quality Regulation* and *Water Rights in Montana*. The Montana Water Center has developed and taught courses for drinking-water professionals and storm water control for contractors. In response to an apparent need for information for elected officials, the Montana Water Center proposes a course on Montana's water designed for at elected officials. The project goal is that more decision makers would conserve and protect Montana's water resources.

Alternatives considered included:

- Alternative A--Develop web-based course on water science and regulation and offer it at training and conferences scheduled by other entities (project partners) and electronically;
- Alternative B--Provide on-site training throughout Montana using a circuit rider;
- Alternative C--Develop and present water education only through live presentations at workshops around the state (not associated with conferences); and
- Alternative D--No action.

No information or details were provided on how costs were developed for the alternatives.

Technical Approach

The goal of this project would be to enhance conservation and protection of Montana's water resources. This goal would be accomplished by determining key water issues for municipal and county decision makers, covering these issues in a course, and presenting the course to decision makers at conferences and on the web.

The project sponsor selected Alternative A because it would use partnerships between the Water Center and other organizations that offer scheduled training and support to elected officials. One partner is

identified. Travel and time commitment of audience members and presenters would be minimized. The sponsor believes this method of developing curriculum will result in a better course.

Specific tasks to be accomplished:

- Engage partners and advisors;
- Develop preliminary curriculum;
- Subject the course to advisor review;
- Promote presentations and webinars;
- Present the course live and via “webinars”; and
- Evaluate and finalize.

The project would begin in July 2009 and end in June 2011. The schedule is feasible.

Project Management

Project staff would be drawn from The Water Center, with the assistance of a contracted water attorney. The Montana Water Center administers a USGS base grant which partly funds its programs. It has also administered an EPA grant that will end in fall 2009. The project manager and the manager of the center have adequate experience to administer the grant.

The Water Center does not plan to seek input from the public in developing the course, but would discuss course content with at least one county commissioner, a city or town council member, a conservation district board member, and a county water and sewer district board member. The Water Center would also discuss the project with a variety of private and public organizations. Ten letters of support were provided from a variety of organizations.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$7,787	\$0	\$0	\$7,787
Professional & Technical	\$91,676	\$0	\$0	\$91,676
Construction	\$0	\$0	\$0	\$0
Total	\$99,463	\$0	\$0	\$99,463

Three course-delivery alternatives were considered, but with no other funding alternatives. The proposed funding package consists of .25 FTE for the project manager, .08 FTE for the project engineer, and .25 FTE for the media specialist. The application is unclear on how The Water Center’s USGS base grant would apply to this project. Costs appear overstated. For example, the applicant has budgeted over two weeks to consult 11 entities on possible curriculum, but with very vague goals. Although the applicant states that some work has already been done on a draft curriculum outline, the applicant has budgeted over five weeks each, per hour-long module, to develop course content. The application is unclear about how many times the course would be presented, but even assuming the maximum number of possible presentations, the amount of time allotted for each seems excessive. Not enough information was provided to compare the relative costs of the various alternatives, nor to verify preliminary costs for the preferred alternative. The project would need additional funding for updates. Alternatives do not discuss the possibility of cost reimbursement from conference fees. Costs were not estimated for a web-only option. The costs presented in the application seem excessive when considering the scope of work. Up to 350 public officials could take the course during the project.

Benefit Assessment

The resource benefits for this project would be in resource conservation, development, and preservation; however, all resource benefits would be indirect. Knowledgeable decision makers may be more likely to enhance Montana’s efforts to have a sustainable and high-quality water supply. The decisionmakers may better understand water science and regulations and use the information in their decisions. Multiple

possible benefits could occur, including water quality protection, improved community water systems, water rights awareness, storm water control, wetlands protection, riparian corridor protection, and others. These benefits are difficult to quantify. The sponsor plans to offer the course to one quarter of the decisionmakers (approximately 350) in municipal and county positions.

Course modules would likely include: (1) basic hydrogeology, groundwater/surface water interaction, and water data interpretation; (2) impacts of land use and development on water resources; (3) floodplain and riparian zone management, (4) water quality impairment and protection, nonpoint source pollution, drinking water and waste water management; and (5) water law and regulation in Montana. The applicant does not explore the relevance of this type of water education to decision-making process. Concrete examples of how this might have played out for any of the proposed modules would have been helpful, but would still make quantifying benefits difficult.

The proposed study does not involve a regional project or measuring devices. Water quality would not be directly improved, and an alternative energy source would not be involved. No new jobs or preservation of existing jobs would be directly associated. No tourism benefits are stated, and no new agricultural practices are developed. No trade balance or restoration of resource would be directly associated. Some relationship to population growth and climate change is presented.

Environmental Evaluation

The proposed course could indirectly impact water resources (surface water, groundwater) and other resources (wetlands, riparian areas) beneficially, depending on how the information is applied. No direct effects would be expected.

Funding Recommendation

The DNRC recommends grant funding of \$99,462 for this project upon development and approval of the final scope of work, administration, budget, and funding package.

Project No. 89

Applicant Name	Ronan, City of
Project Name	Ronan Water System Improvements
Amount Requested	\$ 100,000 RRGL Grant
Other Funding Sources	\$ 450,000 CDBG Grant
	\$ 750,000 TSEP Grant
	\$ 300,000 RD Grant
	<u>\$ 4,195,000</u> RD Loan
Total Project Cost	\$ 5,795,000
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Ronan was incorporated in March 1912 and the first water system was put into service in 1917. A major modification of the existing system was made in 1990. This project involved replacement of a number of water mains in various areas of town, and it extended a 12-inch main east along Round Butte Road to a new water tank. A new eight-inch main was extended from the water tank to the disinfection facility and sedimentation basin. The old main between the disinfection facility and town was abandoned. All new mains were constructed with pvc pipe. A 750,000-gallon standpipe was also constructed as part of the improvement project. The intake line between the Crow Creek intake and the sedimentation basin failed in 2005. The line was replaced with eight-inch pvc main.

Deficiencies with the water system include:

- Water supply does not meet DEQ standards with the largest supply source out of service, other sources cannot meet the maximum day or future demand;
- Inadequate storage capacity;
- The Crow Creek disinfection system ozone unit does not meet disinfection requirements under the new LT-2 rule;
- Undersized mains;
- Dead-end mains; and
- Inadequate fire flow.

System deficiencies have been prioritized and phased.

This proposed project would:

- Construct a 750,000-gallon elevated water storage tank and associated piping;
- Construct a booster station, pressure-reducing station, and control system;
- Construct a new 600-gpm well; and
- Replace four-inch mains.

Technical Assessment

Project Background

Ronan is an incorporated community within the Flathead Indian Reservation in Lake County along State Highway 93. Ronan has approximately 800 households (population 2,000) and 118 commercial/institutional users. The city's water system consists of: an un-filtered, ozone-disinfected spring source; two groundwater wells with chlorine disinfection; a 750,000-gallon storage reservoir; and approximately 20.3 miles of four-inch through 12-inch diameter water distribution main. Problems with the existing system include: insufficient supply to meet maximum daily demand with the largest well out of service, inadequate storage to supply needed fire flows plus average daily demand, and inability to deliver fire flows to some parts of town due to undersized mains.

Technical Approach

The applicant has evaluated several alternatives, including no action, for addressing its supply, storage, and distribution deficiencies and has prioritized its needs. The city's preferred alternative is to: drill one groundwater well (with an expected capacity of 600 gpm), construct a 750,000-gallon elevated storage tank in town, and install approximately 5,000 lineal feet of six-inch and eight-inch C900 water main to replace the four-inch mains. Implementation of the recommended alternative will provide for: adequate supply redundancy and capacity, adequate storage for domestic and fire flow needs, and enhanced system hydraulics to meet DEQ-1 design standards. The city uses only two-thirds of the storage in its concrete tank. The PER stated if the tank were filled to capacity, water pressure in town would be too high. The alternatives analysis did not address what could be done to fix the water pressure problems with the present tank, but instead focused on construction of a new tank.

Construction is slated to begin in summer 2010 and end in July 2011.

Specific tasks to be accomplished:

- Construct one drinking water well with an expected capacity of 600 gpm;
- Construct one 750,000-gallon elevated storage tank in town; and
- Install approximately 5,000 lineal feet of six-inch and eight-inch C900 water main to replace deteriorated mains and provide needed looping.

Project Management

The project engineer has been selected and has considerable experience in designing and constructing similar water system improvements. The project budget suggests that the grant and loan programs will be administered by city staff, although a grant/loan administrator has yet to be identified. The city council and mayor will retain ultimate responsibility for the project. The project management plan spells out duties and responsibilities for each member of the management team.

The project has had very little public involvement. The project has been discussed at two city commission meetings, but no public presentations or rate hearings have been conducted. Ronan is committed to continue with council meetings open to the public. Attendees are given the opportunity to voice concerns about the proposed project during a comment and question period. No other public involvement plan was mentioned.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$249,000	\$249,000
Professional & Technical	\$0	\$0	\$940,000	\$940,000
Construction	\$100,000	\$0	\$4,506,000	\$4,606,000
Total	\$100,000	\$0	\$5,695,000	\$5,795,000

One funding scenario was considered for two slightly different project scopes. The chosen funding package consists of an RRGL grant, TSEP grant, CDBG grant, and RD grant and RD loan. This funding package was chosen because the applicant qualifies for general CDBG funds (56% LMI) and would be a reasonably good candidate for TSEP funds (both applications have been submitted). Funding the remaining project costs through a 40-year RD loan will yield the lowest possible user rate increase. The funding package is considered feasible. If the applicant does not secure the DNRC grant, the combined water and sewer user rate in Ronan would be 171% of DOC's target rate based on the city's median household income.

After project completion, the projected monthly water rate for each user in Ronan will be \$49.29, a significant increase from the current rate of \$19.92. The new rate includes \$19.96 monthly cost for water debt repayment and \$8.41 additional charge for O&M costs. Increased O&M is primarily from additional pumping costs (due to replacement of gravity spring source with groundwater well) and new storage tank maintenance costs.

Benefit Assessment

The major resource benefits are in resource development. The city will drill another drinking water well that will provide redundancy and dependability for the water system. Furthermore, the additional well will be able to enhance the city's ability to handle future growth within the system and accommodate residential and commercial development. Development will likely increase demand for drinking water and further use of the groundwater resource. Some conservation benefits may be realized through reduced dependency on the surface water source and allowing more flow to remain in Crow Creek for agricultural and fisheries uses.

Environmental Evaluation

The proposed water project could have a net beneficial effect on the environment. By drilling a new well and reducing the city's dependency on the Crow Creek surface water source, Crow Creek may have more consistent and higher flows which will enhance local fisheries. Beneficial impacts to the community water users will also be realized by enhancing system dependability. The selected storage alternative will result in an elevated (and visible) storage tank in town versus the remote, ground-level tank also considered for this project.

Short-term, negative environmental concerns associated with construction, e.g., noise and dust, can be averted by using best management practices.

Funding Recommendation

The DNRC recommends grant funding of \$100,000 upon re-evaluation of alternatives to solve the specific need of water pressure adjustment and the development and approval of the final scope of work, administration, budget, and funding package.

The following projects, listed alphabetically, are not recommended to receive grant or loan funding.

Applicant Name	Missoula, City of
Project Name	Fort Missoula/Bitterroot River Bank Stabilization Design
Amount Requested	\$ 79,310 Grant
Other Funding Sources	\$ 4,850 Applicant
Total Project Cost	\$ 84,160
Amount Recommended	\$ 0 Grant
Project Abstract	(Prepared and submitted by applicant)

Missoula plans to complete engineering design to stabilize a 1,000-foot reach of the Bitterroot River to reduce sediment load into the river and prevent the river from meandering into an existing gravel pit and future city park. Loss of the riverbank and riparian habitat has occurred from direct scouring along the outside meander of the river and from active use and access to this section of the river. Active erosion is occurring in the downstream third of the meander along a small sliver of land, primarily riverbank that will be transferred to Missoula in 2012.

Adjacent and behind this parcel is an active 74-acre gravel pit that will also be deeded to the city in 2012. The city plans to acquire both parcels for development of a pond feature park dedicated to boating, swimming, and fishing. This park will be part of the larger 246-acre Fort Missoula Regional Park with an estimated community investment of \$20 million. DEQ 303(d) lists this reach of the Bitterroot River as impaired because of copper, lead, nitrogen, and sediment. The project reach represents one of the longest exposed and unvegetated stretches of the Bitterroot in Missoula County. The meander appears to be actively migrating west. If permitted to continue it will erode the riverbank and potentially reach the gravel pit. A large portion of the gravel pit nearest the river has been backfilled with rejected fine sediments. If the meander continues its migration, it will expose and potentially discharge thousands of cubic yards of fine sediments into the Bitterroot River.

The city is seeking this grant to provide planning, public involvement, and design of the riverbank to stabilize river migration, reduce sediment contribution to the Bitterroot River, and protect the public investment and resources dedicated to building a city park in this location.

Technical Assessment

Project Background

This project will complete the planning and design necessary for Missoula and The University of Montana to reduce sediment entrainment into the Bitterroot River and prevent further erosion and migration of the Bitterroot River channel into a gravel pit site and proposed future city park. This reach of the Bitterroot River is adjacent to a gravel pit where the river is actively migrating westward. The river is eroding 1,000 feet of unstable riverbank as high as 30 feet with little or no vegetative cover. An access road along the riverbank is sloughing into the river as a result of a recent channel migration. The site is in the southwestern portion of the Missoula Valley adjacent to historic Fort Missoula.

The proposed stabilization design project is on two properties: The University of Montana owns the upstream parcel with approximately 1,100 feet of river frontage and Northern Lights Development owns the downstream property with approximately 1,200 feet of river frontage. The Northern Lights property is a long narrow parcel that includes only the riverbank and an easement for a gravel pit road. The gravel pit is owned and operated, active since 1961, by Knife River Corporation (JTL Group).

The JTL Group has agreed to deed the gravel pit to the city by 2012. Northern Lights has not agreed to deed its property to the city, but a nonprofit group, Friends of Missoula Parks, is trying to acquire the property. There is also no agreement between the city and The University of Montana. The University of Montana and Northern Lights are the two parties that own the streambank in question.

Technical Approach

The overall project goal is to develop strategies and design stabilization alternatives to improve riparian habitat and enhance water quality in the Bitterroot River. The project goals are also to reduce sediment load to the Bitterroot River, prevent the Bitterroot River erosion of the gravel pit site, and protect Missoula's investment in the future park site.

The bank stabilization design will require an analysis of channel migration and behavior over recent time and through historical aerial photographs. The photographs will provide evidence of the extent of migration over time, the deterioration of riparian habitats, and projected rates of migration into the future. Bank design will also require estimating relevant hydraulic parameters using a hydraulic model. Hydraulic modeling will require surveying channel cross sections and long profiles to define model geometry inputs. The modeling effort will focus on estimating water surface elevations, flow velocities, near bank shear stress (an important predictor of scour/erosive force), and flow depths. In addition, the model will be used to determine the extent of inundation during flood discharges and the flow required to inundate the gravel pit site.

Modeling will provide scientists with appropriate data to complete preliminary design of the riverbank. The design will include plan view and cross-section drawings of the bank along with a drawing to provide a conceptual view of the restored bank.

The public involvement phase will advise the general public of the project and its intended purpose. The application also states that the grant would fund creation of a stakeholders group to provide input on adjacent land uses and related projects through the design phase.

The application stated that the final design phase would incorporate stakeholder and public comment. Based on the input, the design team will develop several potential designs and identify the recommended alternative. A secondary reviewer commented that specific goals for selecting the bank stabilization design are not specified, so criteria for selecting a preferred bank design solution are unclear.

The only alternatives presented were financial scenarios of who would pay for the planning process. The preferred alternative of funding the planning project with the RRGL grant was considered the only viable alternative.

The schedule provided in the application indicates that project design will begin in August 2009 and be complete by 2010. The city may not acquire the gravel pit property until 2012, and the application did not indicate when the city would acquire the streambank property.

Specific tasks to be accomplished:

- Data collection/survey/hydrologic assessment/modeling;
- Public involvement; and
- Final design.

Project Management

Missoula will provide project management and status reports. The city will contract for planning through a competitive RFP process and select the best-qualified consultant.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$4,850	\$4,850
Professional & Technical	\$79,310	\$0	\$0	79,310
Construction	\$0	\$0	\$0	\$0
Total	\$79,310	\$0	\$4,850	\$84,160

The project budget appears complete for the scope of this project. Missoula will contribute \$4,850 of in-kind costs to administration of the grant, and the remaining \$79,310 would be used for consultants in design and public involvement. No funding package is in place for the actual construction part of the restoration project.

Benefit Assessment

The project would benefit water quality of the Bitterroot River, if designed and implemented appropriately. The applicant does not currently own the riverbank property in question. The budget is not in place to do the actual restoration work. The restoration work would depend on funding from a mill levy not yet passed or from the Missoula Parks and Recreation budget.

The project received letters of support from DEQ, Knife River, and Missoula County, but no letters from the property owners-the University of Montana and Northern Lights Development. No letters of support were received from other stakeholders such as DFWP, the Missoula Conservation District, or the public.

Environmental Evaluation

This project is to complete planning and design for streambank stabilization for a 1,000 foot reach of the Bitterroot River. In and of itself the plan has no environmental impact. Environmental impacts associated with the project itself were evaluated and no apparent adverse long-term impacts will result. If completed, the project would positively benefit the quality of the Bitterroot River by stabilizing the streambank and prevents tons of material from the gravel pit to erode into the river.

Funding Recommendation

The DNRC does not recommend grant funding at this time. DNRC recommends reapplication after the city ownership of the streambank property and the Knife River gravel pit has been resolved.

Applicant Name	Garfield County Conservation District (GCCD)
Project Name	Mosby Musselshell Watershed Group Water Storage Project
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 15,000 Applicant
Total Project Cost	\$ 115,000
Amount Recommended	\$ 100,000 Grant
Project Abstract	(Prepared and submitted by applicant)

The GCCD has agreed to sponsor this grant for the Mosby Musselshell Watershed Group (MMWG). The MMWG is a group of landowners/operators who own property along the Musselshell River in Petroleum and Garfield counties. The MMWG formed due to concern for the Musselshell River watershed which was adversely affected due to several years of unusually low drought flows on the lower end of the Musselshell River. In June 2006, a letter from the MMWG was sent to the lower Musselshell property owners requesting interest and expressing need for water storage. They responded in favor of developing water storage.

The state of Montana and the people in eastern Montana recognize the importance of healthy and adequate water supplies to the state's rivers and lakes. The MMWG also recognizes the importance of a year-round flow in the lower Musselshell River for both area producers and the health of the Musselshell watershed.

This proposed water storage facility would store water during high flows and heavy runoff. The stored water would then be returned to the Musselshell River watershed in times of low flows, thus keeping the watershed healthy and flowing year-around. The water storage project would be in a reservoir in Butts Coulee, approximately four miles northeast of Melstone. The water for the reservoir would come by canal from the Musselshell River and be pumped into the reservoir by a pump/turbine system. The system would not only pump the water into the reservoir but would also generate electricity to offset pumping costs. The reservoir would have a capacity of 4,000 to 6,000 acre-feet. Approximately 2,000 to 2,500 acre-feet would be returned to the river in the irrigation season, leaving at least 1,500 to 4,000 acre-feet in the reservoir as a reserve and for possible recreational purposes.

Technical Assessment

Project Background

GCCD, in Jordan in Garfield County, is sponsoring this application for a grant to continue studies of a proposed water storage project in the Musselshell drainage. The purpose of the water storage project would be to strengthen agricultural resources, conserve water, provide a surface water recreation and fishing opportunity, generate electricity, and provide a potential municipal water source to Melstone. The water storage project would be owned and operated by the MMWG, a group of landowners/operators who own property along the Musselshell River in Petroleum and Garfield counties. The water storage project would store 4,000 to 6,000 acre-feet of water behind a dam located near Melstone in Musselshell County. Approximately 2,200 acres and 21 farms or ranches would be served by the water storage project.

Although details are not provided on the previously conducted screening, nine alternative dam sites were investigated. The number was narrowed down to three for more in-depth study. Butts Coulee was selected as the best dam location. Rejected locations may better achieve the project purpose, but the information provided in the application was not sufficient to determine if the best site was chosen. The application mentions that several design alternatives were reviewed for the Butts Coulee site including different dam heights, storage volumes, and means of getting water into the reservoir. The proposed water storage plan is to construct an approximately 60-foot high dam. The reservoir would be off-stream because the drainage area does not produce enough runoff to fill the reservoir. An approximately four-mile long supply canal with a capacity of 100 cfs would be used to fill the reservoir from a variety of sources. The water in the supply canal would be pumped into the reservoir by means of a pump/turbine. The pump/turbine would pump water when filling and generate power when water is released from the reservoir.

The Musselshell River near this project is chronically dewatered; the water storage project plans to capture high flow from the river and release the water during low flow. Diversion into the reservoir would occur from October through February, and during other high-flow periods.

Technical Approach

The scope of work for this grant application is unclear. The technical narrative states that the grant funds will be used to investigate and address the potential hurdles of water rights, cultural resources, right-of-way, legal issues, and financial arrangements. The financial narrative and project management plan also discuss hiring an engineer to continue with preliminary engineering construction plans, but this task is not listed in the technical narrative. Internal inconsistencies in the application make it unclear how the location and design alternatives already completed would be revisited based on the information gathered with the proposed tasks. The grant application did not consider alternatives to the tasks.

Reviewers expressed a number of concerns with the project. Water availability is not documented; even if water is available, obtaining water rights to fill the reservoir could be difficult. During winter ice could cause problems in the supply canal. Right-of-way must be obtained for both the canal and reservoir. Financial concerns are discussed under the Financial Assessment below.

The tasks listed in the application are not adequately defined to clarify exactly what would be accomplished under each task nor under what time-frame. The following is the list of tasks from the technical narrative (other sections of the application mention other tasks not included here).

Specific tasks to be accomplished:

- File a water right application with DNRC;
- Conduct a cultural resource survey;
- Conduct a geotechnical investigation;
- Negotiate with 3 land owners for right of way;
- Form a legal entity and negotiate terms of a loan.

In summary, the tasks described in the application address planning needs for the reservoir and canal construction project. Reviewers indicate that obtaining water rights is likely to be problematic, an adequate water supply may not be available, and the applicant's proposed funding package for the construction project is not feasible.

Project Management

GCCD has some experience managing grants, and will manage the grant for the MMWG. The MMWG watershed coordinator, identified as the project manager, will report and be directly responsible to the MMWG board of directors and the conservation district administrator. An engineering firm will be hired to complete the preliminary engineering plans and provide assistance to the project manager. Procurement is not discussed in the application.

Landowners, city and county officials, and local politicians provided a number of letters in support of this project. Several public meetings have been conducted regarding this project, and additional public meetings will occur during project planning and preliminary design.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$22,000	\$0	\$12,000	\$34,000
Professional & Technical	\$78,000	\$0	\$3,000	\$81,000
Construction	\$0	\$0	\$0	\$0
Total	\$100,000	\$0	\$15,000	\$115,000

A general cost estimate was provided for the tasks identified in the technical narrative based on other undefined projects. The reviewer could not determine on financial feasibility due to inadequate task description. The applicant's proposed funding package for the construction project may not be feasible.

Benefit Assessment

Resource benefits for this project would be in the potential for increasing water storage capacity resulting in resource conservation, and development. Because this is a planning project, all benefits would be indirect. If the project is built, excess water would be stored when available for release during low flow. A fishery and recreation reservoir would be created. A renewable energy source would be created. Water could be used as a municipal water supply for the town of Melstone. Low flows in the Musselshell River normally result in high levels of total dissolved solids (TDS); increased flows from release of stored water would help to decrease the high levels of TDS. The primary purpose of the reservoir would be for irrigation and the completed water storage project could allow an additional 2,200 acres of cropland to be developed.

Environmental Evaluation

This planning project would have no adverse effect on the environment. The planning would provide information for environmental assessment of the water storage project. A more in-depth environmental study would be conducted before initiation of reservoir construction.

Funding Recommendation

The DNRC does not recommend grant funding at this time. DNRC recommends reapplication when the applicant has (1) obtained water rights for the storage project, and (2) developed a feasible funding plan for construction and maintenance of the reservoir and canal.

Applicant Name	Greenfields Irrigation District (GID)
Project Name	Pishkun Enlargement Study
Amount Requested	\$ 100,000 Grant
Other Funding Sources	\$ 100,000 Applicant
Total Project Cost	\$ 200,000
Amount Recommended	\$ 100,000 Grant

Project Abstract (Prepared and submitted by applicant)

Since its irrigation facilities were constructed nearly 100 years ago, the Greenfields Irrigation District (GID) has lost significant water storage capacity due to sedimentation. Severe fire damage in the drainage basin during summer 2007 will likely cause significant additional sedimentation and loss of water storage in coming years. This loss is about 10,000 acre-feet and is projected to increase to nearly 20,000 acre-feet during the planning period of this application. GID wishes to pursue a solution to this problem that includes 26,000 acre-feet of additional storage.

The district will hire the U.S. Bureau of Reclamation (USBR) to evaluate the potential of increasing the storage in Pishkun reservoirs.

Technical Assessment

Project Background

The GID is west of Great Falls along the Sun River and began operation in 1913. Pishkun Reservoir, an off-stream water storage facility, and Gibson Reservoir are part of the GID. Over the years, natural sediment deposits in the storage reservoirs have reduced water volumes for irrigation and caused water shortages for GID irrigators. This study will evaluate Pishkun Reservoir for possible enlargement to address the water shortages. This study was the only alternative addressed in the application.

Technical Approach

Enlarging Pishkun Reservoir was the preferred alternative. No other alternatives were explored that could be compared with the cost and scope of the proposed study.

Pishkun Reservoir is owned by the USBR. USBR policy requires the GID to fund and conduct the study. The study will consist of (1) a USBR review of reservoir operations, (2) seismic load tests, (3) hydraulic load tests, and (4) an engineering review of the dikes that impound the water to determine if it is safe to raise the dikes to increase impoundment capacity. An engineering firm will complete a detailed study delineating the area to be inundated and a risk assessment of reducing dike freeboard. A previous study indicated that significant additional investigation is needed to determine if the needed amount of water (26,000 acre-feet) is available within the basin and if GID has usable water rights. One technical reviewer

indicated that water availability and water rights issues must be addressed before starting the proposed study.

If funded, the study would begin in July 2009 and end by fall 2010.

Specific tasks to be accomplished:

- Contract with USBR;
- Contract with engineering firm;
- Conduct study; and
- Present study results to public.

Project Management

The GID will oversee and manage the project. The GID manager will oversee all phases of the project. The GID accountant will manage expenses and grant funding. The GID will contract with the USBR and an engineering firm to conduct the study. The GID will coordinate with the Sun River Watershed Group. If funded, the project is ready to begin in July 2009.

Financial Assessment

Budget Item	RRGL Grant	RRGL Loan	Match	Total
Administration	\$0	\$0	\$5,000	\$5,000
Professional & Technical	\$100,000	\$0	\$95,000	\$195,000
Construction	\$0	\$0	\$0	\$0
Total	\$100,000	\$0	\$100,000	\$200,000

The applicant provided a general estimate of project costs. Water availability, water rights, and associated costs should be addressed. Itemized costs exceed total project costs in the application by approximately \$14,000. Both issues should be addressed before contracting. No other alternatives were explored that could be compared with the cost and scope of the proposed study.

The applicant indicates GID serves 83,000 acres, but gives the cost per unit in acre-feet not per acre. The applicant states that GID could fund the entire study, but it would delay O&M and other GID projects. Matching funds are identified and secure. The DNRC grant would be used to pay for the USBR portion of the study.

Benefit Assessment

If the study were to result in enlargement of Pishkun Reservoir, the primary benefit to the renewable resource is potential development of 26,000 acre-feet of water for irrigation by impoundment in an off-stream storage reservoir in the Sun River Basin. The applicant lists that other benefits may accrue to fisheries and recreation, but no details are given. Economic benefits to GID irrigators are explained in detail in the application.

Environmental Evaluation

Minimal, short-term negative impacts to soil and vegetation may occur from bore hole drilling during the study. No long-term, negative impacts should occur. If the study results in enlargement of Pishkun Reservoir, an environmental assessment of on-site and downstream effects should be prepared before construction.

Funding Recommendation

The DNRC recommends no grant funding for this project. The project is owned by the US Bureau of Reclamation. No letter or other indication of support was received from the USBR. Water rights and water availability also have not yet been established.

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. 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 for 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. Loan applications are reviewed to determine financial, environmental, and technical feasibility as well as citizen and resource benefits.

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 percent 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. Recommendations are developed to be consistent with past direction provided by the Long-Range Planning subcommittee of the Legislature.

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, loan agreement is prepared and executed to make specific requirements and covenants with respect to the project being financed. Borrowers must acquire all property rights necessary for the project, including easements 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, bond reserve account, replacement and reserve 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.

Projects are closely monitored during construction for compliance with approval contract documents and the loan agreement.

The loan agreement requires an annual audited financial report for the life of the loan. 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 Loan Balances

Applicant	Balance Due	Applicant	Balance Due
Beaverhead County/Red Rock WSD	\$ 1,418,187	Forsyth, City of	\$ 153,562
Bitterroot Irrigation District	422,605	Fort Benton	314,882
Bozeman, City of	60,727	Gardiner Park Water District	30,216
Bozeman, City of	83,002	Huntley Irrigation District 1	737,138
Broadwater Power Project	14,885,000	Huntley Irrigation District 2	176,799
Buffalo Rapids Irrigation District	730,169	Huntley Irrigation District 3	64,705
Daly Ditches Irrigation District	276,375	Huntley Irrigation District 4	197,519
DNRC/State Water Projects Bureau	---	Hysham, Town of	115,529
Bair Dam	728,200	Lower Willow Creek Irrigation District	92,330
Broadwater-Missouri Pipespan	245,800	Malta Irrigation District	1,794,648
Deadman's Basin (Barber)	275,299	Miles City, City of	250,905
Deadman's Basin (Canal)	49,449	Mill Creek WSD	451,244
East Fork Rock Creek Dam	450,000	Sage Creek County Water District	293,285
Martinsdale Reservoir	87,122	Sanders County Water District - Noxon	24,286
Nevada Creek Dam Rehab	389,686	Sun Prairie SD	93,980
North Fork of the Smith River	382,274	Sun Prairie WSD	79,633
Petrolia Dam	209,456	Tin Cup WD	162,782
Dutton, Town of	44,326	Tongue River	8,692,308
Dutton, Town of	7,930	West Yellowstone, City of	25,459
East Bench Irrigation District	304,555	Wibaux, Town of	60,883
Flathead County	1,396,043	Total	\$ 36,258,298

Notes:

--- Not applicable

2009 Loan Recommendations

Bitter Root Irrigation District	Bitter Root Irrigation District Siphon 1, Phase 1	\$ 473,000
MT DNRC	Ruby Dam Rehabilitation	2,000,000
MT DNRC	Deadman's Basin Terminal Outlet Replacement	<u>400,000</u>
Total Loan Requests		\$ 2,873,000

Figure 5 Coal Severance Tax Loans / Water Development Public Loan Balances

Applicant	Balance Due
Antelope County Water and Sewer District	\$ 39,288
Cut Bank - North Glacier Water and Sewer District	<u>14,866</u>
TOTAL	\$ 54,154

Figure 6 Public Loans Authorized in 2003 and Seeking Reauthorization

Applicant	Amount	Rate
Sunset Irrigation District	\$1,465,266	Market-not to exceed 4.5%
Mill Creek Irrigation District	\$ 572,000	Market-not to exceed 4.5%

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 contacted Montana Rural Water Systems, Inc. (MRWS) to solicit projects from private drinking water systems. 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 for 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 those units, and submitted to the 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 are 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 the 1993 Legislature appropriated \$100,000 to DNRC to fund grants for private entities. Since 1993, with the exception of the 2003, 2005, and 2007 sessions, 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 or 5% of the total appropriation.

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. 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. Figure 7 lists the private grants that have been approved since October 2004.

FIGURE 7 Private Grant Applications Approved During 2007-2008

PROJECT SPONSOR	AMOUNT
James Hagenbarth	4,000.00
Dale Carpenter	2,750.00
Eugene Compton	<u>389.41</u>
TOTAL	\$ 7,139.41

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. 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.

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 applicant's financial strengths, weaknesses, and risk-taking ability. This also includes an evaluation of the security offered and a determination of DNRC's relative security position DNRC will have. All of the 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 RRGL program. The 1997 Legislature amended the statute to allow 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. The 2005 legislature amended the statute to raise the limits to \$400,000 for individuals and \$3 million for water user associations. 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 \$30 million to finance private loans. Changes made by the 1995 Legislature allow DNRC to have up to \$30 million of general obligation Renewable Resource bonds outstanding. Since the program's inception, bonds totaling about \$40 million have been issued to finance private loans. Presently, \$18.5 million in bonds is 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 4.03 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 is 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 percent 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 percent 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 RRGL 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 RRGL 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 July 1, 2008, 433 private loans had been approved under the RRGL program. A total of \$38,091,727 has been advanced, and \$1,316,000 is committed to projects that have not requested disbursements. Figure 8 lists the private loans that have been approved in FY 2007-2008. Loans have been used to finance projects involving new and refurbished irrigation systems, riprap, irrigation wells, canal siphon replacement, and refurbishing private drinking water systems.

FIGURE 8 Private Loan Applications Approved During 2007-2008

Contract Number	Loan Amount	Contract Number	Loan Amount
07-3505	\$ 61,500	07-3538	\$ 75,140
07-3506	25,000	07-3539	43,570
07-3508	103,455	08-3541	143,785
07-3509	191,450	08-3543	36,450
07-3510	91,430	08-3544	111,400
07-3511	310,365	08-3545	42,000
07-3512	70,000	08-3546	54,465
07-3513	46,700	08-3547	400,000
07-3514	183,652	08-3548	60,300
07-3515	115,000	08-3549	76,000
07-3516	25,000	08-3550	62,475
07-3517	103,455	08-3551	115,000
07-3518	55,895	08-3552	275,000
07-3519	100,000	08-3553	94,000
07-3520	90,000	08-3554	154,000
07-3521	220,000	08-3555	95,000
07-3522	31,545	08-3556	49,900
07-3523	130,000	08-3557	90,000
07-3524	38,000	08-3558	59,840
07-3525	176,300	08-3559	80,000
07-3526	156,375	08-3560	110,000
07-3527	92,000	08-3561	146,645
07-3528	200,000	08-3562	90,000
07-3529	47,665	08-3563	60,000
07-3530	81,400	08-3564	61,145
07-3531	41,000	08-3565	45,065
07-3532	118,040	08-3567	75,000
07-3533	144,560		
07-3534	48,000		
07-3535	66,220		
07-3536	90,585		
07-3537	30,000		
		Total	\$5,990,772

CHAPTER V

Irrigation Development Program

Background

The Irrigation Development program was initiated by the 1999 Legislature to foster development of new irrigation projects and production of high-value crops such as potatoes and sugar beets. Program staff provide financial, technical and legal assistance to government and private entities.

Grants typically ranging from \$2,000 to \$15,000 per project are available through this program. Project examples include installing test wells for irrigation, conducting feasibility studies on irrigation system improvements, or new irrigation projects, or providing information to the public, such as agriculture tours to educate producers on new technology.

The Irrigation Development program is now in its eighth year. The program has assisted producers and irrigators to develop over 32,000 acres of new irrigation and has played an important role in improving the management and conservation of over 150,000 acres of existing irrigation so that more water is available for all uses.

In Eastern Montana, Irrigation Development program staff provided funding and technical assistance to increase the number of acres used to plant barley, dairy feed and potatoes. The staff have also worked with the Fort Peck Tribes in their efforts to get the proposed Fort Kipp Irrigation Project up and running. This 2,200 acre project is expected to begin building in spring 2009 and will serve as a template for how the Tribes develop other new irrigation projects along the Missouri River over the next several decades.

Project Solicitation and Review

To request funds, applicants are required to describe the project, identify the sources and uses of funding, and discuss the implementation schedule for the study.

All applications submitted are evaluated for completeness and compliance with the intended purposes of the program. Requests for irrigation development funds are reviewed by DNRC staff and funded if appropriate, on a first come basis.

FIGURE 9 Irrigation Development Grants Awarded in FY 2008

Irrigation Development Grants Awarded in FY 2008		
Project Sponsor	Project	Amount
MT Salinity Control	Groundwater Impact	\$ 2,850
Fort Peck Tribes	Consultant work	10,000
Pondera County Canal & Reservoir	Product study	6,150
Richland County Conservation District	Sponsor the Mon/Dak Agriculture Show	5,500
Lazy AM Ranch	Test well	5,000
Fort Peck Tribes	Surface owner information	3,500
Pondera County Canal and Reservoir	GIS information	15,000
Buffalo Rapids Project	GIS information	15,000
Clinton Irrigation District	Survey Main Canal	9,000
Warren Johnson	GIS information	4,850
Garfield County	Water storage project	11,000
Chester Irrigation Project	Irrigation efficiencies	5,000
Helena Valley Irrigation District	Ditch lining study	5,000
Sun River Watershed Group	GIS information	15,000
Delphia Melstone Canal Water Users	Siphon liner	5,000
Eastern Plains Resource Conservation and Development	Mapping project	13,750
Richland County Conservation District	Groundwater studies	11,000
Raglands	Reserved Water	300
Paradise Valley	GIS information	7,100
	Total	\$150,000
Irrigation Development Grants Awarded in FY 2009 To Date		
Project Sponsor	Project	Amount
Eastern Plains Resource Conservation and Development	Sponsor the Mon/Dak Agriculture Show	\$ 5,500
Flathead Joint Board of Control	Construct flumes	6,000
Gordon Bradley	Test Well	10,000
Kjeld Jonnson	Test Well	10,000
Crane Creek Ranch	Test Well	10,000
Helena Valley Irrigation District	GIS Application	10,000
Pondera County Canal & Reservoir	GIS Application	10,000
	Total	\$ 61,500

CHAPTER VI

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:

- Description of the problem;
- Statement of when the problem occurred;
- 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 manage renewable resources in the state through conservation, development 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 \$100,000 for emergency grants. DNRC will again request \$100,000 during the 2009 session to fund emergency grants for fiscal years 2010 and 2011.

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 Fiscal Years 2008 and 2009

Each emergency grant request submitted during fiscal year 2008 and fiscal year 2009 to date was reviewed by DNRC staff. Staff provide the DNRC director with a recommendation. The director approves or denies the request. Total funding for all emergency grants may not exceed the legislative biennial appropriation for emergency projects under the Renewable Resource Grant and Loan program. Per biennium, \$10,000,000 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 2007 and 2008.

Authorized Emergency Grant Projects

In 2007, the Legislature authorized \$100,000 for emergency grants. During the 2008-2009 biennium to date, the following emergency projects have been funded:

Town of Brockton	\$30,000
Emergency Water System Improvements	
August 2007	

In February 2007, a water main connecting Brockton's drinking water supply with its storage reservoir and distribution system ruptured beneath the Burlington Northern Santa Fe Railroad tracks. An emergency temporary repair was immediately made, but the Railroad required that a permanent cased line be installed prior to November 1, 2007 at an estimated cost of \$102,000.

Helmville School District No. 15	\$10,000
Emergency Water System Improvements	
March 2008	

In February 2008, the Helmville school district received an administrative order from the Department of Environmental Quality (DEQ) giving it 60 days to design and have in operation a disinfection system for its water well. Water samples from the well had repeatedly exceeded total coliform limits for several months. An emergency grant in the amount of \$10,000 was awarded to offset the \$14,000 project cost.

**Daly Ditches Irrigation District
Hedge Canal Emergency Dike Repair Project
August 2008**

\$20,000

In July and August 2008, the dike between the Hedge Canal and the Bitterroot River failed structurally due to seepage in two locations. Repairs consisting of dike reconstruction and canal lining costing approximately \$60,000 were made by the district following each failure incident. An emergency grant in the amount of \$20,000 was awarded to offset the \$60,000 project cost.

CHAPTER VII

Summary of Grants to Public Entities, October 2006-September 2008

The status of all projects authorized October 2006 through September 2008 is reported here. Project status is reported in four categories: completed, active, authorized but not executed, and terminated.

Grant Projects Completed Since October 1, 2006

Beaverhead Conservation District Hagenbarth Ditch Improvements Project RRG-08-1300

The Beaverhead Conservation District received a \$100,000 grant in 2007 for construction of improvements to the Hagenbarth Ditch, an irrigation canal that parallels the Big Hole River between Melrose and Glen. The project was a priority of the Big Hole Watershed Committee and one of several projects designed to protect and enhance the Big Hole watershed. The project was constructed in late winter and early spring 2008, and all grant funds have been disbursed.

Broadview, Town of Broadview Water Supply Study RRG-06-1280

A \$99,997 grant was awarded by the 2005 Legislature. The grant was for a study to determine if a viable water supply could be found for the Town of Broadview. The project compiled existing hydrogeologic data and conducted an inventory of existing water supply wells and springs in the area. Test drilling and well construction then took place. Adequate water quality and quantity were found in one well. The project was completed in summer 2007.

Buffalo Rapids Irrigation District Improving Irrigation Efficiency and Water Quality RRG-06-1253

A \$100,000 grant was authorized by the Legislature in 2005. A grant agreement was executed in September 2005. The project purpose is to replace two lateral canals with pvc pipe and accompanying structures. The project was completed in December 2007. All \$100,000 of grant funds were disbursed.

Butte-Silver Bow Big Hole River Transmission Line Replacement RRG-06-1263

A \$100,000 grant was authorized in 2005 for replacement of water transmission line between the Big Hole River and the Feeley Water Treatment Plant for the community of Butte's water supply. A grant agreement was executed in September 2005. The project was completed in January 2007.

Cascade, Town of Water System Improvements Project RRG-06-1268

The Town of Cascade received a \$100,000 grant in 2005 for construction of a water storage reservoir and connecting transmission main. The project was completed in 2007, and all grant funds have been disbursed.

Charlo Sewer District Wastewater Treatment and Collection RRG-05-1236

A \$100,000 grant was authorized by the Legislature in 2001. A grant agreement was executed in September 2004. Funds were used to build a new lift station, construct a new aerated lagoon system with storage, construct a wetland, and construct an ultraviolet tertiary treatment facility. The collection

main from town to the new lift station was also replaced. There were delays caused by site acquisition and a change in discharge permit parameters which required a change in the preliminary engineering review. Construction is complete and all grant funds have been disbursed.

**Choteau, City of
Water System Improvements Project
RRG-06-1246**

The City of Choteau received a \$100,000 grant in 2005 for construction of water system improvements. Major improvements include a new pumping facility at Richem Spring and the replacement of approximately 60% of the distribution system. Bid early in 2006, the project is complete and in operation. All grant funds have been disbursed.

**Circle, Town of
Wastewater System Improvements Project
RRG-06-1262**

The Town of Circle received a \$100,000 grant in 2005 for wastewater system improvements including a lift station, collection system replacement, and a reconstructed treatment lagoon. Due to funding limitations, the project is being constructed in two phases. RRGL funding is being used for lift station replacement and the replacement of 2,000 feet of collection system piping. Bid in July 2006, this portion of the project is complete and all grant funds have been disbursed.

**Conrad, City of
Raw Water Intake and Pump Station Improvements Project
RRG-06-1264**

A \$100,000 grant was authorized in 2003 for design and construction of a new intake and intake backwash, a new pump station and wet well, an intake line and transmission line, and extension of an overhead power line. The project was done in three phases. Phase 1 was design and construction of the Lake Frances intake, Phase 2 was design and construction of the transmission line, and Phase 3 was design and construction of the pump station. The project was substantially complete in late 2006. A final report was submitted in April 2007.

**Dodson, Town of
Wastewater System Improvements Project
RRG-06-1266**

In 2005, the Town of Dodson received a \$100,000 grant for design and construction of a new wastewater treatment lagoon. The project bid during summer 2006, and work began in September. Construction was completed in 2007 and all grant funds have been disbursed.

**Ennis, Town of
Wastewater System Improvements Project
RRG-07-1284**

The Town of Ennis received a \$100,000 grant in 2005 for wastewater system improvements. Included are a new outfall structure in the Madison River; sludge removal and disposal from an abandoned lagoon cell, and an ultraviolet tertiary treatment facility. Tertiary treatment is required to comply with current surface water discharge criteria. The project bid in September 2006, and work began in October. Construction is complete and all grant funds have been disbursed.

**Flathead Basin Commission
Ashley Creek Headwaters Restoration
RRG-04-1219**

A \$99,700 grant agreement was authorized in 2003 for restoration activities including: revegetating riparian zones, fencing riparian areas, implementing grazing management plans, making channel improvements, installing water gaps, reinforcing critical fish barriers for the cutthroat trout, installing brush bundles, stabilizing stream banks, regenerating aspens, project monitoring, oversight, and producing a feasibility report on potential road relocations and building. The project was completed in spring 2007.

**Fort Belknap Irrigation District
Sugar Factory Lateral Project Phase 1
RRG-05-1231**

A \$100,000 grant was authorized in 2003 for the improvements to the Sugar Factory Lateral. The project was contracted in July 2004. The project was for design and installation of corrugated HDPE pipeline to enclose the Sugar Factory Lateral that borders Chinook and to conduct an assessment of seepage losses in canals throughout the district. The seepage study was completed. The construction of Phases 1 and 2 took place simultaneously and was bid in spring 2006. The project was completed in fall 2007. All grant funding was expended.

**Fort Belknap Irrigation District
Sugar Factory Lateral Project Phase 2
RRG-06-1249**

A \$100,000 grant was authorized in 2005 for Phase 2 of improvements to the Sugar Factory Lateral, including: design and construction of corrugated HDPE pipeline to enclose the Sugar Factory Lateral that borders Chinook; design and construction of inlet and discharge structures with bar grating; installation of two irrigation turnouts; and reclamation of the site. A grant agreement was executed in July 2005. The construction of Phases 1 and 2 took place simultaneously and was bid in spring 2006. The project was completed in fall 2007. All grant funding was expended.

**Gallatin Local Water Quality Protection District
A dedicated Monitoring Well Network for the Gallatin Valley
RRG-04-1225**

A \$50,000 grant was authorized in 2003. A grant agreement was executed in May 2004. Funds were used to drill and construct groundwater-monitoring wells. These new wells, in conjunction with existing wells monitored by MBMG, created a dedicated monitoring network for the Gallatin Valley. Also, funds were used to collect water quality samples and measure initial water levels to establish baseline data for the new well sites. As part of this grant project, a long-term monitoring plan for the well network was developed in cooperation with MBMG. The project was completed and closed out in spring 2007.

**Gardiner-Park County Water District
Water System Improvements Project
RRG-06-1243**

In 2005, the Gardiner-Park County Water District received a \$100,000 grant for construction of a new water treatment plant designed to remove arsenic from the system's groundwater supply. Bid early in 2006, the project is complete and in satisfactory operation. All grant funds have been disbursed.

**Hysham Irrigation District
Streambank Stabilization to Protect Irrigation Intake
RRG-04-1226**

A \$50,000 grant was authorized by the Legislature in 2003. A grant contract was executed in June 2004. The project purpose was to install structures to stabilize and protect the stream bank at the irrigation system intake. The project was completed in November 2006. The full \$50,000 in grant funds were disbursed.

**Jefferson Valley Conservation District
Jefferson River Restoration
RRG-06-1250**

A \$95,468 grant was authorized in 2005 for restoration projects in the Jefferson River watershed. A grant agreement was executed in July 2005. Included in the project were: watershed coordination, an irrigation efficiency project with installation of soil moisture monitoring equipment; drought planning; the design and implementation of a bank stabilization project; and a sediment and stream morphology project as an ongoing study of stream channel and riparian health. This project was completed in spring 2007 and all grant funding was expended.

**Laurel, City of
Wastewater System Improvements Project
RRG-06-1261**

In 2005, the City of Laurel received a \$100,000 grant for replacement of wastewater system collection piping to alleviate a problem with shallow groundwater infiltrating the collection system and overloading the treatment facility. The project bid late in summer 2006 with construction scheduled for late 2006 and 2007. The project is complete and all grant funds have been disbursed.

**Liberty County Conservation District
Chester Sprinkler Irrigation Project
RRG-06-1260**

A \$100,000 grant was awarded in 2005 for development of a PER for a sprinkler irrigation development project in Liberty County covering approximately 20,000 to 40,000 acres of farm land. The project was completed in January 2007. All grant funding was expended.

**Malta Irrigation District
Replacement and Modification of Check Structures
RRG-04-1205**

A \$100,000 grant was authorized in 2003 for replacement of check structures within the district. The project was contracted in July 2004, and work on the new check structures began in fall after irrigation season. The district replaced 34 check structures. The project was completed in December 2007.

**Manhattan, Town of
Wastewater System Improvements
RRG-06-1273**

A \$100,000 grant was authorized in 2005. A grant agreement was executed in October 2006. The grant was awarded as Phase 2 of upgrades to Manhattan's wastewater system. This contract was specifically for replacement of the facultative lagoons providing wastewater treatment for Manhattan with a new mechanical wastewater treatment plant. The project was completed in fall 2008 and all grant funds were expended.

**Milk River Irrigation Project Joint Board of Control
Halls Coulee Siphon Repair Project
RRG-07-1291**

The 2005 Legislature authorized a grant for \$100,000 to the Milk River Joint Board of Control for repair of the Halls Coulee siphon. Siphon repair consisted of replacing five leaking expansion joints, two on the left barrel and three on the right barrel, and four failed concrete saddle supports. The project was completed in fall 2008 and all funds were disbursed.

**Missoula County
Mullan Road Corridor Sewer Project-Phase I
RRG-04-1197**

In 2003, the county received a \$100,000 grant authorization for design and construction of a wastewater collection system to complete centralized sewer service in the Mullan Road area west of Reserve Street in Missoula. Project construction was completed in 2005, and all grant funds have been disbursed.

**Montana Department of Agriculture
Monitoring Well Network to Assess Ag Chemicals
RRG-04-1210**

A \$100,000 grant was authorized by the Legislature in 2003. A grant agreement was executed in September 2003. The project purpose was to drill new wells to assess agricultural chemical presence. The project was completed in June 2006. In total \$100,000 in grant funds were disbursed.

**Montana Department of Corrections
Rehabilitation of Prison Ranch Dam
RRG-04-1216**

In 2003, the Montana Department of Corrections received an \$80,000 grant for construction of a new spillway and stilling basin at Upper Taylor Dam, a high hazard earthfill dam on the prison ranch west of Deer Lodge. Work has been in progress since 2003, with labor and equipment being provided by prison inmates and students from the Anaconda Job Corps when they are available. The RRGL grant was used for spillway excavation and stilling basin construction. This portion of the project is complete and all grant funds have been disbursed.

**Montana Department of Natural Resources and Conservation
Deadman's Basin Supply Canal Rehabilitation Project
RRG-06-1254**

In 2005, the DNRC State Water Projects Bureau received a \$100,000 grant to hire a consultant to identify critical components of the Deadman's Basin Supply Canal and prepare an engineering report. The report was prepared and critical items of work were constructed in 2005. Included were structure replacement and improvements and canal lining to protect embankments from saturation failure and alleviate seepage. All grant funds have been disbursed.

**Montana Department of Natural Resources and Conservation
Martinsdale North Dam Riprap Project
RRG-06-1244**

In 2005, the DNRC State Water Projects Bureau received a \$100,000 grant to riprap the face of Martinsdale North Dam to prevent erosion that has resulted in periodic clogging of the dam's outlet conduit. The project bid in September 2006 and construction is complete. All grant funds have been disbursed.

**Montana Department of Natural Resources and Conservation
Martinsdale Outlet Canal Drop Structure Replacement Project
RRG-06-1257**

In 2005, the DNRC State Water Projects Bureau received a \$100,000 grant for replacement of drop structures in the Martinsdale Outlet Canal. The project is complete and all grant funds have been disbursed.

**Power Teton County Water and Sewer District
Water System Improvements
RRG-05-1232**

A \$100,000 grant was authorized in 2003 for design and construction of a water distribution system, a pre-sedimentation basin, and a new steel water tank. The project was contracted in August 2004. The project was completed in December 2006.

**Pablo-Lake County Water and Sewer District
Wastewater System Improvements Project
RRG-05-1234**

In 2003, the district received a \$100,000 grant for design and construction of an expansion to its existing wastewater treatment lagoon. The expansion project includes the construction of additional treated wastewater storage cells and expansion of the treated wastewater spray irrigation area. The project is complete and all grant funds have been disbursed.

**Panoramic Mountain River Heights County Water District
Water System Improvements Project
RRG-08-1306**

Located near Kalispell in Flathead County, Panoramic Mountain River Heights County Water District received a \$100,000 grant in 2007 for construction of a new well and replacement of the water distribution system. The project was constructed during summer 2008 and all grant funds have been disbursed.

**Richland County Conservation District
Groundwater Study
RRG-04-1217**

A \$50,000 grant was authorized by the Legislature in 2003. A grant agreement was executed in December 2003. The project purpose was to study the potential for groundwater use in the Lower Yellowstone River Valley. The project was completed in June 2008. The full \$50,000 of grant funds were disbursed.

**Roosevelt County Conservation District
Fort Peck Irrigation Water Quality and Quantity, Phase I
RRG-06-1276**

A \$100,000 grant was authorized in 2005 for improving water quality and quantity on the Fort Peck Irrigation Project by cleaning and shaping drain ditches in the district. A grant agreement was executed in July 2006. Approximately three miles of drain ditch were cleaned and shaped. The project was completed in fall 2007.

**Ryegate, Town of
Water System Improvements
RRG-05-1237**

A \$100,000 grant was awarded in 2003 for design and construction of water source improvements, distribution system improvements, and installation of water meters. The project originally involved drilling two new wells for a water supply, but the wells did not produce the quantity or the quality of water needed. The project was phased and Phase 1 was the design and construction of an infiltration gallery. Phase 2 included improvements to the distribution system and water meters. The project was completed in spring 2008.

**City of Scobey
Wastewater System Improvements
RRG-04-1209**

A \$100,000 grant was authorized by the Legislature in 2003. A grant agreement was executed in August 2003. The project purpose was to upgrade city wastewater facilities. The project was completed in December 2007. The full \$100,000 of grant funds were disbursed.

**Spring Meadows County Water District
Water System Improvements Project
RRG-06-1267**

In 2005, the Spring Meadows County Water District, northwest of Missoula, received a \$100,000 grant for construction of water system improvements including a new storage reservoir, a replacement well, and minor distribution system improvements. The project bid in 2006, but all bids exceeded the budget for the project. The project was redesigned to include a steel storage reservoir instead of concrete in an effort to reduce construction costs. The project has been successfully bid and constructed, and all grant funds have been disbursed.

**Three Forks, City of
Wastewater System Improvements Project
RRG-08-1293**

The City of Three Forks received a \$100,000 grant in 2007 for construction of wastewater system improvements. The project was phased for construction, and the RRGL grant was used to rehabilitate the existing wastewater collection system using "cured-in-place" pipe lining technology. This phase of the project is complete and all grant funds have been disbursed.

**Troy, City of
Water System Improvements Project
RRG-05-1235**

In 2003, the city received a \$100,000 grant for construction of a new water well, construction of a new water storage reservoir, and distribution system improvements including water meters at each service connection. The project was completed in 2007 and all grant funds have been disbursed.

**Upper/Lower River Road Water and Sewer District Phase 1
Water and Wastewater Systems Improvements Project
RRG-05-1233**

In 2003, this newly formed district that includes eight subdivisions and five mobile home parks adjacent to the City of Great Falls received a \$100,000 grant for design and construction of a new water system and a new wastewater collection system. A debt election by the district passed in 2004, and the project is complete. All grant funds have been disbursed.

**Valier, Town of
Wastewater System Improvements Project
RRG-06-1269**

In 2005, the Town of Valier received a \$100,000 grant for improvements to its wastewater collection system including manhole replacement and slip lining of existing deteriorated lines. The project bid in August 2006, and construction began in September. The project is complete and all grant funds have been disbursed.

**Whitefish, City of
Water System Improvements Project
RRG-06-1274**

The City of Whitefish received a \$100,000 grant for water distribution system improvements in 2005. The project consists of constructing a line under the Burlington Northern Railroad yard using trenchless technology, to provide system looping that will stabilize pressures and ensure a connection between the city's water treatment plant and the south portion of the community. The project was completed in fall 2007, and all grant funds have been disbursed.

**Wisdom-Beaverhead County Sewer District
Wastewater Treatment Facility Replacement Project
RRG-02-1168**

In 2001, the district received a \$100,000 grant to address floodplain issues and begin preliminary design of a new sewer lagoon for Wisdom. Additional funding for the project was obtained, and construction was completed in 2007. All grant funds have been disbursed.

**Yellowstone Irrigation District
Flow Measurement Project
RRG-06-1271**

A \$100,000 grant was authorized by the Legislature in 2005. A grant agreement was executed in October 2005. The project purpose was to install water measurement flumes in the system and conduct a structural evaluation of the river diversion structure. The project was completed in September 2008. In total \$100,000 in grant funds were disbursed.

Active Grant Projects

**Bainville, Town of
Wastewater System Improvements
RRG-08-1310**

A \$100,000 grant was authorized by the Legislature in 2007. A grant agreement was executed in April 2008. Design of a new sewage treatment lagoon for the community, as well as locating and replacing

leaking sewage collection lines, and disposing of sludge from the existing lagoon are planned. The system improvements will include a new, three-celled lined facultative lagoon, and replacement of approximately 2,000 linear feet of sewage collection main. Additional funding for the project has been obtained, and the project is currently in the design stage with construction scheduled to begin in 2009.

**Beaverhead Conservation District
Spring Creek Restoration Project, Phase 1
RRG-007-1292**

A \$100,000 grant was authorized in 2005 for restoration of the lower three miles of Spring Creek, a tributary to the Beaverhead River. The project was delayed until adequate match funding was obtained and a detailed work plan completed. A grant agreement was executed in July 2007. Through this grant, Beaverhead Conservation District is working with the Beaverhead Watershed Committee to restore the stream bank. The purpose of the project is to improve water quality, soil erosion, and fish habitat in Spring Creek. An environmental consultant was contracted in September 2008 develop a restoration design.

**Big Horn County Conservation District
Alluvial Aquifers in Northern Big Horn County
RRG-06-1272**

A \$100,000 grant was authorized in 2005 for assessment of alluvial aquifers in northern Big Horn County. A grant agreement was executed in October 2005. To date \$79,649 of grant funds have been spent on this project. The contract has expired and a final report and close out is expected by late 2008.

**Black Eagle Water and Sewer District
Water System Improvements
RRG-08-1335**

A \$100,000 grant was authorized by the 2007 Legislature to design and replace cast iron water mains, replace fire hydrants and valves, and replace all nonstandard water service lines to the property on these mains on Smelter Avenue in Black Eagle. The project was to be done in conjunction with a MT Dept of Transportation road replacement project of Smelter Avenue. The portion of Smelter Avenue that is the main street for Black Eagle will not be replaced until 2012. The district elected to move forward with the main replacement project because of rising costs. The project was bid and construction is slated for completion in fall 2008. The road will be temporarily patched and total road reconstruction slated for completion in 2012.

**Brady County Water and Sewer District
Wastewater System Improvements
RRG-08-1297**

A \$100,000 grant was authorized by the 2007 Legislature for the town of Brady to design and construct a new lagoon with spray irrigation, remove the sludge from the current lagoon and replace the entire collection system. The project was contracted in summer 2007. Design is nearing completion. To date, \$48,800 of grant money have been spent. The project is slated for completion in summer 2009.

**Buffalo Rapids Irrigation District
Canal Automation
RRG-06-1251**

A \$88,955 grant was authorized by the Legislature in 2005. A grant agreement was executed in September 2005. The purpose of the project is to design and construct a canal automation system which maintains water levels in the system. To date \$41,093 in grant funds have been spent. The project is 55% completed. An extension has been requested and will be granted to extend completion to December 2009.

**Buffalo Rapids Project District 1
Open Lateral 34.5 Conversion to Pipeline
RRG-08-1323**

A \$100,000 grant was authorized by the Legislature in 2007. A grant agreement was executed in August 2007. The purpose of the project is to replace a canal with a pipeline. To date \$90,000 have been spent. The project is 40% completed. An extension has been requested and will be granted to extend completion to December 2009.

**Buffalo Rapids Project District 2
Open Lateral 3.2 Conversion to Pipeline
RRG-08-1352**

A \$100,000 grant was authorized by the Legislature in 2007. A grant agreement was executed in May 2008. The purpose of the project is to replace an open ditch with a pipeline. To date \$70,865 have been spent. The project is 20% completed. Project completion is expected by December 2008.

**Bynum Teton County Water and Sewer District
A New Source of Drinking Water for Bynum, Phase 1
RRG-08-1295**

A \$100,000 grant was authorized by the 2007 Legislature for the community of Bynum to find water. The community contracted with the Montana Bureau of Mines and Geology to identify test drill sites; to drill test wells, and to report the findings from the test well drilling. Three test wells were drilled and one of the wells had sufficient quantity for the community. To date \$72,969 of grant money have been spent. The project is expected to be completed in summer 2009.

**Carbon Conservation District
Hydrogeology and Water Balance of the East/West Bench Aquifers, Phase 1
RRG-08-1341**

A \$100,000 grant was authorized by the 2007 Legislature to do a baseline study of the hydrogeology and water balance of the aquifers underlying the East and West Bench of Rock Creek near Red Lodge. This project was contracted in spring 2008. The project is expected to be completed in December 2009.

**Carter-Chouteau County Water and Sewer District
Water System Improvements
RRG-06-1245**

The 2005 Legislature authorized a \$100,000 grant to the community of Carter for water system improvements. Specifically, the water and sewer district will design and construct water distribution system improvements, water source improvements, and purchase and install water meters and arsenic treatment point of use devices on each service connection. Currently the water meters and point of use devices are being installed. The project is expected to be completed in early 2009.

**Columbia Falls, City of
Wastewater System Improvements Project
RRG-08-1353**

The City of Columbia Falls received a \$100,000 grant in 2007 for improvements to the wastewater treatment plant. The project is currently being advertised for bid with construction scheduled for fall 2008. No grant funds have been disbursed.

**Custer Area-Yellowstone County Water and Sewer District
Wastewater System Improvements Project
RRG-06-1264**

The Custer Area-Yellowstone County Water and Sewer District received a \$100,000 grant in 2005 for wastewater system upgrades. Included are collection system replacement, a new lift station, and lagoon system reconstruction. The project is substantially complete at the time of this report, and \$90,000 in grant funds have been disbursed.

**Cut Bank, City of
Water System Improvements Project
RRG-08-1360**

In 2007, the city received a \$100,000 grant authorization for water distribution system improvements. A grant agreement was executed in June 2008. The project will replace over 7,000 linear feet of old, heavily corroded cast iron water main, and includes replacement of valves, fittings and fire hydrants for the sections being renovated. The project will significantly improve fire flows to the downtown section of the city. Additional funding for the project has been obtained. Construction on the project has been delayed in order to coordinate water main replacement with a main street/highway repaving project which is scheduled for 2010.

**Darby, Town of
Water System Improvements Project
RRG-08-1356**

The Town of Darby received a \$100,000 grant in 2007 for improvements to its drinking water system. Due to funding limitations, the project has been phased for construction. Phase 1 of the project, consisting of a well and water storage reservoir, is scheduled for construction in 2009. No grant funds have been disbursed.

**Dawson County
Yellowstone River Floodplain Management
RRG-04-1221**

A \$75,000 grant was authorized by the Legislature in 2003. A grant agreement was executed in April 2004, and \$70,000 of the grant funds have been disbursed. Funds have been used to update floodplain regulations in Dawson County via the goal of adopting a new Flood Insurance Study. Work on a hydrological analysis, floodplain assessment, and floodplain delineation is complete. New flood hazard maps will be made covering 15 miles of the Yellowstone River in and around Glendive; this is the sole portion of the work plan which remains to be completed. A public participation and data adoption process will take place and the Flood Insurance Study and maps will be published and made available to the public; this is the portion of work for which the remaining \$5,000 of grant funds have been set aside. The project goal is to help county officials make informed floodplain management decisions about growth and development, and protect and preserve the natural resources of the floodplain itself. LiDAR (lazar radar), bathymetry, aerial photography, and other data have been obtained. With the exception of adopting and publishing the new maps, the project was substantially complete by December 2007. An amendment, extending the term of the grant to December 2009 was signed in late December 2007.

**East Bench Irrigation District
East Bench Irrigation District Canal Lining
RRG-08-1328**

The 2007 Legislature authorized a \$100,000 grant to the East Bench Irrigation District to line a portion of the main canal with 'pond guard' liner to reduce seepage loss. A contract was executed in fall 2007. The final engineering has been completed and the materials purchased. Construction is expected to take place in fall 2008 with completion by early 2009.

**Ekalaka, Town of
Water and Wastewater System Improvements Project
RRG-08-1314**

The Town of Ekalaka received a \$100,000 grant in 2007 to construct improvements to both its drinking water and its wastewater systems. The project is currently under construction with completion scheduled for late 2008. No grant funds have been disbursed.

**Elk Meadows County Water District
Water System Improvements Project
RRG-08-1334**

Elk Meadows County Water District received a \$100,000 grant in 2007 for construction of improvements to its drinking water system. The project is being completed in phases. Phase 1, consisting of a short

distribution line replacement, was completed early in 2008. Phase 2, consisting of a storage tank expansion and installation of water meters, is under construction with completion scheduled for late 2008. Phase 3, distribution system upgrades, is scheduled for 2009. The final phase, drilling of an additional well, has been delayed pending water rights acquisition; a firm construction date has not been established. No grant funds have been disbursed.

Fairfield, Town of
Wastewater System Improvements Project
RRG-06-1255

In 2005, the Town of Fairfield received a \$100,000 grant for wastewater collection system improvements and a new lagoon. Funding limitations have delayed the lagoon work; however, the project has been phased and rehabilitation of a critical section of the collection system outfall line has been completed with RRGL funding. To date, \$91,981.98 in RRGL grant funds have been disbursed.

Fergus Conservation District
Carter Pond Dam Rehabilitation Project
RRG-08-1326

In 2007, the Fergus Conservation District was awarded a \$100,000 grant to help fund rehabilitation of the Upper Carter Pond and Lower Carter Pond Dams north of Lewistown. Designed by Ducks Unlimited, the project consists of installation of new outlet works and major structural reconstruction on each of two earthfill dams. Construction is in progress with completion scheduled for November 2008. No grant funds have been disbursed.

Fort Peck Tribes
58 Main Replacement for Water Management
RRG-08-1327

A \$100,000 grant was authorized by the Legislature in 2007. A grant agreement was executed in October 2007. The purpose of this project is to remove a failing irrigation canal check structure and replace it with a Langeman gate. This project has been bid, an engineer contracted, and construction is due to be completed by December 2008. Zero grant dollars have been disbursed.

Fort Peck Tribes
Fort Peck D-4 Drain Water Conservation Improvements
RRG-08-1324

A \$100,000 grant was authorized by the Legislature in 2007. A grant agreement was executed in January 2008. The purpose of this project is construction of a riprap dam and holding reservoir for the purpose of water conservation. There has been no progress on this project and zero grant dollars have been disbursed. The grant agreement has been extended for another year.

Fort Shaw Irrigation District
Water Quantity and Quality Improvement Project
RRG-04-1213

An \$89,122 grant was authorized by the Legislature in 2003. A grant agreement was executed in October 2003. In total \$80,211 in grant funds have been spent. The purpose of the project is to improve facilities of the irrigation district to conserve water. The project is approximately 95% completed. Project completion is expected in December 2008.

Geyser Judith Basin County Water and Sewer District
Water System Improvements
RRG-08-1311

The 2007 Legislature authorized a \$100,000 grant for Geyser to drill a second back-up well. The 2003 legislature authorized a grant for \$100,000 for the first well. The first project well was delayed because the first well did not initially produce the amount of water expected or needed. The district worked with the Bureau of Reclamation and obtained funding to perform some rehabilitation on the well. This work took almost a year. The first well has been air fractured and now produces the water expected. The second well should be completed in fall 2008 with final completion in December 2008.

**Glacier Conservation District
Marias River Water Quality Improvements Project
RRG-08-1359**

In 2007, the Glacier Conservation District received a \$100,000 grant to fund planning, design, and construction of stream bank stabilization at two locations on the Marias River. The project is currently in the planning stages, with management being performed by the Liberty Conservation District. No grant funds have been disbursed.

**Glasgow Irrigation District
Vandalia Dam Improvements, Phase 3
RRG-08-1303**

The 2005 Legislature authorized a \$100,000 grant for the Glasgow Irrigation District to complete Phase III of repairs to Vandalia Dam. The project was contracted in spring 2008. Originally the project was to replace struts and walkways on the dam. An engineering study indicated that more the more immediate needs were to repair two dam gates and install a new seal on the gates and repair corroded concrete on the surface of the dam. The project is expected to be completed by December 2009.

**Goodan-Keil County Water District
Water Improvement Project
RRG-08-1318**

The 2007 Legislature authorized a \$100,000 grant to the Goodan-Keil Water District to construct a new concrete storage tank; convert the booster pump station to three-phase power; replace old well field and transmission piping; and install seven new fire hydrants and new water meters. This project was contracted in spring 2007. Construction began in late summer 2008 and the project is slated for completion by December 2008.

**Greenfields Irrigation District
Irrigation System Improvements Project
RRG-08-1332**

The Greenfields Irrigation District received a \$100,000 grant in 2007 to construct two pumping facilities. Irrigation wastewater currently being lost to the system will be returned to main canals for reuse when the project is complete. The project is scheduled for construction in fall 2008 and 2009. No grant funds have been disbursed.

**Green Mountain Conservation District
Crow Creek Restoration Project 2007
RRG- 08-1313**

The Crow Creek restoration project was the restoration of approximately ½ mile of Crow Creek to a more proper functioning channel. The contract was signed and the construction portion of the project was completed in fall 2007. Monitoring is continuing. It is expected that the project will be completed in 2009.

**Hamilton, City of
Wastewater Treatment Plant Improvements Project
RRG-08-1343**

The City of Hamilton received a \$100,000 grant in 2007 for construction of upgrades to its wastewater treatment plant. The project is currently being designed and is scheduled for construction in 2009. No grant funds have been disbursed.

**Hamilton, City of
Wastewater Treatment Plant Improvements Project
RRG-08-1343**

The City of Hamilton received a \$100,000 grant in 2007 for construction of upgrades to its wastewater treatment plant. The project is currently being designed and is scheduled for construction in 2009. No grant funds have been disbursed.

**Hill County
Beaver Creek Dam Stabilization Project
RRG-08-1354**

Hill County received a \$100,000 grant in 2007 for construction of safety improvements to Beaver Creek Dam. A project consisting primarily of structural modifications, including a toe berm to augment stability, is currently in design with construction scheduled for 2009. No grant funds have been disbursed.

**Hysham Irrigation District
Hysham Main Ditch Improvement
RRG-08-1331**

A \$100,000 grant was authorized by the 2007 Legislature. A grant contract was executed in October 2007. The project purpose is to line and raise canal banks on sections of the main canal to increase conveyance efficiency. In total \$15,500 in grant funds have been spent. The project is approximately 30% completed. Project completion is expected by December 2009.

**Judith Basin County
Geyser Water System Improvements
RRG-04-1195**

The 2003 Legislature authorized a \$100,000 grant for the community of Geyser to drill a new well. This well was delayed because it did not initially produce the amount of water expected or needed. The district worked with the Bureau of Reclamation and obtained funding to perform some rehabilitation on the well. This work took almost a year. The first well has been air fractured and now produces the water expected. This project is expected to be completed by December 2008.

**Jordan, Town of
Wastewater System Improvements
RRG-08-1302**

The 2007 Legislature authorized a \$100,000 grant to Jordan for a wastewater system improvements project. This project includes design and construction of a three-cell facultative lagoon system, construction of a lift station with submersible pumps, construction of a new control building, and replacement of 1,500 lineal feet of collection pipe. The project was contracted in summer 2007. The project was bid in summer 2008 and construction will start in the fall. It is slated to be complete in spring 2009.

**Lewis and Clark Conservation District
Florence Canal Rehabilitation Project
RRG-06-1275**

The 2005 Legislature authorized a \$100,000 grant for rehabilitation of the Florence Canal. Repair of the flume has been completed and initial ditch lining has been completed. When the ditch work was done, it was apparent to the engineer that many of the culverts initially slated for replacement did not need to be replaced. The contract was amended and the conservation district will use the money slated for culvert replacement for more ditch lining. The project is slated for completion by December 2008.

**Lewis and Clark County
Lewis and Clark Fairgrounds, Dunbar Area Water System Improvements
RRG-08-1299**

The 2007 Legislature authorized a \$100,000 grant for water system improvements to the Lewis and Clark Fairgrounds/Dunbar area in Lewis and Clark County. The project was contracted in 2007 and is presently in construction. The project is slated for completion in December 2008.

**Libby, City of
Cabinet Heights Wastewater System Improvements Project
RRG-08-1305**

In 2005, the City of Libby received a \$100,000 grant for construction of a wastewater collection system in the Cabinet Heights subdivision, a recently annexed area that currently relies upon on-site wastewater

disposal. Acquisition of federal funding has delayed the project; however, funding has now been awarded and project development is proceeding. Construction is expected to occur in 2009.

Livingston, City of
Glass Pulverizer Purchase and Installation Project
RRG-08-1337

The City of Livingston was awarded a \$100,000 grant in 2007 to purchase and install a glass pulverizer. The pulverizer will be used to process glass currently being disposed of in the landfall into small pieces usable as a gravel substitute for road construction, pipe bedding, and other applications. Equipment is being fabricated and construction is expected to be complete by the end of 2008. No grant funds have been disbursed.

Livingston, City of
Livingston Flood Damage Reduction Study
RRG-06-1265

A \$100,000 grant was awarded to the City of Livingston by the 2005 Legislature for a flood damage reduction feasibility study. The city contracted with the Army Corps of Engineers to complete the study. The study was delayed because of lack of Corps matching funds. The city requested an amendment to the original contract in summer 2008. The city hired a consultant to review what the Corps had completed to that point. The city then requested that the grant money be spent on a consultant to complete the feasibility study that the Corps started and to provide a recommended alternative to the city. It is expected that the project will be complete by December 2008.

Manhattan, Town of
Water System Improvements
RRG-08-1364

A \$100,000 grant was authorized by the 2007 Legislature. The grant was authorized for water system improvements including design and construction of two new storage tanks, back-up power with automatic transfer capabilities, telemetry system, fencing around the chlorination house, and water meters with backflow prevention devices. The project's scope was scaled back in 2008 because of water rights issues and related tank construction. The project was contracted in 2008 for installation of water meters, backflow prevention devices, a fence around the chlorination house, and back-up power. The project is presently in construction with completion slated for December 2009.

Lower Yellowstone Irrigation Project
Canal Control Project
RRG-06-1278

A \$100,000 grant was authorized by the Legislature in 2005. A grant agreement was executed in March 2006. The project purpose is to install automatic check structures in the main canal. To date \$25,853 of grant funds have been spent. The project is 15% completed. The sponsor has been contacted and will likely request a completion extension. Project completion was expected by December 2008.

Milk River Irrigation Project Joint Board of Control
Saint Mary Canal, Drop 3 Plunge Pool Concrete Repair
RRG-08-1363

A \$100,000 grant was authorized by the 2007 Legislature to the Milk River Joint Board of Control for repair of St. Mary's canal drop structure 3. The project was contracted in summer 2008. US Bureau of Reclamation is completing the design and data collection portion of the project and will be responsible for construction bids. The scope of work includes installation of a new chute terminal wall and repair of training walls, wingwalls, and floor. The project will likely be completed by December 2009.

Mill Creek Irrigation District
Mill Lake Dam Rehabilitation Project
RRG-04-1204

In 2003, the district received a \$100,000 grant for construction of spillway, outlet works improvements, and seepage abatement for Mill Lake Dam, a high hazard dam located in the Bitterroot-Selway

Wilderness Area west of Hamilton. Preliminary and final engineering was completed in 2005, and a portion of the work was completed that year. Outlet works improvements were made in 2007. Sealing of the upstream face of the dam and spillway improvements are scheduled for construction during the summer and fall 2009. To date, \$95,000 of the grant funding have been disbursed.

Missoula, City of
Rattlesnake Neighborhood Sewer Collection System
RRG-04-1206

In 2003, the City of Missoula received a \$100,000 grant for design and construction of a wastewater collection system to complete centralized sewer service in the lower Rattlesnake area. The project became the focus of citizen protests and legal action against the city, prompted by the alleged failure of the city to allow public participation during the planning and environmental review stages of the project. Although the project was delayed, it is being constructed in phases, and the lawsuit has been dismissed. No grant funds have been disbursed.

Missoula County
Grant Creek Restoration and Flood Mitigation
RRG-08-1304

The 2005 Legislature authorized a \$100,000 grant to Missoula County to reduce surface and groundwater flood problems, improve fish passage and habitat, and improve recreational opportunities. This grant was contracted specifically to address construction of an inlet structure, installation of the bypass pipeline, construction of a discharge structure, and restoration of the site. The grant is expected to be completed by December 2009.

Missoula County Lolo RSID
Lolo Wastewater System Improvements
RRG- 08-1348

A \$100,000 grant was authorized by the 2007 Legislature for wastewater system improvements for the community of Lolo. The project purpose is to upgrade the county's Lolo wastewater system facilities by adding an open channel UV disinfection system. The contract was executed in late August 2008. No funds have been expended yet on this project.

Montana Department of Environmental Quality
Geothermal Assessment and Outreach Partnership
RRG-08-1308

A grant for \$99,963 was authorized in 2007 to inventory and study selected geothermal sites in Montana for development potential as a source of renewable energy. A grant agreement was executed in September 2007. No funds have been dispersed to date.

Montana Department of Natural Resources and Conservation
Ackley Lake Dam Rehabilitation Project
RRG-08-1322

DNRC's Water Resources Division received a \$100,000 grant in 2007 for construction of improvements to the outlet works, spillway, and drains for Ackley Lake Dam southwest of Hobson. The project bid late summer 2008 and is scheduled for completion late in 2008. No grant funds have been disbursed.

Montana Department of Natural Resources and Conservation
Community Tree Planting
RRG-08-1320

The 2007 Legislature awarded the DNRC Forestry Division a \$100,000 grant for community tree planting. To date, \$35,493.86 have been expended. The project is set to be completed in June 2009.

**Montana Department of Natural Resources and Conservation
East Fork Siphon Replacement Project
RRG-08-1307**

DNRC's Water Resources Division received a \$100,000 grant in 2007 for replacement of a buried siphon downstream from East Fork Dam in Granite County. The project is currently under construction with completion scheduled for late 2008. No grant funds have been disbursed.

**Montana Department of Natural Resources and Conservation
Frenchman Dam Rehabilitation Study
RRG-06-1248**

The 2005 Legislature authorized a \$100,000 grant for a study on rehabilitation of Frenchman Dam. A grant agreement was executed in June 2005. The project entailed a background data review, geotechnical investigation, flood hydrology study, analysis of firm annual yield, and evaluation and development of various spillway designs. The project is 95% complete. All grant funds have been expended. A final report is due by December 2008.

**Montana Department of Natural Resources and Conservation
Middle Creek Dam Early Detection and Warning System
RRG-08-1319**

DNRC's Water Resources Division received a \$100,000 grant in 2007 for design and installation of a remote early detection and warning system for Middle Creek Dam, an earthfill high-hazard dam approximately 15 miles south of Bozeman on Hyalite Creek. The system has been designed and materials have been purchased by DNRC. Installation is scheduled for late 2008. To date, \$41,326 in RRGL funding have been disbursed.

**Montana Department of Natural Resources and Conservation
Smith Creek Canal Rehabilitation Project
RRG-08-1338**

DNRC's Water Resources Division received a \$100,000 grant in 2007 for reshaping and lining portions of the Smith Creek Canal, one of two feeder canals to Nylan Reservoir west of Augusta. The project has been advertised for bid with construction scheduled for fall 2008. No grant funds have been disbursed.

**Montana State University
Channel Response Assessment for the Upper Blackfoot
RRG-08-1296**

A \$100,000 grant was authorized in 2007 to study the response of stream channels and floodplain of the Upper Blackfoot River to Mike Horse Dam rehabilitation activities. The project is approximately 65% complete, and \$67,029.18 have been dispersed.

**Montana State University
Four Corners Surface and Groundwater Study
RRG-06-1242**

A \$99,618 grant was authorized by the 2005 Legislature to collect hydraulic data necessary to numerically model groundwater-surface water interaction in the four Corners area and to establish monitoring which can be used to assess the response of groundwater to precipitation, irrigation, and river stage. The project was delayed because of staff turnover. A final report is currently being written and the project will be complete in December 2008.

**Neihart, Town of
Water System Improvements Project
RRG-08-1355**

The Town of Neihart received a \$100,000 grant in 2007 to replace the drinking water main between the system's treatment plant and the town's distribution system. The project is currently being designed with construction scheduled for 2009. No grant funds have been disbursed.

**North Powell Conservation District
Blackfoot Drought and Water Conservation Project
RRG-08-1325**

The 2007 Legislature authorized a \$100,000 grant to the North Powell Conservation District to increase water conservation through the improved performance of pivot systems. North Powell Conservation District and the Blackfoot Challenge will complete irrigation pivot system energy and maintenance evaluations on 25 pivots systems. A contract has been executed and energy audits were completed on a number of systems this past summer. The project is scheduled to conclude in July 2009.

**North Valley County Water and Sewer District
Water System Improvements
RRG-08-1361**

The 2007 Legislature authorized a \$100,000 grant to the North Valley Water and Sewer District. DNRC asked the district to consider hooking into the North Central Regional Water System as rural customers. This alternative was not considered in the original PER. The community chose to move forward with the project as originally proposed. The project was contracted in summer 2008 and completion is expected in spring 2010.

**Park County-Cooke City Water District
Water System Improvements
RRG-04-1191**

A \$100,000 grant was authorized by the 2003 Legislature for a water system improvements project for the community of Cooke City. The project consists of designing and constructing a new storage tank, water distribution system improvements, and new wells. Water meters will also be installed on all residential and commercial water accounts and wells no longer in service will be properly abandoned.

The project was delayed because of a National Park Service objection to the water right on the new well. That issue has been resolved. The project was bid in summer 2007 and bids came in exceptionally high. Instead of scaling the project back, the community decided to wait to rebid the project. In summer 2008 the community received more funding from the Rural Development program. The project will be rebid in December 2008. Completion is expected by December 2009.

**Petrolia Irrigation District
Canal Lining Project
RRG-08-1301**

Petrolia Irrigation District received a \$100,000 grant in 2007 to line portions of its canal system. The project has been designed and materials are being purchased for installation. Construction will be complete in fall 2009. To date, \$46,778 in grant funds have been disbursed.

**Philipsburg, Town of
Water Meter Installation Project
RRG-08-1342**

The Town of Philipsburg received a \$100,000 grant in 2007 for installation of water meters at all drinking water system connections. The project purpose is to promote conservation and reduce impacts to the town's wastewater system. The project is scheduled for completion by early 2009. No grant funds have been disbursed.

**Pinesdale, Town of
Water System Improvements Project
RRG-08-1333**

The Town of Pinesdale received a \$100,000 grant for water system improvements in 2007. The project is currently in the late stages of design with construction scheduled for 2009. No grant funds have been disbursed.

**Polson, City of
Water System Improvements
RRG-09-1368**

The 2007 Legislature authorized a \$100,000 grant to the City of Polson for water system improvements. The project was contracted in summer 2008 and includes: design and construction of the new tanks including controls, valves fittings, telemetry system, and site fencing. It is expected the project will be complete by December 2009.

**Pondera County Conservation District
Marias River Watershed Baseline Assessment
RRG-08-1347**

The 2007 Legislature authorized a \$100,000 grant to the Pondera Conservation district to locate and establish water quality monitoring sites; collect samples quarterly; train local conservation districts in water quality monitoring and sampling procedures; create a database; enter data into the database; and provide a written assessment of watershed baseline conditions for use in prioritizing restoration projects. The project was contracted in spring 2008. No money has been disbursed.

**Power Teton County Water and Sewer District
Water System Improvements
RRG-08-1362**

The 2007 Legislature authorized a \$100,000 grant for Phase 3 of a water systems improvement project. This is the final phase of a water system improvements project for the community. Specific tasks that will be accomplished are: install approximately 7,800 feet of water main and related appurtenances in the distribution system to replace undersized mains and loop dead-end mains; replace approximately 9,250 feet of leaking transmission main between the water treatment plant and the distribution system; and install charcoal filtration in the water treatment plant. Plans and specifications have been submitted to DEQ. The project will likely be bid in spring 2009 with completion by December 2009. No money has been disbursed.

**Rae Water and Sewer District
Water System Improvements
RRG-08-1316**

The 2007 Legislature authorized a \$100,000 grant to the Rae Water and Sewer District for water system improvements. Specific tasks to be accomplished include: the design and construction of a new tank, improvements to the distribution system; new booster pump station and backup generator, and upgrade to the existing SCADA system to include wells and storage tank. The district is currently waiting to hear if it will receive matching funds. It is expected the project will be complete in 2009.

**Ramsay County Water and Sewer District
Water System Improvements
RRG-04-1203**

A \$100,000 grant was authorized in 2003 for design and construction of a water distribution system, new hydrants and valves, new wells, and installation of water meters on all service connections and source supplies. The project was contracted in August 2003. The project was delayed because of two failed debt elections. The third debt election passed and the project progressed. It was completed in fall 2008.

**Ranch County Water and Sewer District
Water System Improvements Project
RRG-06-1270**

In 2005, Ranch County Water and Sewer District received a \$100,000 grant for water system improvements including a new well, a 150,000 gallon water storage reservoir, a boost pump and chlorination facility, and distribution system replacement. The project is complete except for closeout issues. To date, \$95,000 of grant funding have been disbursed.

Ravalli County

Improved Resource Protection, Floodplain Hazard Mapping

The 2007 Legislature approved a \$100,000 grant for the acquisition of 185 square miles of LiDAR data and data processing. The data will meet or exceed all FEMA accuracy standards for 2-foot contour data of the Bitterroot Valley. The data will then be used for flood hazard mapping and identification. Eventually the data will be used for planning future development in a manner that minimizes the impact to the natural resources in the Bitterroot Valley. The contract has been signed and the project is 90% complete.

Red Lodge, City of

Water System Improvements Project

RRG-08-1294

The City of Red Lodge received a \$100,000 grant in 2007 for construction of water system improvements consisting of distribution line replacement and construction of a storage reservoir. Construction is nearing completion at the time of this report, and \$95,000 have been disbursed.

Ronan, City of

Wastewater System Improvements

RRG-08-1298

The 2007 Legislature approved a \$100,000 grant to the City of Ronan for a wastewater system improvement project. The grant is expected to be completed by December 2008 with installation of back-up power for the city's lift stations.

Savage Irrigation District

Rehabilitation Plan

RRG-06-1283

A \$100,000 grant was authorized by the Legislature in 2005. A grant agreement was executed in July 2006. The project purpose is to investigate options and produce a design plan for rehabilitating system features. To date \$3,891 of grant funds have been spent. The project is approximately 5% completed. The sponsor has been contacted and will likely request a completion extension. Project completion was expected by December 2008.

Sanders County

Septic Systems Replacement Project

RRG-08-1317

In 2007 the county received a \$100,000 grant from the Legislature. A grant agreement was executed in September 2007. Disbursements (two) through September 2008 total \$90,000, and have been used to establish and maintain a small revolving loan program through the Sanders County Community Development Corporation. The revolving loan program provides for alternative funding for Sanders County residents needing replacement of sub-standard and/or failing on-site wastewater treatment systems; loan funds are only made available after the applicants have exhausted or otherwise been excluded from other conventional means of funding needed improvements. The grant agreement will expire in September 2012, but depending upon rate of repayment of loans, the county and the development corporation may be able to fund further system replacements for an additional period of time.

Seeley Lake Sewer District

Centralized Wastewater Collection and Treatment System Phase 1

RRG-07-1289

In 2005, the Seeley Lake Sewer District received a \$100,000 grant for development and construction of Phase 1 of a multi-phased wastewater collection and treatment system for the community of Seeley Lake. The acquisition of federal grants has delayed progress; however, preliminary project engineering is proceeding, and alternatives are being evaluated to facilitate Phase 1 construction. To date \$42,495 in grant funds have been disbursed to pay for engineering costs.

**Seeley Lake Water District
Water System Improvements Project
RRG-08-1344**

In 2007, the Seeley Lake Water District received a \$100,000 grant for design and construction of water system improvements, including additional storage. The project is being designed with construction scheduled for 2009. In total \$25,000 of grant funds have been disbursed to pay for final design costs.

**Sheaver's Creek Water and Sewer District
Water System Improvements Project
RRG-04-1212**

In 2003, the district received a \$100,000 grant for design and construction of improvements to its drinking water system. Included were distribution line replacement, water meter installations at all service connections, two new wells, and construction of a 140,000-gallon water storage reservoir. Distribution system work and wells were completed in 2005. Easement acquisition has delayed construction of the storage reservoir. Construction is now scheduled for late 2008. No grant funds have been disbursed.

**Shelby, City of
Water System Improvements Project
RRG-08-1336**

The city received a \$100,000 grant from the 2007 Legislature. A grant agreement was executed in November 2007. The project will replace existing under-sized water mains with 12-inch mains, create more efficient looping within the water distribution system with 8-inch tie-in mains, and install impervious surfaces around the upper terminus of existing water supply wells which are at risk from potential surface run-off. Additional project funding has been obtained. Construction began during summer 2008, and is expected to be completed by the end of 2008.

**Sheridan, Town of
Water System Improvements Project
RRG-06-1259**

In 2005, the Town of Sheridan received a \$100,000 grant for water distribution system improvements including the replacement of water mains, hydrants, and appurtenances. The project is complete except for closeout issues, and \$90,000 have been disbursed.

**Sheridan, Town of
Wastewater System Improvements Project
RRG-08-1345**

In 2007, the Town of Sheridan received a \$100,000 grant for the construction of wastewater collection and treatment system upgrades. Funding limitations have delayed the project, and no progress is being made at this time. No grant funds have been requested or disbursed.

**Sheridan County
Raymond Dam Rehabilitation
RRG-08-1315**

A \$100,000 grant was authorized by the Legislature in 2007. A grant agreement was executed in September 2007. The project purpose is rehabilitation of the reservoir for recreational and fish and wildlife benefits. Site engineering has been completed and contract negotiations for dredging are in progress. Zero grant dollars have been disbursed.

**Sidney Water Users Irrigation District
Increasing Irrigation Efficiency
RRG-05-1238**

A \$100,000 grant was authorized by the 2003 Legislature. A grant contract was executed in November 2004. The project purpose is to replace an earth canal with pipe. In total \$90,000 in grant funds have been disbursed.

**Sidney Water Users Irrigation District
Increasing Irrigation Efficiency, Phase 2
RRG-08-1351**

A \$100,000 grant was authorized by the 2007 Legislature to replace a portion of main canal with pipeline. A grant contract was executed in May 2008. To date no funds have been spent. Project completion is expected by December 2010.

**Stanford, Town of
Water System Improvements
RRG-04-1194**

A \$100,000 grant was authorized in 2003 to design and construct two new wells and rehabilitate the wells currently in service. The project also includes design and construction of a new elevated steel tank and water distribution system. To date, \$90,275 have been expended. The community has just obtained a state easement to continue with water line work. It is expected that this project will be completed in December 2008.

**Stillwater Conservation District
Stillwater-Rosebud Watershed Aquifer & Stream Study
RRG-08-1330**

A \$100,000 grant was authorized by the Legislature in 2007. A grant agreement was executed in April 2008. Grant funds will be used to collect and evaluate hydrogeologic data to assist in planning and managing development occurring in the watershed. Data will be collected and analyzed. Information on the groundwater and surface water characteristics and interactions will be made available to residents, planners, and resource managers. The goal is to use the data to better manage and protect groundwater resources throughout the watershed. Project completion is expected by December 2009.

**Stillwater County
Yellowstone River Floodplain Management
RRG-04-1222**

A \$75,000 grant was authorized by the Legislature in 2003. A grant agreement was executed in March 2004; in total \$70,000 have been disbursed. Funds are being expended to update floodplain regulations in Stillwater County by adopting a Flood Insurance Study in the project area. Work on a hydrological analysis, floodplain assessment, and floodplain delineation is complete. New flood hazard maps will be made covering 15 miles of the Yellowstone River in and around Reed Point, Columbus, and Park City; this is the sole portion of the work plan which remains to be completed. A public participation and data adoption process will take place and the Flood Insurance Study and maps will be published and made available to the public; this is the portion of work for which the remaining \$5,000 of grant funds has been set aside. The project goal is to help county officials make informed floodplain management decisions about growth and development, and protect and preserve the natural resources of the floodplain itself. LIDAR (lazar radar), bathymetry, aerial photography, and other data have been obtained. With the exception of adopting and publishing the new maps, the project was substantially complete by December 2007. An amendment extending the grant term to December 2009 was signed in late December 2007.

**St. Ignatius, Town of
Wastewater System Improvements Project
RRG-06-1256**

In 2005, the Town of St. Ignatius received a \$100,000 grant to construct a new wastewater treatment lagoon and effluent disposal system. The project is complete except for closeout issues; \$90,000 in grant funds have been disbursed.

**Sunburst, Town of
Water System Improvements Project
RRG-08-1357**

The Town of Sunburst received a \$100,000 grant in 2007 to identify the source of corrosive water that has destroyed the casing on one of its supply wells and to develop two existing wells that are not

currently in use. Hydrogeologic investigation will be performed by the Montana Bureau of Mines and Geology. The study is in progress. No grant funds have been disbursed.

**Sunny Meadows County Water and Sewer District
Water System Improvements Project
RRG-08-1339**

The district received a \$100,000 grant in 2007 for improvements to its existing water system. The primary components of work are replacement of the water storage reservoir and installation of water meters. The project is currently under construction; no grant funds have been disbursed.

**Superior, Town of
Water System Improvements
RRG-08-1309**

The 2007 legislature approved a \$100,000 grant to the Town of Superior for water system improvements. Improvements are all distribution system improvements. Mine tailings were used in the road beds and driveways in town. The worst was cleaned up by EPA in 2002, however, until the town can complete sampling to determine whether remediation is needed, construction has been delayed. The contract will need to be extended. Construction should be completed in fall 2009.

**Sweet Grass Conservation District
West Boulder Point of Diversion Rehabilitation
RRG-08-1346**

The 2007 Legislature approved a \$44,500 grant to Sweet Grass Conservation District for the replacement of a diversion structure in the West Boulder. Design on the project is complete. The contract is set to be completed by December 2009.

**Thompson Falls, City of
Thompson Falls Water System Improvements
RRG-08-1329**

The 2007 Legislature authorized a \$100,000 grant for the community of Thompson Falls for water system improvements. The project consists of transmission line replacement and new meters. It was contracted in January 2008 and construction was started in summer 2008. The project is substantially complete as of October 2008 and will be closed out by December.

**Tri-County Water and Sewer District
Water System Improvements Project
RRG-08-1350**

Tri-County Water District, north of Great Falls, received a \$100,000 grant in 2007 for improvements to its rural water system. Construction is scheduled for fall 2008 for a new infiltration gallery, wet well, and pump house; replacement of 20,000 lineal feet of undersized water main; and installation of a boost pump facility. No grant funds have been disbursed.

**Upper/Lower River Road Water and Sewer District Phase 2
Water and Wastewater Systems Improvements Project
RRG-06-1282**

In 2005, the Upper/Lower River Road Water and Sewer District, located on the southwest outskirts of Great Falls, received a \$100,000 grant for the second phase of water and wastewater system improvements begun under Phase 1. Completed during summer 2008, this second phase expands the area being centrally sewerred. To date, \$95,000 have been disbursed.

**Whitefish, City of
Wastewater System Improvements
RRG-08-1312**

The 2007 Legislature approved a \$100,000 grant to the City of Whitefish for wastewater system improvements. Specifically, a new building will be constructed to house an automated rotary screen; provide a bypass basin for use in bypassing the Main Lift Station for needed inspection, cleaning and

maintenance of the wet well, and construction of a new flocculating clarifier. The project was contracted in fall 2007. It was bid in summer 2008. Bids came in under the engineer's estimate. The project should be complete by fall 2009.

**Whitehall, Town of
Wastewater System Improvements**

RRG-08-1366

The 2007 Legislature approved a \$100,000 grant for wastewater system improvements. The project was contracted in summer 2008. Specific tasks to be accomplished are: design and construction of a two-cell, membrane-lined, facultative lagoon system; a 28 million gallon storage cell and spray-irrigation system; elimination of four storm drain connections to the sanitary sewer system; reconnection to the town's existing storm sewer system; and rehabilitation of the collection system. The project is slated for completion by December 2009.

**Woods Bay Homesites County Water and Sewer District
Water System Improvements Project**

RRG-07-1285

In 2005, the Woods Bay Homesites County Water District south of Bigfork received a \$100,000 grant for water distribution system improvements including line replacement and installation of water meters. Easement acquisition has delayed the project, which is now scheduled for construction in 2009. To date, no grant funds have been disbursed.

**Yellowstone Conservation District
Canyon Creek Restoration**

RRG-06-1277

A \$100,000 grant was authorized in 2005 for demonstration projects in stream restoration, watershed management, and weed control. The weed control portion of this project has been completed. Spraying was done for salt cedar and knapweed and education involving this demonstration project is ongoing. Planning for the stream restoration portion of the project has been completed and construction is expected to be completed by December 2008.

**Yellowstone Conservation District
Modeling Aquifer Response to Urban Sprawl, West-Billings Area, MT**

RRG-08-1340

The 2007 Legislature authorized a \$100,000 grant to the Yellowstone Conservation District for building and calibrating a finite difference groundwater model under steady-state and transient (time variable) conditions to match measured groundwater levels and measured stream flows. Once completed, the model will be used to test aquifer responses under various development scenarios in the West Billings area. The contract has been signed, and work is underway with a projected completion date of November 2009.

**Yellowstone County
Yellowstone River Floodplain Management**

RRG-04-1223

A \$75,000 grant was authorized by the Legislature in 2003. A grant agreement was executed in April 2004 and \$70,000 have been disbursed. Funds are being used to update comprehensive floodplain regulations in Yellowstone County by adopting a new Flood Insurance Study. A hydrologic analysis, floodplain assessment, floodplain delineation, and new flood hazard maps will be made from west county line to Pompey's Pillar, a distance of 45 river miles. A public participation and data adoption process will take place, and the Flood Insurance Study and maps will be published and made available to the public; this is the portion of work for which the remaining \$5,000 of grant funds have been set aside. The goal of this project is to help county officials make informed floodplain management decisions about growth and development, and protect and preserve the natural resources of the floodplain itself. LiDAR (lazar radar), bathymetry, aerial photography, and other data have been obtained. With the exception of adopting and publishing the new maps, the project was substantially complete by December 2007. An amendment, extending the term of the grant to December 2009 was signed in late December 2007.

Authorized Projects Not Yet Executed

Beaverhead County

Blacktail Deer Creek Flood Mitigation Project

No Contract

The 2007 Legislature authorized a \$100,000 grant to Beaverhead County for a flood mitigation project. This contract has not yet been executed because of turnover in staff at the county level. It is anticipated the contract will be signed by late November 2008, with field work beginning in spring 2009.

Chester Irrigation District

Chester Irrigation Project: Phase 2 Water Service Contract Application

No Contract

The 2007 Legislature authorized a \$100,000 grant to the Chester Irrigation District. The purpose of the grant is to provide funding to the Chester Irrigation District so it can begin negotiations with the US Bureau of Reclamation to obtain a water service contract for the Chester Irrigation Project. The Chester Irrigation Project is in the process of forming an irrigation district. The project will not be contracted until the irrigation district has been legally formed.

Dayton Lake County Water and Sewer District

Wastewater System Improvements

No contract

The 2007 Legislature authorized a \$100,000 grant to the Dayton Lake County Water and Sewer District for wastewater system improvements. The project's original budget totaled over \$5 million. The district included an Army Corps of Engineers 595 grant for over \$2 million and an EPA STAG grant for over \$1 million in its budget. Of these two grants the district received only a \$230,000 Army Corps of Engineers 595 grant. The district had no alternative funding so the project could not proceed. The district contracted with the Army Corps of Engineers and is having the original Preliminary Engineering Grant reviewed to see if there are any viable and more cost effective alternatives.

Gallatin County Hebgen Lake Estates RID 322

Wastewater System Improvements

No Contract

The 2007 Legislature authorized a \$100,000 grant to the Gallatin County Hebgen Lake Estates RID 322 for a wastewater system improvements project. The project is currently in design. A debt election is scheduled to be held in winter 2008. The project should go to bid this spring with construction to start in the summer 2009.

Loma County Water & Sewer District

Water System Improvements

No Contract

A \$100,000 grant was authorized by the Legislature in 2007 for design and construction of improvements to the water distribution system and water storage tank. No grant agreement has been executed to date. The district has portions of the remainder of its funding package in place; however, a major portion of the proposed project funding was to have been from a federal-to-local government assistance grant, and the district was not granted those funds in the federal FY 2008 funding cycle.

Malta Irrigation District

Dodson N Canal Regulating Reservoir

No Contract

A \$100,000 grant was authorized by the Legislature in 2007. A grant agreement has not been executed and zero grant dollars have been disbursed. The district had difficulty in negotiating the purchase of land for the reservoir and is going to ask the 2009 Legislature for authorization to use its grant funds on a different project that will have similar resource benefits.

**Mineral County Saltese Water and Sewer District
Saltese Wastewater System Improvements
No Contract**

The 2007 Legislature authorized a \$100,000 grant for wastewater system improvements for the community of Saltese. The project specifically was to construct a new gravity collection system, lift station, septic tank, and drainfield. The project has not yet been contracted because communication between the sponsor and DNRC cannot be established. The engineer contracted by the community for the project is no longer involved with the project. The water and sewer district has not responded to several phone calls and emails from DNRC.

**Sunset Irrigation District
Irrigation System Improvements Project
No Contract**

Sunset Irrigation District near Stevensville was awarded a \$100,000 grant in 2007 to convert open ditches to pipelines, thus providing a pressurized irrigation system to reduce or alleviate pumping costs for spray irrigation. The cost of the system is high, and the district has not committed to borrowing the additional funds necessary to construct the project. To date, a grant agreement has not been executed between DNRC and the district, and no grant funds have been disbursed.

**Twin Bridges, Town of
Wastewater System Improvements
No Contract**

The 2007 Legislature authorized a \$100,000 grant to the Town of Twin Bridges for wastewater system improvements. The project is almost ready to be contracted. It is expected to be contracted and completed in 2009.

Terminated Projects

**Paradise Valley Irrigation District
Turnout Replacement Project
RRG-06-1279**

A \$100,000 grant was awarded in 2005 to replace irrigation turnouts in the Paradise Valley Irrigation District. The project was to purchase and replace 54 turnouts and associated pipe with standardized (pre-fabricated) turnouts and new pipe, dispose of the old pipe, and reclaim the disturbed lands around the turnouts. The project was completed in fall 2007. The contract expired in December 2007. DNRC made repeated attempts to contact the district to obtain an adequate final report. The contract was terminated because the district did not respond. In total, \$89,264 were expended from this contract, with \$10,736 reverted to the natural resource projects account.

CHAPTER VIII

Renewable Resource Project Planning Grants

Application Administration and Project Review Procedures

The 2007 Legislature authorized \$400,000 for Renewable Resource Project Planning Grants. The intent of the program is to fund planning efforts for projects that will measurably conserve, develop, manage, or protect Montana's renewable resources.

DNRC accepts applications for planning grants from public entities on an "open-cycle" basis. No application fee is required. Grant awards are made on a first-come, first-serve basis for qualified studies until funding is depleted. No match funding was required for the 2008-2009 biennium.

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.

DNRC awarded project planning grants to public entities for 23 public facility (water, wastewater, or solid waste) and 7 other planning projects. The \$400,000 in planning grant money was all contracted between July 1, 2007 and September 30, 2007. This popular program funded planning for 21 of the larger RRGL grant applications received in 2008.

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 assure that the proposed costs are feasible.

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 2007, the Legislature authorized \$400,000 for planning grants. The funded project planning grant applications included the following:

FIGURE 10 Project Planning Grants Approved During the 2009 Biennium

Project Sponsor	Project Type	Grant Amount
Public Facility Projects		
Bearcreek, Town of	Water	\$ 15,000
Big Sky	Water	15,000
Bozeman, City of	Water	15,000
Brady WSD	Wastewater	15,000
Bridger Pines Water and Sewer District	Wastewater	15,000
Bynum, Town of	Water	15,000
Cascade, Town of	Water	10,000
Crow Tribe	Water and Wastewater	10,000
Darby, Town of	Water	15,000
Eureka, Town of	Water	15,000
Fallon County	Water and Wastewater	10,000
Flathead County	Stormsewer	15,000
Glasgow, City of	Wastewater	15,000
Hot Springs, Town of	Wastewater	15,000
Kevin, Town of	Water	15,000
Lewis and Clark County	Wastewater	15,000
Neihart, Town of	Water	7,500
Philipsburg, Town of	Wastewater	15,000
Polson, City of	Stormsewer	15,000
Shelby, City of	Wastewater	5,000
Stevensville, Town of	Water	3,500
Troy, City of	Water	15,000
Virginia City	Wastewater	9,000
Other Planning Projects		
Bitterroot Irrigation District	Irrigation	15,000
Butte, City of	Growth	15,000
Clinton Irrigation District	Irrigation	15,000
Daly Ditches	Irrigation	15,000
Hysham Irrigation District	Irrigation	15,000
Lincoln County Conservation District	Stream Restoration	15,000
Manhattan, Town of	Capital Improvements Plan	15,000
TOTAL		\$ 400,000

2009

Montana Department of Natural Resources and Conservation



1625 Eleventh Avenue
PO Box 201601
Helena, Montana 59620
406/444-6668
www.dnrc.mt.gov

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