

RECLAMATION AND DEVELOPMENT GRANTS PROGRAM

REPORT TO THE LEGISLATURE

Project Evaluations and Funding Recommendations

January 2001

**Montana Department of Natural Resources and Conservation
Conservation and Resource Development Division
1625 Eleventh Avenue
P.O. Box 201601**

Helena, Montana 59620-1601

ABBREVIATIONS

ARCO	Atlantic Richfield Company
BLM	Bureau of Land Management, U.S. Department of the Interior
BOGC	Board of Oil and Gas Conservation
BPMC	Bridger Plant Materials Center
CBM	Coal Bed Methane
CD	conservation district
CECRA	Comprehensive Environmental Cleanup and Responsibility Act of 1989
CEP	Comparative Evaluation Planting
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CMC	Chicago Mining Corporation
COE	U.S. Army Corps of Engineers
DEQ	Montana Department of Environmental Quality
DFWP	Montana Department of Fish, Wildlife and Parks
DHES	Montana Department of Health and Environmental Sciences (now Montana Department of Environmental Quality)
DNRC	Montana Department of Natural Resources and Conservation
DOA	Montana Department of Administration
EE/CA	Engineering Evaluation/Cost Analysis
EEE/CA	Expanded Engineering Evaluation / Cost Analysis
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
FBC	Flathead Basin Commission
FRDO	Flathead Regional Development Office
FY	fiscal year
GIS	Geographic information system
GPS	Global Position System
GWIC	Groundwater Information Center, Montana Bureau of Mines and Geology
HNF	Helena National Forest
IEP	Initial Evaluation Plantings
MBMG	Montana Bureau of Mines and Geology
MCA	Montana Code Annotated
MCL	Maximum Contaminant Level
MEPA	Montana Environmental Policy Act
MGWPCS	Montana Groundwater Pollution Control System
MMRA	Metal Mine Reclamation Act
MOPG	Missoula County Office of Planning and Grants
MSU	Montana State University
NCP	National Contingency Plan
NEPA	National Environmental Policy Act
NRCS	Natural Resources Conservation Service, U.S. Department of Agriculture
NRIS	Natural Resource Information System
PA	Preliminary Assessment
PCBs	polychlorinated biphenyls
PCS	petroleum-contaminated soils
PGC	Pegasus Gold Corporation
PLPs	Potentially Liable Persons
PRP	Potentially Responsible Party

RCRA	Resource Conservation and Recovery Act
RDGP	Reclamation and Development Grants Program
RDP	Remedial Design Plan
RIT	Resource Indemnity Trust
RRGLP	Renewable Resource Grant and Loan Program
TMDL	total maximum daily load
UM	University of Montana
USFS	Forest Service, U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VNRS	Voluntary Nutrient Reduction Strategy
WPPS	Well Plugging Prioritization System
WRD	Water Resources Division, Montana Department of Natural Resources and Conservation
YRCDC	Yellowstone River Conservation District Council

TABLE OF CONTENTS

Page

Abbreviations	iii
Projects Submitted for Funding in the 2003 Biennium	vii

CHAPTER I

Program Description and Procedures	1
Program Information	1
Project Eligibility.....	1
Applicant Eligibility	2
Funding Limits	2
Application Review and Ranking Procedures	2
Recommendations.....	3

CHAPTER II

Project Abstracts, Evaluations, and Recommendations for the 2003 Biennium	6
Part 1. Projects Recommended for Funding	7
Part 2. Reauthorization of 1999 RDGP Funds	47
Part 3. Projects Not Recommended for Funding.....	69

CHAPTER III

Status Report of 1993-1999 Projects	85
(Completed since last biennium and active projects)	
Projects Approved by the 1999 Legislature.....	85
Projects Approved by the 1997 Legislature.....	87
Projects Approved by the 1995 Legislature.....	89
Projects Approved by the 1993 Legislature.....	89

LIST OF TABLES

Table 1. Ranking and Funding Recommendations	4
--	---

PROJECTS SUBMITTED FOR FUNDING IN THE 2003 BIENNIUM

Following is a list of projects submitted for funding in the 2003 biennium. For easy reference, the list is alphabetized by the names of the project sponsors. However, in Chapter II the project abstracts, assessments, and recommendations are presented in the order of their ranking by the Department of Natural Resources and Conservation and the Governor.

APPLICANT NAME -- Project Title	Page
BOARD OF OIL AND GAS CONSERVATION - 2001 Eastern District Orphaned Well Plug and Abandonment, and Site Restoration; 2001 Northern District Orphaned Well Plug and Abandonment, and Site Restoration	7
BOARD OF OIL AND GAS CONSERVATION - 2001 Southern District Orphaned Well Plug and Abandonment, and Site Restoration	29
BROADWATER CONSERVATION DISTRICT - Big Belt Mine Reclamation Projects	20
BUTTE-SILVER BOW COUNTY - Upper Clark Fork Basin, Superfund Technical Assistance	26
CASCADE COUNTY - Fort Shaw Weed Shop Soil Contamination Remediation	33
CUSTER COUNTY CONSERVATION DISTRICT - Yellowstone River Resource Conservation Project	31
DEER LODGE, CITY OF - Former Chicago, Milwaukee Railroad Passenger Fueling Area, Deer Lodge, Montana	22
FLATHEAD BASIN COMMISSION - Implementation of the Flathead Basin Voluntary Nutrient Reduction Strategy	71
FLATHEAD COUNTY - Assessment of Aggregate Resources for Long-Term Planning in Flathead and Missoula Counties	44
GLACIER COUNTY - 2000 Glacier County Plugging and Abandonment, Aid to Independent Operators	61
JUDITH BASIN CONSERVATION DISTRICT - Judith Basin Artesian Well Repair Project	74
LEWISTOWN, CITY OF - Reclamation of Brewery Flats on Big Spring Creek	14
LIBERTY COUNTY - Bear Paw Plugging and Abandonment Aid Program for Small Independent Operators in Liberty, Hill, Blaine, and Chouteau Counties	66
MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY - Broadway / Victoria Mine Reclamation Project	54
MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY - CMC Pony Millsite Reclamation Project (Completion Phase)	17

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY - Development of a Trust Fund to Ensure Long Term Water Treatment at Zortman and Landusky	9
MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY - Gregory Mine Reclamation Project	51
MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY - Mammoth Mine and Mammoth Tailings Site Reclamation Project	48
MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY - Zortman and Landusky Mines - Highwall Reduction Program	58
MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY - Zortman and Landusky Mines - Organic Soil Amendments	56
MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY - Zortman Mine - Ruby Gulch Tailings Removal	35
MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION - Environmental Hazard Sites on State Land	41
MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION - Spatial Data Conversion - Preservation of Montana Water Information	69
PARK CONSERVATION DISTRICT - Governor's Upper Yellowstone River Task Force Cumulative Effects Investigation: Phase II	76
PONDERA COUNTY - Pondera County Oil and Gas Well Plug and Abandon Project	64
POWELL COUNTY - Ontario Wet Tailings Reclamation	11
ROSEBUD AND BIG HORN CONSERVATION DISTRICTS - Evaluation and Prevention of Hydrologic Impacts from Coal Bed Methane Production in the Tongue River Watershed	80
SHERIDAN COUNTY CONSERVATION DISTRICT - Protecting Natural Resources by Reclaiming Oil Field Brine-Contaminated Soils	39
STILLWATER COUNTY - County Gravel Pit Reclamation	82

CHAPTER I

PROGRAM DESCRIPTION AND PROCEDURES

Program Information

The Reclamation and Development Grants Program (RDGP) is a state-funded grant program designed to fund projects that *"indemnify the people of the state for the effects of mineral development on public resources and that meet other crucial state needs serving the public interest and the total environment of the citizens of Montana"* (90-2-1102, MCA). The program, established by the 1987 Montana Legislature, is administered by the Montana Department of Natural Resources and Conservation (DNRC).

In February 2000, DNRC mailed application materials to all Montana communities, counties, the university system, conservation districts, state agencies, state legislators, and others who might benefit by program participation. The application deadline was May 15, 2000. DNRC received 30 applications for RDGP funding totaling over \$7.5 million. These projects are listed alphabetically by applicant on pages vii and viii.

The funding source for this program is the interest income from the Resource Indemnity Trust (RIT) fund. This fund, established by 15-38-201, MCA, receives proceeds from taxes levied on mineral production. Since 1986, 149 projects totaling more than \$27 million have been authorized for funding by previous legislatures. The 1993 Legislature directed that, beginning in state FY 1996, a minimum of \$3 million be allocated for grants. In 1993, the legislature also directed DNRC to give priority to grant requests from the Board of Oil and Gas Conservation (BOGC). This priority is not to exceed \$600,000 for the biennium and does not preclude BOGC from submitting additional grant requests. Additional BOGC grant requests are received and ranked by DNRC in the same manner as all other grant requests submitted.

The Reclamation and Development Grants Program Act requires that the Governor submit, by the first day of each regular session of the legislature, a list of all grant proposals received with his or her recommended priorities for funding (see Table 1). Administrative rules further provide that DNRC must furnish to the legislature a status report on previously funded projects, which is here provided in Chapter III. This report is the result of those directives.

Project Eligibility

The following excerpt from the Reclamation and Development Grants Program Act (90-2-1112, MCA) establishes criteria that projects must meet in order to be eligible for funding.

1. *Except as provided under subsection (2), to be eligible for funding under the Reclamation and Development Grants Program, the proposed project must provide benefits in one or more of the following categories:*
 - a. *Reclamation of land, water, or other resources adversely affected by mineral development*
 - b. *Mitigation of damage to public resources caused by mineral development*
 - c. *Research, demonstration, or technical assistance to promote the wise use of Montana minerals, including efforts to make processing more environmentally compatible*

- d. *Investigation and remediation of sites where hazardous wastes or regulated substances threaten public health or the environment, and*
 - e. *Research to assess existing or potential environmental damage resulting from mineral development.*
2. *If there is a crucial state need to protect Montana's environment, the department may evaluate and the governor may recommend that the legislature approve funding for projects in addition to those described in subsection (1).*

Applicant Eligibility

Any department, agency, board, commission, or other division of state government or any city, county, or other political subdivision or tribal government within the state may apply for a grant from the Reclamation and Development Grants Program.

Funding Limits

No grant may exceed \$300,000. An applicant proposing more than one project may submit a separate application for each. There is no minimum funding limit.

Application Review and Ranking Procedures

The grant applications were evaluated for the technical and financial feasibility of the proposed projects, public benefits to be provided, need and urgency, and impacts on the environment. Reviewers included staff members of the Conservation and Resource Development Division of DNRC and federal, state, and university personnel having expertise in specific project areas. For each application, a descriptive project assessment was written incorporating the concerns, ideas, and comments of the project reviewers.

More funds are requested than are available. Therefore, the department ranks feasible projects, so that it can recommend funding priority and funding level to the Governor and the legislature. Evaluation criteria established by the 1987 Legislature include, but are not limited to:

1. The degree to which the project will provide benefits in its eligibility category or categories
2. The degree to which the project will provide public benefits
3. The degree to which the project will promote, enhance, or advance the policies and purposes of the Reclamation and Development Grants Program
4. The degree to which the project will provide for the conservation of natural resources
5. The degree of need and urgency for the project
6. The extent to which the project sponsor or local entity is contributing to the costs of the project or is generating additional non-state funds
7. The degree to which jobs are created for persons who need job training, receive public assistance, or are chronically unemployed
8. Any other criteria DNRC considers necessary to carry out the policies and purposes of the Reclamation and Development Grants Program

Under the ranking system, a proposal could receive a maximum of 215 points. Specific criteria were established for each category to provide consistency. Of the following criteria, public benefits and need and urgency were weighted most heavily.

		<u>Maximum Points</u>
		<u>Possible</u>
1.	Public benefits	90
2.	Need and urgency	50
3.	Appropriateness of technical design	40
4.	Financial feasibility	15
5.	Project management organization	<u>20</u>
Total possible points:		215

Recommendations

After ranking the projects and recommending funding, the Conservation and Resource Development Division made its recommendations to the DNRC director. The director then presented the recommendations by DNRC to the Governor. The final ranking of the proposed projects is presented in Table 1, along with funding recommendations.

An appropriations bill listing the Governor's recommendations will be introduced to the 2001 Legislature. By appropriation or other means, the legislature may approve grants for those projects it finds consistent with the policies and purposes of RDGP.

TABLE 1

RANKING AND FUNDING RECOMMENDATIONS

Rank	Project Sponsor (Project Title)	Amount Requested	Amount Recommended	Cumulative Total Recommended
* 1	Board of Oil and Gas Conservation -2001 Eastern District Orphaned Well Plug and Abandonment and Site Restoration	300,000	300,000	300,000
* 2	Board of Oil and Gas Conservation -2001 Northern District Orphaned Well Plug and Abandonment and Site Restoration	300,000	300,000	600,000
3	Department of Environmental Quality -Development of a Trust Fund to Ensure Long Term Water Treatment at Zortman and Landusky	300,000	300,000	900,000
4	Powell County -Ontario Wet Tailings Reclamation	300,000	300,000	1,200,000
5	City of Lewistown -Reclamation of Brewery Flats on Big Spring Creek	297,740	297,740	1,497,740
6	Department of Environmental Quality -CMC Pony Mill Site Reclamation Project (Completion Phase)	291,191	291,191	1,788,931
7	Broadwater Conservation District -Big Belt Mine Reclamation Projects	145,380	145,380	1,934,311
8	City of Deer Lodge -Former Chicago, Milwaukee Railroad Passenger Fueling Area, Deer Lodge, Montana	140,000	140,000	2,074,311
9	Butte-Silver Bow County -Upper Clark Fork Basin, Superfund Technical Assistance	107,814	49,272	2,123,583
10	Board of Oil and Gas Conservation -2001 Southern District Orphaned Well Plug and Abandonment, and Site Restoration	300,000	300,000	2,423,583
11	Custer County Conservation District -Yellowstone River Resource Conservation Project	299,977	299,977	2,723,560
12	Cascade County -Fort Shaw Weed Shop Soil Contamination Remediation	237,345	218,466	2,942,026
13	Department of Environmental Quality -Zortman Mine - Ruby Gulch Tailings Removal	300,000	300,000	3,242,026
14	Sheridan County Conservation District -Protecting Natural Resources by Reclaiming Oil Field Brine-Contaminated Soils	299,950	299,950	3,541,976
15	Department of Natural Resources and Conservation - Environmental Hazard Sites on State Land	272,500	272,500	3,814,476
16	Flathead County -Assessment of Aggregate Resources for Long- Term Planning in Flathead and Missoula Counties	167,821	167,821	3,982,297

REAUTHORIZATION OF EXISTING APPROPRIATIONS:

17	Department of Environmental Quality -Mammoth Mine and Mammoth Tailings Site Reclamation Project	300,000	300,000	300,000
----	---	---------	---------	---------

18	Department of Environmental Quality -Gregory Mine Reclamation Project	300,000	300,000	600,000
19	Department of Environmental Quality -Broadway / Victoria Mine Reclamation Project	300,000	300,000	900,000
20	Department of Environmental Quality -Zortman and Landusky Mines - Organic Soil Amendments	300,000	300,000	1,200,000
21	Department of Environmental Quality -Zortman and Landusky Mines - Highwall Reduction Program	300,000	300,000	1,500,000
** 22	Department of Environmental Quality -Coal Bed Methane EIS	250,000	250,000	1,750,000
23	Glacier County -2000 Glacier County Plugging and Abandonment, Aid to Independent Operators	300,000	100,000	1,850,000
24	Pondera County -Pondera County Oil and Gas Well Plug and Abandonment Project	300,000	50,000	1,900,000
25	Liberty County -Bear Paw Plug and Abandonment Aid Program for Small Independent Operators in Liberty, Hill, Blaine, and Chouteau Counties	100,000	50,000	1,950,000
	Department of Natural Resources and Conservation -Spatial Data Conversion-Preservation of Montana Water Information	245,249	0	
	Flathead Basin Commission -Implementation of the Flathead Basin Voluntary Nutrient Reduction Strategy	280,872	0	
	Judith Basin Conservation District -Judith Basin Artesian Well Repair Project	180,000	0	
	Park Conservation District -Governor's Upper Yellowstone River Task Force Cumulative Effects Investigation: Phase II	300,000	0	
	Rosebud and Big Horn Conservation Districts -Evaluation and Prevention of Hydrologic Impacts from Coal Bed Methane Production in the Tongue River Watershed	299,226	0	
	Stillwater County -County Gravel Pit Reclamation	30,780	0	
	TOTAL REQUESTED	7,845,845		

The minimum funding for RDGP is \$3,000,000.

* The Board of Oil and Gas Conservation has statutory priority for \$600,000 in grant funds

** DEQ requested that \$250,000 in funding it received from the 1999 Legislature be reauthorized for preparation of a coal bed methane environmental impact statement (EIS). This request was received after the application submittal deadline and will be presented directly to the 2001 Legislature. It was not evaluated and ranked by DNRC.

CHAPTER II

PROJECT ABSTRACTS, EVALUATIONS, AND RECOMMENDATIONS **FOR THE 2003 BIENNIUM**

These evaluations are based on review of the projects by DNRC. The first 16 evaluations of recommended projects are presented in the order of their ranking. Of the \$3,982,297 recommended for these projects, a statutory maximum of \$3.0 million may be awarded by the 2001 Legislature. To find any particular evaluation quickly, just consult the alphabetical listing of projects by the names of the applicants on page vii.

For projects 17 through 25, it is recommended that unexpended funds awarded by the 1999 Legislature be reauthorized to fund these projects. Total reauthorization of 1999 funds would amount to \$1.1 million. For further explanation, please refer to Part 2 of this chapter beginning on page 47.

For projects recommended for RDGP funding, "TOTAL PROJECT COST" is the sum of "OTHER FUNDING SOURCES" plus the AMOUNT RECOMMENDED.

Part I. Projects Recommended for Funding

Projects Nos. 1 & 2

Applicant Name: Board of Oil and Gas Conservation

Project Name: 2001 Eastern District Orphaned Well Plug and Abandon, and Site Restoration
and
2001 Northern District Orphaned Well Plug and Abandon, and Site Restoration

Amount Requested: \$600,000

Other Funding Sources: \$32,238 Applicant
\$8,000 U.S. Environmental Protection Agency

Total Project Cost: \$640,238

Amount Recommended: \$600,000

Project Abstract: (prepared and submitted by applicant)

The purpose of this grant request is to provide funding to properly plug and abandon orphaned oil and gas, and leaking orphaned abandoned wells, and to perform the surface reclamation. The wells are uneconomic and have the potential to cause damage to subsurface formations, the state's water, and the surface around each well.

The Board of Oil and Gas Conservation (BOGC) will eliminate the threat of contamination by soliciting bids to plug and abandon the wells. Under the supervision of the BOGC staff, the successful bidder will properly plug and abandon each well, dispose of and/or remediate contaminants, and reclaim the surface location.

The wells produced oil and gas or were plugged in the past. The operators could no longer afford to produce the wells and the wells were shut in. The companies' assets will not cover the liabilities to creditors, leaving the operators insolvent. Since the operators are currently insolvent or long since defunct, responsibility for the wells and any potential environmental damage rests with the Board of Oil and Gas Conservation and the State of Montana. The wells will be properly plugged and abandoned when funding is made available.

The orphaned wells are located throughout Montana. In most cases, the wells that present the highest potential to damage the environment because of leaking or loss of mechanical integrity will be plugged first.

The project is estimated to take 24 months. The work will generally begin during the first suitable field season following the availability of funding.

Technical Assessment:

The priority and funding amount for the BOGC's applications, 2001 Northern District and 2001 Eastern District are established pursuant to 90-2-1113(2) (a-c), MCA. For reference, this statute states:

- (2)(a) Subject to the conditions of this part, the department shall give priority to grant requests, not to exceed \$600,000 in total for the biennium, from the Board of Oil and Gas Conservation. The Board of Oil and Gas Conservation shall use a grant that received priority under this subsection

- (a) only for oil and gas reclamation projects. The board may use a maximum of 2.5% of the amount of a grant for administrative costs associated with implementing the projects covered in the grant.
- (b) Any unobligated fund balance of a grant that received priority under subsection (2)(a) remaining at the end of the current biennium must be included as part of the \$600,000 limitation for the next biennium.
- (c) The priority given to the Board of Oil and Gas Conservation under subsection (2)(a) does not preclude the Board of Oil and Gas Conservation from submitting additional grant requests. The department shall evaluate additional grant requests from the Board of Oil and Gas Conservation in accordance with the provisions of subsection (1).

These two applications represent 16 wells located in Toole (7 wells), Hill (3 wells), Richland (2 wells), Fergus (1 well), McCone (1 well), Roosevelt (1 well), and Petroleum (1 well) Counties. All of the wells have been evaluated using Montana's Well Plugging Prioritization System (WPPS). WPPS rates such factors as the threat the well poses to groundwater and surface water, mechanical condition of the wellhead casing, public safety, and potential for cross contamination of mineral-bearing formations and aquifers. All of these wells are leaking some combination of oil, gas and/or water to the ground surface. Delays in proper plugging and abandonment of these wells will result in continued threats to the environment and increased future costs.

The wells are abandoned and all attempts by BOGC to hold a party responsible for plugging these wells have been unsuccessful. The plugging of these wells involves standard oil-field equipment and procedures and will be performed by qualified oil-field plugging contractors.

Financial Assessment:

The two RDGP grant applications are for \$300,000 each. Totals for major budget categories and matching contributions are as follows:

	RDGP	Matching Funds	Total
Salaries and Wages	\$0	\$10,152	\$10,152
Employee Benefits	\$0	\$2,599	\$2,599
Contracted Services	\$600,000	\$8,000	\$608,000
Supplies and Materials	\$0	\$600	\$600
Communications	\$0	\$2,000	\$2,000
Travel	\$0	\$16,487	\$16,487
Miscellaneous	<u>\$0</u>	<u>\$400</u>	<u>\$400</u>
Total	\$600,000	\$40,238	\$640,238

Cost estimates are based on bids on past projects contracted by BOGC and are reasonable for the work performed. As with any oil and gas-plugging project, unknown or unforeseen circumstances may be encountered underground, and costs may vary considerably.

The 2001 Eastern and the 2001 Northern applications constitute the BOGC's \$600,000 priority allocation for the 2003 biennium.

Environmental Evaluation:

No long-term adverse environmental impacts should be created in the plugging and abandonment of the proposed wells, provided reclamation activities are conducted properly. Short-term adverse impacts associated with the movement of equipment to the sites are expected. Compacted soil and destroyed vegetation on access routes would be reclaimed upon project completion, and any debris would be hauled off-site and disposed of in a licensed landfill. Short-term air pollution (e.g., dust, emissions from combustion engines) would be minimal, provided that equipment and traffic routes are watered as necessary and mechanized equipment is in proper working condition. If the sites involve cleanup and disposal of drilling fluids, oil sludge, brine wastes, or other

contaminants, these materials must be identified and characterized and this information used to develop site-specific reclamation plans. Depending on the material and contaminants encountered, remedial action may involve burning, burial, land farming, and addition of soil amendments for materials disposed of on-site, or it may involve hauling materials to a licensed off-site landfill or waste disposal facility. If disposal poses unusual difficulty or necessitates remedial actions not normally implemented by the board, appropriate regulatory or reclamation experts would need to be contacted.

Public Benefits Assessment:

The proper plugging and abandonment of these wells benefit all Montanans by eliminating severe impacts to groundwater and surface water caused by oil field development activity. Statewide, many abandoned and unplugged wells threaten water supplies used for drinking water, stock watering, and irrigation purposes. Safety hazards (e.g., open holes, gas emissions, blowout potential) affect not only humans, but also stock and wildlife. Proper plugging eliminates site-specific problems and helps ensure long-term protection of soil, water, and vegetative resources. Moderate economic benefit will be realized by contractors, equipment suppliers, and other area retailers.

Recommendation:

A grant of up to \$600,000 is recommended for the 2001 Eastern and 2001 Northern District projects, contingent upon DNRC approval of the project scope of work and budget.

Project No. 3

Applicant Name:	Department of Environmental Quality
Project Name:	Development of a Trust Fund to Ensure Long-term Water Treatment at Zortman and Landusky
Amount Requested:	\$300,000
Other Funding Sources:	\$700,000 Applicant
Total Project Cost:	\$1,000,000
Amount Recommended:	\$ 300,000
Project Abstract:	(prepared and submitted by the applicant)

Pegasus Gold Corporation (PGC) conducted open pit mining operations at the Zortman and Landusky sites between 1979 and 1996. Water quality monitoring programs identified the development of acid rock drainage at both mines during 1992. The State of Montana and the U.S. Environmental Protection Agency (EPA) sued PGC for violations of the Montana Water Quality Act and the Clean Water Act during 1994. This suit was settled via a Consent Decree during 1996, which required construction of water treatment plants and bonding for short- and long-term water treatment. Pegasus declared bankruptcy in 1998, and the State now operates the treatment plants using funds provided from the short-term water treatment bonds (\$731,000 per year). These funds will be submitted annually to the State from the bonding company through the year 2017. The Consent Decree also required that a trust fund be developed to provide for continued operation of the water treatment plants beyond that date. It was determined that this could be accomplished by having a fund of \$15 million in place by 2017, and that this requirement could be met if PGC deposited \$1 million into the fund annually between 1996 and 2000. The initial four installments were made by PGC. Subsequent to the bankruptcy, however, the corporation has been dissolved, and a final payment into the trust fund is needed to ensure long-term water treatment at the mines.

The goal of this project is to provide assurance that water pollution at the Zortman and Landusky Mines will be remediated in perpetuity via pH adjustment using lime addition at active treatment plants. The objective of this proposal is to purchase a zero-coupon bond or equivalent instrument valued at \$1 million by July 2001 in order to complete the required trust fund.

The Montana Department of Environmental Quality, Environmental Management Bureau is responsible for implementing the water treatment program at the Zortman and Landusky Mines.

The Zortman and Landusky Mines are located 50 miles southwest of Malta adjacent to the southern boundary of the Fort Belknap Indian Reservation. The Zortman Mine is located in Sections 7, 17 and 18, Township 25 North, Range 25 East, Phillips County, Montana. The Landusky Mine is located in Sections 14, 15, 22, and 23, Township 25 North, Range 24 East, Phillips County, Montana.

Purchase of the remaining bond needed to complete the trust fund would occur during July 2001.

Technical Assessment:

The objective of trust fund establishment is succinctly stated in the Project Abstract and readily implementable. While the need for \$300,000 has not been clearly established in the application, it is apparent that Pegasus Gold Corporation's declaration of bankruptcy has created a major financial liability for the State of Montana. DEQ is seeking supplemental funding from a number of sources to help offset the deficiency caused by inadequate bonding of the Zortman and Landusky mine complex. There are four RDGP grant applications from DEQ (totaling \$1,200,000) that address this issue. All four applications are interrelated, i.e., what is funded and implemented for one project, affects funding and implementation of the others.

For example, an accompanying DEQ grant application entitled, Organic Soil Amendments states that, if that project is funded and constructed, water treatment costs could be reduced by \$600,000 annually -- provided that suitable cover soils are available and subsequently amended to increase fertility. Cover soils are addressed in another Zortman and Landusky grant application from DEQ entitled Ruby Gulch Tailings Removal and would be placed on disturbed areas at the Zortman Mine. Organic amendment (sawdust) would be purchased and incorporated into the Ruby Gulch cover soils material as described in the Organic Soil Amendments proposal. The potential savings envisioned by DEQ from these other two projects raises the question of why a \$15 million trust fund is required and not some lesser amount. The Trust Fund proposal offers no clear explanation as to how implementation of these two other projects affects the need for and cost of water treatment. Water treatment costs over the long term will have a direct bearing on the need for and cost of establishing a trust fund.

While it may be clear to DEQ how all this works out, such is not clear to RDGP reviewers. The unanswered question is the level of funding that is appropriate. Is it the \$300,000 level requested, some other lesser amount, or none at all?

It would have been particularly helpful for RDGP review had the application provided clear detail discussing other financing options besides establishment of a \$15 million trust fund. For example, DEQ states that \$4 million of the \$5 million necessary to ensure a trust fund of \$15 million by 2017 is already deposited. An analysis by DEQ of the amount that \$4 million would return by 2017 seems appropriate, particularly in light of the projected cost reduction to be realized through cover soils placement and incorporation of organic amendment material. Similarly, since DEQ apparently is able to match the RDGP requested amount with \$700,000, it would also be appropriate to include an analysis of what \$4.7 million would return on an annual basis. Neither of these potential financing options or its feasibility was discussed in the trust fund proposal.

Aside from the uncertainties in the precise amounts needed for long-term water treatment costs and trust fund establishment, DEQ faces very real fund shortages for the reclamation of the entire Zortman- Landusky mine complex. If no other sources of funding prove feasible, then use of RDGP funds should be considered.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Funds	Total
Miscellaneous	<u>\$300,000</u>	<u>\$700,000</u>	<u>\$1,000,000</u>
Total	\$300,000	\$700,000	\$1,000,000

DEQ has not yet identified where in its budget the matching funds of \$700,000 will be obtained. Establishment of a trust fund seems preferable to annual appropriation by state government.

Environmental Evaluation:

The purchase of a bond does not have any adverse impact on the environment.

Public Benefits Assessment:

Water treatment will repair and mitigate damage to the environment caused by irresponsible mine operators and will help ensure protection of the local area's groundwater and surface water resources. A revival in local recreation and tourism, an important part of the Zortman community economy, is an expected result of the eventual cleanup and reclamation of the Zortman and Landusky mine complex.

Recommendation:

A grant of up to \$300,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

Project No. 4

Applicant Name:	Powell County	
Project Name:	Ontario Wet Tailings Reclamation	
Amount Requested:	\$300,000	
Other Funding Sources:	\$1,065,450	U.S. Forest Service (USFS)
	\$1,750	Applicant
Total Project Cost:	\$1,367,200	
Amount Recommended:	\$300,000	

Project Abstract: (prepared and submitted by applicant)

The Ontario Mine and Mill are on private land in the Little Blackfoot drainage about 9 miles south of Elliston, Montana. While the mine and mill site are located on private land, tailings from the milling operation extend from the mill down Ontario Creek in the Helena National Forest (HNF), covering an area of approximately 17 acres. Soil samples taken from these tailings show very high levels of arsenic, copper, lead, zinc, and cadmium. Arsenic and copper levels also exceed phytotoxicity limits. Bed sediment samples collected in September 1998 by the USFS from four sites in Ontario Creek indicate that the metals concentrations for arsenic, lead, and zinc exceed proposed EPA sediment quality criteria for those sites sampled below the Ontario mine. This high level of metals in the stream sediment results in degraded habitat conditions for fish and macroinvertebrates that live in the stream substrate and is a potential risk to downstream users.

Powell County has requested that the HNF be responsible for carrying out this project. The county and the HNF entered into similar agreement when the county received a DNRC grant for reclamation of the Charter Oak Mine and Mill site in 1998. The county also has additional mine reclamation experience in cooperating with the EPA in the clean up of the Clark Fork River. Besides the work at the Charter Oak Mine, HNF has been involved in reclamation of four other mine sites in the past seven years. The USFS has the technical capabilities to oversee this project from design to implementation.

This project will take at least one full field season (May-October), with the possibility of some work carrying over one additional field season.

The goals for this project are:

1. Restore the headwaters of the Little Blackfoot River by reducing the amount of metal-laden water and sediment leaching to surface and groundwater sources
2. Maintain the historical integrity of the site
3. Protect and improve water quality for downstream users
4. Improve spawning and rearing habitat for bull trout and west slope cutthroat trout in Ontario Creek

Technical Assessment:

Soil samples were collected and tested from both the waste-rock dump and the riparian zone. The arsenic concentrations below the dump and in the soil/tailings mix area (riparian zone) are elevated to more than 500 times the background levels. The concentration of copper in the tailings area and the lead concentration below the dump exceed phytotoxic limits. The phytotoxic concentrations of metals in the soil/tailings mix area are strongly evidenced along the riparian zone by the lack of vegetation and poor soil formation.

The surface water samples collected indicate that the impacts to water quality in Ontario Creek from the Ontario Mine and Mill are severe. The concentrations of metals exceeded one or more Maximum Contaminant Levels (MCLs) in all of the samples. These MCLs were established under the federal Safe Drinking Water Act.

Diminished water quality and contaminated bed sediments (elevated levels of arsenic, zinc, copper, lead, and cadmium) are also responsible for depressed fish numbers and distribution throughout the drainage. Electroshocking surveys of Ontario Creek to detect fish distribution and species abundance show a zone of very little fish density from the Ontario Mine downstream for several miles to the confluence of Mary Ann Creek. Arsenic and lead exceed proposed EPA sediment criteria at all sites in Ontario Creek below the mine.

Water, sediment, and soil sampling as well as fish surveys all demonstrate the negative effects of mining on the Ontario Creek drainage. By removing the tailings, this project would improve and restore habitat effectiveness for aquatic species. The bull trout, an endangered species, and the west slope cutthroat trout, a sensitive species, both of which are high priorities for state and federal fish and wildlife agencies, would substantially benefit from removing contaminants from the stream system.

This project is much like the abandoned mine reclamation projects previously completed in the Little Blackfoot watershed by Powell County, the USFS, the Montana Department of Environmental Quality (DEQ), and DNRC at the Charter Oak site, and by the USFS, EPA, and DEQ in the Tenmile Creek watershed. Much like the proposed Ontario project, these projects also removed contaminated tailings from stream channels and placed them in a constructed repository. This project will provide long-term benefits for the estimated 45 residences located downstream from the site, and for aquatic species within the watershed.

The Ontario Mine and Mill site was ranked forty-sixth worst of the 276 mines that were inventoried by DEQ in 1995. It is the tenth worst site on USFS lands that were inventoried by the Montana Bureau of Mines and Geology in 1995. Both of these rankings were based on the severity of contamination and threats posed to the environment.

Prior to implementing any reclamation alternative, USFS will prepare an Engineering Evaluation/Cost Analysis (EE/CA) that specifically addresses the advantages and disadvantages of each alternative and provides a

cost/benefit analysis of each. The EE/CA will be initiated in the summer of 2000 and is scheduled to be completed by March 2001.

The preferred cleanup alternative is likely to consist of the total removal of the waste rock, tailings, and contaminated soils. These wastes would be hauled to the nearby Luttrell Pit, which is an existing centralized repository for mine waste. Since the tailings were transported by the stream, and for the most part were deposited in and along the stream, the majority of material that needs to be removed is within the riparian area. Restoring these wetlands to a fully functioning stream is a major goal of this project.

A no-action alternative would leave the 30,000 cubic yards of tailings in a position to continue to be a source of both water and soil contamination. Because the tailings are exposed to weathering and erosive processes, they would remain mobile, continue to migrate from the site, and spread contamination farther down the drainage. Routes of exposure include ingestion, inhalation, and dermal contact.

A potential problem exists immediately upslope from the proposed project. An undetermined quantity of waste rock is situated on private land just beyond the USFS boundary and has potential for mass movement downslope. If this situation (downslope movement) were to occur, the reclamation that this request proposes to accomplish would definitely be damaged. In order to protect state, federal, and local investments in the Ontario Mine cleanup, this site and its potential threat to downstream reclamation, needs to be thoroughly investigated. Site characterization, landowner responsibility, and remedial design of this site will affect RDGP's recommendation for funding. Absent resolution of these concerns, RDGP funding would be a potential waste of money.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Funds	Total
Salaries and Benefits	\$3,250	\$40,500	\$43,750
Contracted Services	\$296,400	\$1,020,000	\$1,316,400
Communications	\$0	\$1,200	\$1,200
Travel	\$250	\$3,250	\$3,500
Miscellaneous	<u>\$100</u>	<u>\$2,250</u>	<u>\$2,350</u>
Total	\$300,000	\$1,067,200	\$1,367,200

All salaries and benefits for Powell County and Forest Service personnel are based on the employees' daily pay rate, multiplied by the number of days necessary for them to oversee the project.

Budget costs are based on current construction and labor costs. Equipment costs for the contracted removal work are included in the contracted services section.

The remaining budget costs such as supplies, materials, communications, travel, and miscellaneous items are estimated costs based on current county and Forest Service operations and maintenance activities. These activities have been given values that the parties incur daily as a cost of doing business, under normal circumstances.

The Forest Service is committed to funding both reclamation and monitoring activities on the site. The Forest Service has budgeted \$60,000 in FY 2000 to complete the EE/CA and Potentially Responsible Party (PRP) search and an additional \$1,000,000 in FY 2001 for the reclamation work.

The construction budget is based on removing an estimated 30,000 cubic yards of tailings and contaminated soils to the Luttrell Pit at a cost of \$1,020,000 and restoring approximately five acres of wetlands at a cost of \$205,000.

The total for just the reclamation activities is estimated to be \$1,225,000. Including the associated cost of preparing the EE/CA and PRP report put the total cost at \$1,367,200.

Environmental Evaluation:

The impact to the environment is expected to be both beneficial and long-term. Short-term adverse impacts to water quality are expected during construction. A 310 permit and 3A authorization are likely to be required for temporary water quality exceedances. The environment assessment conducted by USFS will identify appropriate measures to avoid or mitigate problems associated with construction activities. Heritage resource clearance will be completed with the State Historic Preservation Office before construction start-up. Erosion protective measures will need to be undertaken after construction in order to allow vegetation to become reestablished. Stabilization of this drainage will result in improved long-term water quality and improved fish habitat.

Public Benefits Assessment:

This project will improve water quality, restore riparian vegetation, and remove heavy metals from the Little Blackfoot watershed. Removing the source of heavy metal contamination at the headwaters of the Little Blackfoot will help to restore and protect resources downstream from the site. This project complements the restoration work already underway in the Little Blackfoot with the reclamation of the Charter Oak Mine and Mill site.

The county, Forest Service, Montana Department of Fish, Wildlife and Parks (DFWP), and the U.S. Fish and Wildlife Service (USFWS) are all concerned with the aquatic health of the Little Blackfoot. Bull trout, an endangered species, and westslope cutthroat trout, a sensitive species, can both be found in the Little Blackfoot River. Heavy metal concentrations in the bed sediments are suppressing populations and distributions of both species in the drainage. Reclamation of this site will greatly reduce the risk to public health and safety to people who live and recreate in the area.

This project would improve water quality and protect human health and safety, making the Little Blackfoot a more desirable place to both recreate and live. Montanans who would benefit from an increase in the number of people coming to this part of Montana would be home builders, store owners, motels, restaurants, and other service industries. Reclamation contractors and suppliers will experience moderate economic benefit.

Recommendation:

A grant of up to \$300,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget. Site reclamation and design must address the upslope waste rock material located on private land.

Project No. 5

Applicant Name: City of Lewistown

Project Name: Reclamation of Brewery Flats on Big Spring Creek

Amount Requested: \$297,740

Other Funding Sources:	\$27,000	Applicant
	\$7,100	Department of Environmental Quality
	\$178,800	U.S. Environmental Protection Agency
	\$2,500	Department of Fish, Wildlife and Parks
	\$2,800	Montana Bureau of Mines and Geology

Total Project Cost: \$515,940

Amount Recommended: \$297,740

Project Abstract: (prepared and submitted by applicant)

This proposal is submitted by the City of Lewistown to the DNRC Reclamation and Development Grants Program. The proposal seeks \$297,740 to clean up polychlorinated biphenyls (PCBs) and other contaminants in the Brewery Flats section of Big Spring Creek at the southeastern edge of Lewistown in Section 23, Township 15 North, Range 18 East.

Random samplings of fish from Montana waterways in 1986 and 1995 indicated that Big Spring Creek trout near Lewistown contained the second highest concentrations of PCBs in the state. In 1998, the Montana Bureau of Mines and Geology (MBMG) identified a spike in PCB concentrations just below Brewery Flats. Subsequent sediment analyses by conducted by the MBMG, the Montana Department of Environmental Quality (DEQ), and the Montana Department of Fish, Wildlife, and Parks (DFWP) confirmed the initial test results.

Big Spring Creek in the Brewery Flats area was straightened by the Milwaukee Railroad Company in the early 1900s. Brewery Flats once housed an oil refinery and has been used as a public dump site and a railroad switching yard. None of these uses continues to exist at the site.

The Montana Department of Fish, Wildlife, and Parks recently restored meander bends of Big Spring Creek in Brewery Flats, the largest stream restoration project in Montana. Last year, local citizens and Americorps volunteers constructed a hiking trail through the area to allow people from around the region to view and enjoy the newly restored stream.

Lewistown intends to use Brewery Flats as parkland for Montana citizens. The area will also help teach schoolchildren from around the region about stream biology and restoration activities. However, the area remains contaminated with PCBs that must first be cleaned up. This proposal will fund a two-year cleanup project that will be overseen by the Montana Department of Environmental Quality.

Technical Assessment:

A number of state and federal investigations have been conducted at the Brewery Flats site since 1985. These findings document the presence of PCBs, heavy metals, polynuclear aromatic hydrocarbons, semi volatile organic compounds, total petroleum hydrocarbons, and pesticides occurring in soil, groundwater and surface water, and stream channel sediments. PCB contamination has also been found in fish tissue, leading to a public health advisory recommending limited (one meal per month) fish consumption.

The investigations continue and currently target finding the precise locations of PCB contamination sources. In the meantime, the city has done an excellent job of developing cleanup options based on the investigative results thus far. In this proposal, three primary cleanup objectives are presented.

1. Eliminate the threat of discrete phase diesel (found on the surface of the water table and adjacent soils)
2. Remove four collection sumps, including surrounding contaminated sludge and soils
3. Remove and/or contain contaminated surface soil (entire site)

Feasible remedial actions to implement these three cleanup objectives have been examined, and a preferred cleanup alternative has been selected in each. Selection factors included the following:

- Level of protection of human health and the environment
- Compliance with applicable laws
- Cost-effectiveness
- Ability to reduce or eliminate the toxicity, mobility, and volume of contamination

- Mitigation of exposure to risks
- Short-term and long-term effectiveness
- Implementability

In all three preferred cleanup actions, the contaminated media will be removed and disposed of at an approved off-site location. On-site exposure (by ingestion, inhalation, and dermal contact) to this contamination will be eliminated. Preparation and approval of the final design will be coordinated with DEQ. Upon project completion the site should be suitable for its planned use as a recreational park.

The application states that there may be some risk to groundwater posed by low-level soil contaminants besides heavy metals. In addition, high lead levels located at the south portion of the property need to be addressed. Investigation scheduled for completion during the fall of 2000 (using a \$50,000 RDGP grant from the 1999 Legislature) should determine the exact nature and extent of this contamination and the associated risk to human health and the environment. It is possible, therefore, that the current preliminary cleanup design may have to be revised to accommodate possible increases in remedial costs. Because of the nature, persistence, and high level of contaminants, the site is a high priority for use of RDGP funds. Local support for the project has been and continues to be overwhelming.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Funds	Total
Salaries and Wages	\$3,000	\$19,000	\$22,000
Employee Benefits	\$800	\$7,000	\$7,800
Contracted Services	\$293,040	\$172,000	\$465,040
Supplies and Materials	\$800	\$400	\$1,200
Communications	\$0	\$400	\$400
Travel	\$100	\$900	\$1,000
Miscellaneous	<u>\$0</u>	<u>\$18,500</u>	<u>\$18,500</u>
Total	\$297,740	\$218,200	\$515,940

The grant funds will be used for engineering design and construction, including DEQ oversight costs. Significant funds (\$191,200) have been expended by state and federal agencies in attempts to characterize the contamination and determine its location and source. These funds were listed as match funding because of the ongoing nature of the project. The costs are reasonable for the work proposed and reflect similar work at other hazardous waste sites statewide.

Environmental Evaluation:

Removal of site contamination will result in long-term beneficial impacts to the site's soil, vegetation, and surface water resources. Site safety and health plans will be developed to help ensure protection of site workers. Adverse impacts will be of short duration and adequately mitigated by compliance with design plans and specifications. Impacts to groundwater are expected to be beneficial but should be periodically monitored to assess the impact of planned removal actions.

Public Benefits Assessment:

The project area has been identified as a hazardous waste site by the U.S. Environmental Protection Agency and the Montana Department of Environmental Quality. Site investigations and sampling have documented areas of contamination from former industrial activities, including an oil refinery and a railroad switching yard that no longer exist at the site. The City of Lewistown and concerned citizens wish to clean up the site and use it for the following:

- Green belt natural area
- Recreational activities including hiking and bird watching
- An environmental education and an outdoor classroom for area schools
- Location for a trail loop system throughout the site
- Ball fields for local children

The site is characterized by a broad floodplain with open meadows, a rich diversity of marshy and open-water wetlands, and abandoned river oxbows. Conservation of the natural resources is of utmost concern, and the community plans to keep most of the area as a floodplain and greenbelt.

Cleanup of the Brewery Flats will ensure public safety for all site users. Cleanup and removal of contaminated soils will have significant benefits for present and future generations and will create a greenbelt and natural area that adjoins the City of Lewistown. In addition, the adjacent DFWP-owned Brewery Flats fishing access site and stream restoration projects will result in much higher use in the near future. Cleanup of the subsequent green belt and natural area will augment public use of this property.

Recommendation:

A grant of up to \$297,740 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

Project No. 6

Applicant Name:	Department of Environmental Quality	
Project Name:	CMC Pony Millsite Reclamation Project (Completion Phase)	
Amount Requested:	\$291,191	
Other Funding Sources:	\$207,000	Applicant
	\$10,000	U.S. Office of Surface Mining
	\$90,000	Governor's Office
	\$100,000	U.S. Environmental Protection Agency
Total Project Cost:	\$698,191	
Amount Recommended:	\$291,191	
Project Abstract:	(prepared and submitted by applicant)	

Funding of this project is necessary to complete remaining reclamation work at the CMC Pony Millsite. The Department of Environmental Quality (DEQ) has taken the responsibility for preventing releases and limiting the extent of past releases of hazardous materials at the Pony Mill since abandonment of the property in 1994. Reclamation work was undertaken at the Pony Millsite subsequent to a declaration of bankruptcy and abandonment of the site by the Chicago Mining Corporation (CMC), and by the failure to act on the part of the court-appointed bankruptcy trustee. Work was completed in order to eliminate the threat of cyanide contamination of groundwater supplies utilized by residents of the community of Pony.

Pumping of cyanide-contaminated leachate from collection sumps at the tailings impoundment was contracted by DEQ during 1996 and 1997. During 1998 and 1999, DEQ's Mine Waste Cleanup Bureau contracted with two engineering and construction firms to destruct cyanide, de-water mill tailings, and stabilize the tailings

impoundment at the CMC Pony Millsite. Work completed included the breaching of a high hazard dam located above the floodway that passes through the community of Pony.

Funds sought under this application will allow DEQ to finish the reclamation items remaining at the Pony Millsite. Remaining reclamation items involve earth moving and disposal of any materials remaining on the site after the sheriff's sale. Cyanide, cyanide mill tailings, petroleum compounds, and hazardous materials have already been removed from the site and will not be part of the completion phase of the project.

Pony Mill is not eligible for reclamation funds supplied by the federal Office of Surface Mining as the site postdates the eligibility date for the abandoned mine fund (August 4, 1977). The Pony Mill has been addressed under Montana's Comprehensive Environmental Cleanup and Responsibility Act (CECRA); however, CECRA is typically enforced through an order to a financially viable responsible party. Orders have been issued for cleanup of the Pony Mill, but no parties with resources available to pay for cleanup have been forthcoming. Government funds from multiple sources have been used to pay for the cleanup work completed to date; however, these funds were available on a one-time-only basis.

The primary objective of this project is to complete the reclamation work at CMC Pony Millsite. Hazardous substances and cyanide compounds have been removed and the site stabilized; however, the site is still in need of cleanup of structural debris and industrial waste. Completing the reclamation will involve regrading the site to a stable contour resembling the configuration of the site before disturbance. Benches and steep slope areas will be filled and covered. Regrading will involve moving and contouring approximately 70,000 cubic yards of material. Site regrading will be followed by application of approximately 9,600 cubic yards of stored topsoil. The site will then be revegetated using native grasses and forbs. Water quality will be protected, and the site will again be able to support a native stand of vegetation species. Commitment to reclamation of sites disturbed by mineral development will be demonstrated to a cynical and skeptical public.

The Montana Department of Environmental Quality, Mine Waste Cleanup Bureau will be the organization responsible for conducting this reclamation project.

The CMC Pony Millsite is located on a hilltop directly upgradient and to the west of the community of Pony, Madison County, Montana. The site is located about ¼ mile from the closest residence. Legal description of the site is the Southwest Quarter of the Southwest Quarter (SW¼ SW¼) of Section 18, Township 2 South, Range 3 West. The site is reached by traveling west from Harrison on Montana Highway 283 five miles to Pony. Millsite access is through town via Pony Creek Road.

Project construction should be completed within 180 consecutive calendar days.

Technical Assessment:

The Pony Millsite lies on the eastern edge of the Tobacco Root Mountains of southwestern Montana, approximately ¼ mile west of Pony, Montana. During 1989 and 1990, the Chicago Mining Corporation constructed the Pony Custom Mill to process gold ore from various small mines in the area using cyanide vat leach technology.

In January 1990, the then Montana Department of Health and Environmental Sciences (DHES) issued Montana Groundwater Pollution Control System (MGWPCS) Permit No. 0059 to the Chicago Mining Corporation for the operation of the Pony Custom Mill. The Pony Mill was proposed to operate as a custom mill that would not have a mine attached to it, but rather would receive ore from independent mines operating in the area. At the time that the Chicago Mining Corporation began construction of the Pony Mill, custom mills were not regulated under the Metal Mine Reclamation Act (MMRA). In 1989, the Montana State Legislature had passed changes to MMRA that included custom mills in the class of regulated mining and milling operations required to obtain an operating permit. Custom mill rules went into effect on July 1, 1990. In an effort to avoid regulation under MMRA, CMC operated the mill during June 1990 and poured the first doré bar without discharging tailings. The tailing pond was completed during August 1990. The State of Montana sued CMC in Madison County District Court maintaining that, since the mill was not fully operational until after July 1, 1990, the operators of the Pony Mill should be required to apply for an operating permit. The State lost the case as the District Court found that the

mill was operational before the custom mill rules went into effect, even though no tailing impoundment was in place. Consequently, the Pony Mill was not required to obtain an operating permit under MMRA, and no requirement was in effect that reclamation bonds be posted for the site.

Pony Mill operated intermittently during 1990 and 1991. In January 1994, DEQ revoked CMC's MGWPCS permit for failure to monitor for eight consecutive quarters. CMC abandoned the site and filed for bankruptcy. In May 1994, DEQ detected traces of cyanide in samples collected from a domestic well in the town of Pony and in a spring at the toe of the tailings impoundment. With these indications that the liner system installed under the tailings pond was leaking, DEQ committed to a regimen of pumping cyanide-contaminated water from under the liner. Pumping of cyanide-contaminated leachate continued on a semi-annual basis through 1997.

In 1998, responsibility for cleanup at the Pony Mill was transferred to the DEQ Remediation Division, Mine Waste Cleanup Bureau. Rather than continue the expensive practice of periodically pumping leachate generated from the tailings impoundment, a decision was made to eliminate the source of cyanide contamination. During 1998 and 1999, a cyanide removal project was constructed which consisted of flushing the residual cyanide compounds out of the tailings. Water in the tailings pond was evaporated using a sprinkler system, and the tailings pond liner was removed. Saturated tailings material was stabilized by mixing with dry inert material and the resultant mixed material was graded to provide positive drainage. The tailings impoundment dam was breached, with the breach material being the source of inert fill mixed into the tailings. Although the drained and stabilized tailings impoundment was seeded, steep slopes have been subject to rill erosion. Spring runoff in 1999 resulted in gullying at the dam breach and washing of sediment off-site. An irrigation ditch located downstream filled with sediment during this event. Little if any topsoil was applied to better ensure vegetative reestablishment.

After years of maintenance by DEQ and response actions designed to protect groundwater supplies from contamination, the site does not present a severe threat to human health. Erosion, sedimentation, and lack of vegetative cover, however, are still major problems that need corrective action. Delay in implementing measures designed to remedy these problems will increase the risk for more serious problems in the future. Protection of the site (and the investment thus far) is urgently important, not only to Pony area residents, but to the public image of DEQ. The conditions of permit #0059 will be fulfilled. The construction tasks identified in the project abstract are standard practice and technically feasible. Because no other funding is available to complete the project as required, and in the time frames expected by the residents of Pony, the project is a good investment of RDGP funding. The state should definitely complete the reclamation that it started.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Funds	Total
Salaries and Wages	\$8,328	\$0	\$8,328
Employee Benefits	\$2,248	\$0	\$2,248
Contracted Services	\$277,000	\$0	\$277,000
Communications	\$200	\$0	\$200
Travel	\$1,275	\$0	\$1,275
Rent and Utilities	<u>\$2,140</u>	<u>\$0</u>	<u>\$2,140</u>
Total	\$291,191	\$0	\$291,191

Matching funds already expended for contracted services amount to \$407,000. There is no current DEQ match provided. DEQ has requested a total of \$14,191 in non-contracted services (salaries, benefits, communications, and rent). U.S. Office of Surface Mining funding cannot cover these expenses for DEQ employees because the site disturbance was created after August 4, 1977, the eligibility cutoff date for federal funding.

Environmental Evaluation:

The grading, topsoiling, and revegetation of the Pony Millsite will not have any long-term adverse impacts to the environment. Short-term impacts associated with construction activities of heavy equipment (fugitive dust, fuel leaks, noise, emissions) are expected but can be minimized by applying water to haul and access roads, scheduling of construction, and properly maintaining equipment.

Public Benefits Assessment:

All Montanans have the right to a clean and healthful environment. They also have the right to expect that regulatory agencies charged with enforcement of mine cleanup statutes make good on broken promises by irresponsible mine operators. The residents of Pony, subjected to a host of problems caused by Chicago Mining Company, will be the direct beneficiaries of this project. It will bring to a close years of frustration and hardship caused by the Pony Millsite operation. Montana contractors, suppliers, and area retailers will experience moderate economic benefits.

Recommendation:

A grant of up to \$291,191 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

Project No. 7

Applicant Name: Broadwater Conservation District

Project Name: Big Belt Mine Reclamation Project

Amount Requested: \$145,380

Other Funding Sources:	\$2850	Applicant
	\$46,790	Townsend Ranger District, Helena National Forest
	\$750	Montana Department of Fish, Wildlife and Parks

Total Project Cost: \$195,770

Amount Recommended: \$145,380

Project Abstract: (prepared and submitted by applicant)

The Big Belt Mine Reclamation Project includes reclamation of placer-mined areas and an isolated lode mine in the Magpie, Hellgate, Avalanche, and Confederate Gulch drainages in the Big Belt Mountains, about 25 miles east of Helena. These projects are located in Township 11 North, Ranges 1 East and 1 West. These drainages have had historical placer mining that has resulted in steep-banked bench cuts, loss of surface streamflow, stream bank instability and sedimentation, impaired fish habitat, and concentrated areas of noxious weeds.

The goals of this project proposal are to stabilize watersheds, restore water quality and desirable vegetation, and enhance recreation user aesthetics. Reclamation objectives include restoring stream bank stability and surface flow, reducing noxious weeds infestations, restoring desirable vegetation, and enhancing fisheries habitat by backfilling the drifts under the channels, reconstructing sections of impaired stream channel, stabilizing cutbanks using a combination of heavy equipment and natural materials, backfilling and reshaping bench cuts, placing topsoil, revegetating areas, constructing slash barriers where needed, and controlling noxious weeds. One lode mine reclamation site is also proposed.

This proposal follows on the heels of successful reclamation from 1995 to 1999 of extensive placer- mined reaches in Whites Gulch in the Big Belts, a cooperative project of the Broadwater Conservation District; the Montana Department of Fish, Wildlife and Parks (DFWP); U.S. Forest Service; Montana Conservation Corps; Boy Scouts; Trout Unlimited; and landowners.

The National Environmental Policy Act (NEPA) process has been completed by the Helena National Forest (HNF). The project will be designed and contracted by engineers and natural resources personnel of the HNF, with review by the conservation district and DFWP. Construction implementation is expected to take from 45 to 60 days. The project could be completed as early as fall of 2001.

Technical Assessment:

This proposal seeks funding to reclaim four drainages impacted by placer mining. The sites are a mix of waste rock and dumps, bench cuts, structural debris, and underground mine workings. Cumulatively, these reminders of mining activities dating back to the 1890s have severely impacted the stream's floodplain and riparian zone. The applicant, in conjunction with the Helena National Forest, will use grant funds to restore and stabilize 3,200 feet of stream channel; restore surface water flow in two to three stream segments; stabilize four acres of bench cuts; overburden, and waste rock; and implement measures to reduce noxious weed infestations. Improved channel conditions and revegetation will result in better water quality and fishery habitat.

The construction work planned is not technically difficult and has been performed by the applicant and HNF several times in neighboring Big Belt drainages. The Whites Gulch Reclamation Project and Deep Creek Stabilization Project are two examples of state, federal, and local projects exemplifying inter-agency coordination between the applicant and DFWP, DNRC, and HNF. Much of the work conducted in the past serves as a prototype model for future habitat improvement and drainage restoration. Expertise gained on these other projects is directly applicable to the current proposal and will aid significantly in meeting project specifications, time lines, and budgets. Local support and involvement have been impressive. While metals contamination at these sites is not severe, the sites do evidence problems caused by placer-mining activity. The drainages have been drastically altered and need corrective action before the conditions worsen. Delays in funding will escalate the cost of future corrective actions.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Funds	Total
Salaries and Wages	\$9,480	\$23,870	\$33,350
Contracted Services	\$135,900	\$0	\$135,900
Supplies and Materials	\$0	\$1,150	\$1,150
Communications	\$0	\$370	\$370
Miscellaneous	<u>\$0</u>	<u>\$25,000</u>	<u>\$25,000</u>
Total	\$145,380	\$50,390	\$195,770

Cost estimates are based on bid tabulations and experience with similar projects. They are reasonable for the work proposed. Matching funds (miscellaneous) are funds spent by HNF for MEPA analysis and documentation. A Montana Department of Revenue audit cost (\$5,000) is included in the RDGP salaries and wages total.

Environmental Evaluation:

The impact to the environment is expected to be both beneficial and long-term. Short-term adverse impacts to water quality are expected during construction. A 310 permit and 3A authorization are likely to be required for temporary water quality exceedances. The environment assessment conducted by HNF identified appropriate measures to avoid or mitigate problems associated with construction activities. Heritage resource clearance will be completed with the State Historic Preservation Office before construction start-up. Erosion protection

measures will need to be undertaken after construction in order to allow vegetation to become reestablished. Stabilization of these drainages will result in improved long-term water quality, particularly during major precipitation events.

Public Benefits Assessment:

The project will result in increased watershed stabilization, improved water quality, enhanced fish habitat, and reduction of noxious weeds. This project will incrementally help to improve water quality in Canyon Ferry Reservoir by reducing sedimentation from stream areas disturbed by placer mining. Backfilling shafts, steep-sided pits, and bench cuts will remove potential caving hazards to forest users. This project will enhance recreation opportunities. The project drainages are located within 30 miles of Helena on public land. These areas of the Helena National Forest are utilized by numerous Montana residents and out-of-state visitors for a variety of recreation activities, including fishing, camping, driving for pleasure, hunting, wildlife viewing, and many more. All of the streams are tributaries of Canyon Ferry Reservoir, valued for its high quality fishing and recreation opportunities that are dependent upon good water quality. All of the reclamation areas are adjacent to primary travel routes, and existing disturbances and associated weed infestations are visible, unattractive, and a deterrent to visitor use. This project will reduce wear and tear on irrigation equipment by improving water quality. Downstream landowners seasonally utilize these streams for irrigation purposes. Too much sediment clogs irrigation valves and shortens the life of these investments.

Montanans will indirectly benefit from the projects in several ways. This project will improve recreational fisheries habitat and potentially provide a barren stream for the reintroduction of native west slope cutthroat trout. A recent petition to list this species as threatened or endangered was determined to be unnecessary due to proactive efforts by DFWP and others to restore former habitat for this species. Projects like this proposal provide additional opportunities to restore the cutthroat trout. This project will result in control of chronic and serious noxious weeds infestations. By reducing the available weed seed source, overall eradication costs to local governments and individuals can be contained.

Recommendation:

A grant of up to \$145,380 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

Project No. 8

Applicant Name:	City of Deer Lodge		
Project Name:	Former Chicago, Milwaukee Railroad Passenger Fueling Area, Deer Lodge, Montana		
Amount Requested:	\$140,000		
Other Funding Sources:	\$9,450	Applicant	
Total Project Cost:	\$149,450		
Amount Recommended:	\$140,000		
Project Abstract:	(prepared and submitted by applicant)		

The City of Deer Lodge is applying for a Reclamation and Development Grant to remove the underground fuel piping and sump system and clean up associated petroleum contamination at the former Chicago, Milwaukee, and St. Paul Railroad (Milwaukee Road) facility in Deer Lodge, Montana. The proposed cleanup will also include filling in a drainage ditch that has likely allowed contamination to be transported into Cottonwood Creek north of the site.

The former Milwaukee Road facility operated as a major cross-country passenger, freight, and maintenance facility from prior to World War I through the 1970s, when the railroad entered receivership. The northern portion of the former rail yard is currently owned by the City of Deer Lodge and consists of approximately 90 acres bounded to the south and west by private property, to the east by the Clark Fork River, and to the north by the Grant-Kohrs Ranch National Monument. The property is located in the Southwest Quarter (SW ¼) of Section 33, Township 8 North, Range 9 West, of Powell County, Montana. The city currently uses the property for storage, and a new municipal water supply well has been recently completed on the west portion of the property. Historical information along with preliminary environmental investigations conducted by the Montana Department of Environmental Quality (DEQ) and the City of Deer Lodge indicate that shallow soils on the property are heavily contaminated with petroleum fuels exceeding regulatory limits. Groundwater has also likely been affected, and evidence of heavy petroleum compounds was detected in sediment samples from Cottonwood Creek north of the site and within the Grant-Kohrs Ranch National Monument. The petroleum likely originated from spills and leaks associated with former locomotive fueling operations that consisted of a system of aboveground storage tanks and an underground piping system. Based on previous DEQ investigative data, the site is on the State Superfund list and has been ranked as a high priority.

Objectives of the project will be to evaluate environmental exposure hazards on the property to mitigate threats to surface water and groundwater through removal of the former fuel piping system, removal of an underground collection sump located in the southwest portion of the property, and filling a drainage ditch that allows seasonal surface water flow from contaminated portions of the property to Cottonwood Creek. The removed piping and sump will be transported as scrap to a local landfill. Petroleum-contaminated soil will be transported to a DEQ-permitted treatment land farm. Filling of the ditch will be accomplished through placement of compacted clay.

The project has broad local support based on the plan to include the property in the Deer Lodge Community Trail System proposed to connect the Old State Prison Museum with the Grant-Kohrs Ranch. Due to the conditions of the bankruptcy of Milwaukee Road, it is not a viable party to participate in the cleanup of the property. No federal moneys are available to complete remediation of this property.

Technical Assessment:

The Department of Environmental Quality's Remediation Division listed this site on the Comprehensive Environmental Cleanup and Responsibility Act (CECRA) state list as a "high priority" site.

A "high priority" site indicates that the contamination at the site poses a risk to human health and the environment. Exposure pathways identified at the site included dermal contact, ingestion, and inhalation of vapors from petroleum-contaminated soils, sediment, and water. The site is further characterized by the following:

1. Documented existence of uncontrolled hazardous or deleterious substances, such as leaking containers or impoundments, that pose a direct hazard due to uncontrolled site access
2. Documented and extensive contamination of exposed soil or exposed sediment with uncontrolled site access
3. Documented impact to a sensitive environment such as a terrestrial or aquatic resource, including wetlands, or area with unique or highly valued environmental or cultural features, or a fragile natural setting
4. Imminent threat to a drinking water source from migration of contamination from soil to surface water, groundwater, or a water line that is a drinking water source

5. Potential for migration of contamination to a utility corridor that is currently in use or documented contamination of a utility corridor that is not in use

DEQ and the City of Deer Lodge conducted a limited test pit investigation on March 29, 2000, to evaluate the extent of petroleum contamination on the former Milwaukee Road property. Six test pits were excavated to depths of between 4 and 8 feet. From the test pit investigation, two general areas of petroleum contamination were identified. The first was located near the covered sump in the southwest portion of the property; the second was in the north portion near what has been tentatively identified as the former fuel pump house. One test pit in each area indicated the presence of mobile petroleum product on the water table. Distribution of petroleum-contaminated soils (PCS) and mobile product is not fully evaluated at the site. One of the proposed tasks for the grant project will be to perform a soil and groundwater investigation to further define the extent of petroleum contamination.

Four potential cleanup options have been evaluated by DEQ, based on the following factors:

- Long-term reliability and effectiveness
- Reduction of toxicity, mobility, and volume
- Short-term effectiveness
- Implementability
- Cost-effectiveness
- Protectiveness

The preferred cleanup alternative consists of excavating and transporting the PCS to a land farm. Assuming that 1,075 cubic yards of material would be treated, the estimated cost to ship and treat the soil at a commercial facility would be approximately \$45 per cubic yard or \$48,375. A savings of up to \$20 per cubic yard or \$21,500 is possible if a local site can be used.

Formal plans and specifications have not been prepared for the project. Conceptual design plans for the project include four major activities that would be funded by RDGP.

1. A limited groundwater investigation, will further define the extent of groundwater and soil contamination at the site. This activity will include installation and sampling of six groundwater-monitoring wells to a depth of approximately 20 feet below the ground surface. A report will be prepared to describe site conditions, evaluate the presence of mobile, free- phase, immiscible product on the water table, and evaluate threatened groundwater receptors, such as the city drinking water well located west of the site for treatment.
2. The underground sump structure located on the southwest portion of the property will be drained, excavated, and removed. PCS excavated during the removal will be transported to a designated land farm site for treatment. Clean fill will be placed in the excavation.
3. The underground fuel pipeline system from the former aboveground storage tanks will be traced, excavated, and removed. Soil samples will be collected to identify areas of contamination and comply with DEQ permit requirements. PCS excavated during the removal will be transported to a designated land farm site for treatment. Clean fill will be placed in the excavation.
4. The drainage ditch that flows north from the site to Cottonwood Creek will be filled with impermeable clay to prevent contaminated groundwater from entering the ditch during high water table events. Filling the ditch will also enhance the wetlands habitat at the site, by slowing drainage during high water table events.

The application presents sufficient documentation justifying RDGP funding. Reclamation of the site is critical to Deer Lodge because of the impact to groundwater, the potential impact on the city's drinking water, and the threat

of petroleum contamination migrating into the Cottonwood Creek and the Clark Fork River. The Montana Department of Environmental Quality has recognized the site as a threat and has assisted in the city's grant application. The site consists of approximately 90 acres located adjacent to the downtown area. Because of its location, it is likely that area residents walking through the site are exposed to contaminated soil. Therefore, it is critical that the site be cleaned up to ensure public health and safety and protect groundwater and surface water. The cleanup of this site may necessitate pumping of free-phase petroleum product. A clearer picture of this possibility will emerge during the proposed groundwater investigation.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Funds	Total
Salaries and Wages	\$2,200	\$4,600	\$6,800
Contracted Services	\$137,800	\$0	\$137,800
Communications	\$0	\$100	\$100
Equipment	<u>\$0</u>	<u>\$4,750</u>	<u>\$4,750</u>
Total	\$140,000	\$9,450	\$149,450

The city will contribute \$9,450, nearly all of which is for equipment and operation costs associated with excavation, hauling, and backfilling. Analytical and consulting costs, combined with regulatory involvement, have driven up the cost of this project substantially. According to DEQ, the costs are reflective of Superfund cleanup actions at similar sites threatening public health or the environment.

This application is the result of activities performed by DEQ and the City of Deer Lodge. Chain-of-title and potential responsible party searches indicate that there are no persons that could be held financially liable for the cleanup of this site. Other funding alternatives were also examined and it was determined that no state or federal moneys are available from DEQ or the U.S. Environmental Protection Agency (EPA) Region VIII to address the evaluation and site cleanup.

Environmental Evaluation:

Implementation of this project will result in long-term, beneficial impact to the environment. Removal of contaminated soils and pipelines should improve surface water and likely groundwater quality. There will be short-term impacts associated with construction activities (excavation and backfilling), primarily dust generation, possible disruption of traffic patterns, noise, and equipment emissions. All impacts are expected to be minimal and of short duration.

Groundwater quality may not improve to levels acceptable to the local community and DEQ. In that event, the impacts to groundwater would need to be reduced by implementation of a groundwater remedial action plan. The duration of impact could be short-term or long-term depending on the availability of funding and treatment effectiveness. Regardless, the project represents a logical first step in the removal and/or reduction of contaminants at this site.

Public Benefits Assessment:

The residents of Deer Lodge will directly benefit from the cleanup of the petroleum contamination associated with the site. By removing the contamination and filling in the drainage ditch, area residents will have drinking water free from the threat of petroleum contamination. Residents who fish, swim, and float in the area will benefit from the contamination being removed, improving the water quality of Cottonwood Creek and the Clark Fork River. Area residents will also benefit by cleaning up the site for potential redevelopment.

Recommendation:

A grant of up to \$140,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

Project No. 9

Applicant Name: Butte-Silver Bow County (in cooperation with Anaconda-Deer Lodge, Powell, and Granite Counties)

Project Name: Upper Clark Fork Basin, Superfund Technical Assistance

Amount Requested: \$107,814

Other Funding Sources: \$114,826 Applicant

Total Project Cost: \$222,640

Amount Recommended: \$49,272

Project Abstract: (prepared and submitted by applicant)

The principal purpose of this project is to sustain the efforts of Butte-Silver Bow, Anaconda-Deer Lodge, Powell, and Granite Counties and other local governments in the upper Clark Fork River basin to coordinate and manage Superfund activities. The project allows local governments and citizens (who possess limited financial and technical resources) to hire an individual with the independent analytical capabilities to evaluate scientific reports, remedial designs, and long-term plans. Information communicated to local leaders and citizens will enable them to effectively participate in the Superfund decision-making process.

The Superfund process in the upper Clark Fork River basin is ongoing, and, based on developments through May 2000, it is expected that the process will not be completed for several more years. In fact, major decisions related to the remediation of many of the area's most serious environmental problems, such as the Butte Priority Soils Operable Unit and the Clark Fork River Operable Unit, have been delayed, and final decisions are not expected until 2001-2003. Consequently, the services and technical assistance provided through this grant are still vital.

The State of Montana's support and commitment to help these four counties, as demonstrated through this grant program, are critical. Over the past decade, the counties have struggled to attain a meaningful role in the Superfund decision-making process. The Upper Clark Fork River Basin is a prime resource, and its eventual cleanup, reclamation, and/or mitigation of the mineral development impacts that occurred in the area over the past 120 years is a great challenge for all of Montana. In addition, the ongoing Natural Resource Damage Program litigation between the State of Montana and the Atlantic Richfield Company (ARCO) has and will continue to have a direct impact on all of the upper Clark Fork River basin.

The cleanup of this river basin will have a tremendous positive impact on the region within and surrounding the basin, and it is likely that the decisions made will set strong precedents for cleanup activities elsewhere in the state and nation.

Technical Assessment:

The upper Clark Fork basin, principally from its headwaters in the Butte area, has been mined almost continuously since 1880. This mining and smelting activity has resulted in soil and water contamination and changes in the way groundwater and surface water flow in and near Butte, Anaconda, and other areas along the

Clark Fork River corridor. Remnants of this mining and smelting history constitute a serious hazard to human health and the environment.

There are four federal Superfund sites, extending over 120 miles in the upper Clark Fork River basin, in various stages of investigation and cleanup. These four sites together constitute the largest Superfund site in the United States. Within these sites are high priority problem areas that are being, or will be, addressed over the next several years, including: The Berkley Pit and underground mine flooding; mine waste deposits in floodplains; the Montana Pole Plant; soil contamination in the vicinity of Butte, Walkerville, Rocker, and Anaconda; flue dust from the Anaconda smelter; the Old Works/East Anaconda Development area; the Warm Springs and Opportunity ponds; the Arbiter beryllium wastes; Smelter Hill; Milltown Reservoir; and streamside tailings along the entire river corridor. In addition, many unknown factors are associated with the Superfund sites, and new problems continue to surface.

Even though some areas have been regraded, topsoiled, and revegetated, environmental problems remain largely unmitigated. As each day passes, the Superfund process grows more complex, and in 2002 and 2003, the ramifications of several major decisions will begin to affect the communities in the Upper Clark Fork River Basin. In effect, the ultimate rehabilitation and remediation of many of the area's environmental problems, such as the Clark Fork River and Opportunity Ponds, are just beginning.

The ongoing Natural Resource Damage Claim negotiations between the State of Montana and ARCO will further increase the need for technical expertise in each of the affected counties. Although a settlement has been reached on several claims, there are still three claims left to settle, and these three - the Butte aquifer, the Anaconda uplands, and the Clark Fork River - have serious implications for the project sponsors.

Given the complexities of the problem, it has been extremely difficult for local governments and citizens to understand the Superfund process fully and know whether proposed remedial activities are in the best long-term interest of the community, the area, and the State. Local governments must be able to participate in the process actively and make informed, responsible decisions. To enable this participation in decision making, local officials need to acquire the capability to analyze the technical information.

This project provides funds to hire a technical specialist who will serve Butte-Silver Bow, Anaconda-Deer Lodge, Granite, and Powell Counties. The project design calls for the four counties to share one technical expert, thereby facilitating the need for communication on cleanup decisions. Decisions made at one site in one county will eventually affect decisions at other sites along the river. Consequently, one full-time person working with all counties helps ensure against counter-productive decisions. Sharing an expert among the four counties is the most cost-effective way to provide the technical expertise, on demand, without undue duplication of services. It is cost-prohibitive for each county to get its own specialist.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Fund	Total
Salaries and Wages	\$66,560	\$59,779	\$126,339
Employee Benefits	\$20,954	\$18,840	\$39,794
Contracted Services	\$10,000	\$0	\$10,000
Supplies and Materials	\$1,200	\$0	\$1,200
Communications	\$1,800	\$600	\$2,400
Travel	\$4,800	\$0	\$4,800
Rent and Utilities	\$0	\$2,400	\$2,400
Equipment	\$0	\$0	\$0
Miscellaneous	\$2,500	\$0	\$2,500
Indirect Costs	<u>\$0</u>	<u>\$33,207</u>	<u>\$33,207</u>
Total	\$107,814	\$114,826	\$222,640

The salary for this position (\$16 per hour plus benefits) is well below what it would cost to hire a private consultant. Contracted service costs include vegetation monitoring and publication graphics and design for specialized information materials. All costs are derived from the previous technical specialist RDGP grant in 1999 and are reasonable for the project scope of work proposed. The counties' match funds represent over one half of the total project cost (52 percent). At the recommended amount of \$49,272, the counties' match represents more than double the RDGP share. The recommended amount is less than the requested amount, because the applicant still has funds remaining from previous RDGP grants.

Environmental Evaluation:

Funding will be used to hire a person with the technical skills and expertise necessary to evaluate scientific reports, remedial designs, and long-term plans. There are no environmental impacts associated with this action.

Public Benefits Assessment:

Without the technical information and assistance provided through this project, affected local governments and their constituents cannot be expected to have the knowledge needed to participate in the Superfund process. Without active participation in the process, local governments cannot effectively influence or attain any degree of confidence in decisions purported to be in their best long-term interests. A thorough understanding of the cleanup process is vital to the residents and subsequently to the overall success of any remediation.

This project will also provide regional and statewide benefits. The Superfund process in the upper Clark Fork River basin is an investigation and remediation process that proposes the eventual clean-up, reclamation, and/or mitigation of the mineral development impacts that occurred in the area over the past 120 years. The damage to the area's resources is extensive and complex. In many cases, solutions have not yet been identified. There is also a Natural Resource Damage Program and continued negotiations between the State of Montana and ARCO on the three unsettled claims that will directly affect the decisions made regarding the upper Clark Fork River basin cleanup. The cleanup of this river basin will have a tremendous positive impact on the region within and surrounding the basin.

Recommendation:

A grant of up to \$49,272 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

Project No. 10

Applicant Name: Board of Oil and Gas Conservation

Project Name: 2001 Southern District Orphaned Well Plug and Abandonment, and Site Restoration

Amount Requested: \$300,000

Other Funding Sources: \$23,799 Applicant

Total Project Cost: \$323,799

Amount Recommended: \$300,000

Project Abstract: (prepared and submitted by applicant)

The purpose of this grant request is to secure funding to properly plug and abandon orphaned oil and gas and leaking orphaned abandoned wells, and to perform the surface reclamation. The wells are of no further economic use and have the potential to cause damage to subsurface formations, the state's water, and the surface around each well.

The Board of Oil and Gas Conservation (BOGC) will eliminate the threat of contamination by soliciting bids to plug and abandon the wells. Under the supervision of the BOGC staff, the successful bidder will properly plug and abandon each well, dispose of and/or remediate contaminants, and reclaim the surface location.

The wells produced oil and gas or were plugged in the past. The operators could no longer afford to produce the wells, and the wells were shut in. The companies' assets will not cover the liabilities to creditors, leaving the operators insolvent. Since the operators are currently insolvent or long since defunct, responsibility for the wells and any potential environmental damage rests with the Board of Oil and Gas Conservation and the State of Montana. The wells will be properly plugged and abandoned when funding is made available.

The orphaned wells are located throughout southern Montana. In most cases, the wells that present the highest potential to damage the environment because of leaking or loss of mechanical integrity will be plugged first.

The project is estimated to take 24 months. The work will generally begin during the first suitable field season following the availability of funding.

Technical Assessment:

The 19 wells in this application are located in Stillwater (9 wells), Yellowstone (8 wells), Bighorn (1 well), and Sweetgrass (1 well) Counties. Most of the wells are leaking oil, gas, and/or water to the surface; are located in a floodplain; or are pressurized at the surface. All have the potential to threaten surface soil and water resources.

The proposed plugging project involves surface preparation at each wellsite, moving in and rigging up an appropriately sized drilling or work-over rig, drilling or cleaning out the well bore to a depth sufficient to control any water or hydrocarbon flow, setting cement plugs in the well bore, and setting mechanical plugs (cast iron bridge plugs) in cased portions of the wells. When all the project wells have been plugged, the surface will be cleaned of debris, pits (if any) will be back-filled and leveled, and the entire area will be re-contoured. Revegetation of the disturbed area will be accomplished utilizing seed mixtures appropriate for the area and satisfactory to the landowner. Such methods are standard industry practice and present no unusual difficulty when performed by

qualified oil-field contractors. Unknown downhole conditions may escalate costs significantly over the estimated costs. In that event, not all wells would be plugged.

These wells have been identified and prioritized using the state's Well Plugging Prioritization System and are considered a high priority for plugging and abandonment. Of the 117 wells currently ranked by BOGC, these wells fall within the upper one-third.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Funds	Total
Salaries and Wages	\$0	\$12,056	\$12,056
Employee Benefits	\$0	\$3,088	\$3,088
Contracted Services	\$300,000	\$0	\$300,000
Supplies and Materials	\$0	\$300	\$300
Communications	\$0	\$1,000	\$1,000
Travel	\$0	\$7,155	\$7,155
Miscellaneous	<u>\$0</u>	<u>\$200</u>	<u>\$200</u>
Total	\$300,000	\$23,799	\$323,799

The total plugging costs are estimated based on the time to plug, cost of plugging materials, cost of dirt work done in preparation for well re-entry, and location restoration upon the wells' completion. Third-party services, such as trucking of water and materials, wire line services, and rental of specialized equipment are included in the estimate. The costs are reflective of similar projects bid on a time-and-materials basis.

Each individual well or site under this project will generally be treated separately for project administration purposes. For bid purposes, the wells will be grouped together to take advantage of the economy of scale. Additional wells may be added, if the project is completed under budget and unused funds are available. While the time allotted for plugging is relatively short (i.e., 3 to 10 days per well), the surface restoration, including re-vegetation, is likely to take one growing season before a final release of the site can be made.

Environmental Evaluation:

No long-term adverse environmental impacts should be created in the plugging and abandonment of the proposed wells, provided reclamation activities are conducted properly. Short-term adverse impacts associated with the movement of equipment to the sites are expected. Compacted soil and destroyed vegetation on access routes would be reclaimed upon project completion, and any debris would be hauled off-site and disposed of in a licensed landfill. Short-term air pollution (e.g., dust, emissions from combustion engines) would be minimal, provided that equipment and traffic routes are watered as necessary and mechanized equipment is in proper working condition. If the sites involve cleanup and disposal of drilling fluids, oil sludge, brine wastes, or other contaminants, these materials must be identified and characterized and this information used to develop site-specific reclamation plans. Depending on the material and contaminants encountered, remedial action may involve burning, burial, land farming, and addition of soil amendments for materials disposed of on-site, or it may involve hauling materials to a licensed off-site landfill or waste disposal facility. If disposal poses unusual difficulty or necessitates remedial actions not normally implemented by BOGC, appropriate regulatory or reclamation experts would need to be contacted.

Public Benefits Assessment:

The proper plugging and abandonment of these wells benefit all Montanans by eliminating severe impacts to groundwater and surface water caused by oil-field development activity. Statewide, many abandoned and unplugged wells threaten water supplies used for drinking water, stock watering, and irrigation purposes. Safety hazards (e.g., open holes, gas emissions, blowout potential) affect not only to humans, but also stock and wildlife. Proper plugging eliminates site-specific problems and helps ensure long-term protection of soil, water, and

vegetative resources. Contractors, equipment suppliers, and other area retailers would realize moderate economic benefit.

Recommendation:

A grant of up to \$300,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

Project No. 11

Applicant Name: Custer County Conservation District

Project Name: Yellowstone River Resource Conservation Project

Amount Requested: \$299,977

Other Funding Sources:	\$15,000	Applicant
	\$16,790	U.S. Natural Resource Conservation Service
	\$132,790	DNRC, Conservation and Resource Development Division
	\$115,000	DNRC, Water Resources Division
	\$36,450	U.S. Geological Survey
	\$39,463	Yellowstone River Conservation District Council
	\$65,520	Technical Advisory Committee members
	\$15,500	funds raised for conference

Total Project Cost: \$736,490

Amount Recommended: \$299,977

Project Abstract: (prepared and submitted by applicant)

The Yellowstone River has increasingly been the focus of growing ecological, economic, social, and political concerns. These concerns are evident in a number of recent events and activities, including the floods of 1996 and 1997, debate over the impact of stabilization activities on the river and its habitats and species, challenges to permitted actions, and, more recently, legal actions. In October 1998, representatives of 11 conservation districts formed the Yellowstone River Conservation District Council (YRCDC), in response to public concern and the attention focused on the river.

YRCDC's purpose is to provide local leadership, assistance, and guidance for the wise use and conservation of the Yellowstone River's natural resources. This purpose was founded on three fundamental precepts: (1) the need for sound scientific information on which to base management decisions; (2) the need for broad-based local, regional, and national input; and (3) the need for technical and financial assistance to address sustainable use issues on the Yellowstone River.

By accomplishing the objectives of the Yellowstone River Resource Conservation Project, YRCDC will acquire the necessary baseline information and initiate public information and education activities, which are necessary to address some of the outstanding issues facing the Yellowstone River stream corridor.

Under this proposal, YRCDC will:

- Complete a physical feature inventory

- Compile the inventory data into a publicly accessible database
- Complete a geomorphic analysis of over 60 miles of selected river segments
- Establish for public use, the Yellowstone River Resource Information and Education Center, with selected sources of information and links to other key organizations and agencies
- Conduct a minimum of six public workshops/tours to present results of the baseline inventories
- Host "The Yellowstone Challenge" scientific conference, to bring together interest groups, policymakers, and specialists to discuss proposed and ongoing studies, legal actions, and potential solutions

Technical Assessment:

The proposed project is well placed in context with other work currently being done on the Yellowstone River. The problem history section provides a good outline of the issues to be addressed with the data to be collected by this project. The physical features inventory will be conducted on 570 miles of the river from Springdale to the Montana/North Dakota border. The geomorphic analysis will be conducted once areas on the lower 570 miles of the river are prioritized using information obtained in the inventory. It is anticipated that this analysis will encompass approximately 66 miles of the river.

The applicant states that this proposal is a balance between a no-action alternative and a large-scale, detailed study of the river. With the emphasis on a reconnaissance-level study followed by a more detailed investigation of high value or problem reaches, the proposal provides an adequate and cost-effective way to summarize the site characterization over a large-scale area.

The applicant proposes standard and state-of-the-art techniques to conduct a geomorphic analysis that will identify and describe river channel stability, erosion, and sedimentation, and compare historical and current channel processes for the selected reaches. These techniques are scientifically sound and will provide useful data to assist in future resource planning and decision making.

The proposal lacks somewhat in planning for long-term maintenance of the geo-spatial database. This database will be derived from the physical features inventory which identifies and describes channel and floodplain attributes of the river. The applicant anticipates that further funding for the database will be needed. Future issues that need to be addressed are the need for further data collection, resolution of database manipulation, and database control. These issues can probably be worked out in future phases of this long-term project.

Use of Custer County Conservation District to handle administration of this project is a good idea. Using Park Conservation District to administer the Upper Yellowstone River Project is working well. Also, YRCDC was given funding by EPA to hire a project coordinator. It has been proven that having a professional project coordinator has helped other watershed groups successfully implement projects.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Funds	Total
Salaries and Wages	\$9,600	\$78,040	\$87,640
Employee Benefits	\$2,400	\$21,060	\$23,460
Contracted Services	\$212,002	\$219,000	\$431,002
Supplies and Materials	\$37,450	\$36,450	\$73,900
Communications	\$9,300	\$0	\$9,300
Travel	\$2,325	\$51,463	\$53,788
Rent and Utilities	\$0	\$15,000	\$15,000
Equipment	\$4,000	\$0	\$4,000
Miscellaneous	<u>\$22,900</u>	<u>\$15,500</u>	<u>\$38,400</u>
Total	\$299,977	\$436,513	\$736,490

The budget is well documented in showing how costs were derived. Cost estimates appear to be realistic. The conservation district is charging approximately 5 percent for contract administration, which is reasonable. Federal and state staff assisted YRCDC in arriving at the figure for the physical features inventory using costs incurred on similar projects. The geomorphic analysis study costs were based on the Yellowstone County geomorphic study. DNRC, U.S. Natural Resource Conservation Services (NRCS), Montana State University (MSU), and Natural Resource Information System (NRIS) staff helped the applicant estimate the cost of developing the spatial database. NRIS was consulted to estimate the cost of developing the resource center website.

Contracted services may be a little under-budgeted, especially in the spatial database development area. This task may take more effort than anticipated in the budget. Furthermore, there are no budgeted costs for document production.

Environmental Evaluation:

This project is not expected to generate any long-term or short-term adverse environmental impacts.

Public Benefits Assessment:

The abstract portion of this review refers to recent legal action concerning the Yellowstone River. This legal action was a lawsuit filed by a coalition of environmental organizations against the U.S. Army Corps of Engineers (COE). This suit called for a ban on all non-emergency bank stabilization activities until a comprehensive study is completed. The court has ruled on this suit and ordered that the COE must no longer consider only the impacts of individual channel modifications, but hereafter must also look at the cumulative effects of projects along the river. This ruling adds urgency to completion of a cumulative effects study for the Yellowstone.

This project is necessary for local conservation districts and the public to better understand the condition of the Yellowstone River stream corridor for informed permitting decisions and development of management tools. This project provides the opportunity to combine historical and contemporary data on river geomorphology and make it available to the public on the web. Channel mapping and survey information will be accessible via Geographic Information Systems (GIS) capabilities and made available to multiple users via the web. These products will be valuable to various decision makers working in the basin. Many interest groups such as landowners, government agencies, and conservation groups will benefit by working from a common database. The U.S. Army Corps of Engineers has been directed by congress to prepare a comprehensive study determining hydrologic, biologic, and socioeconomic cumulative effects. This project will provide baseline information for the Corps study.

The no action alternative of this project would result in the continued piecemeal decision making on bank stabilization, Natural Streambed and Land Preservation Act (310) permitting, and other regulatory actions. Conservation Districts process an average of seventy 310 permit applications on the Yellowstone each year. Implementation of this project will result in the creation of baseline information to allow more comprehensive watershed planning and implementation.

The RDGP program provided \$300,000 to the Governor's Task Force for the start-up of the Upper Yellowstone River cumulative effects investigation. It therefore seems appropriate for RDGP to provide funds to assist YRCDC with the start-up of the investigation for the remainder of the river.

Recommendation:

A grant of \$299,977 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

Project No. 12

Applicant Name: Cascade County

Project Name: Fort Shaw Weed Shop Soil Contamination Remediation

Amount Requested: \$237,345

Other Funding Sources: \$18,879 Applicant

Total Project Cost: \$256,224

Amount Recommended: \$218,466

Project Abstract: (prepared and submitted by applicant)

The former Fort Shaw Weed Shop site is a 9.95-acre parcel located in Fort Shaw on Campbell Street, east of North Fort Shaw Road. Fort Shaw is located approximately 24 miles west of Great Falls in Cascade County, Montana. The property is legally described as the North Half of the Northwest Quarter (N½NW¼) of Section 12, Township 20 North, Range 2 West. The Cascade County Weed and Mosquito Management District occupied the Quonset building from 1953 to 1973. The Fort Shaw Rural Fire Department has used the structure since the early 1980s.

The Quonset building has a gravel floor, and weed control activities conducted prior to 1974 have resulted in the release of chlorinated herbicides onto the gravel surface and their subsequent migration into subsurface soils. This project seeks to remediate these contaminated soils and eliminate any soil contamination and potential groundwater contamination hazards.

The Cascade County Weed and Mosquito Management office will oversee the project. Once funding is secured, the project will be released for bid. The cost of remediation, as outlined in the RDP, will require the project be bid independently. The contractor who is awarded the bid will oversee the project setup, site preparation, excavation of contaminated soils, disposition of those soils, site restoration, and project completion.

This project is site-specific and will occur entirely within the Quonset building. The active remediation of the site should take approximately two weeks. The project will require some additional testing, so it is likely the project will be completed in two months. Once the site is remediated, the rural fire department will reoccupy the structure.

Technical Assessment:

Tests conducted at the Fort Shaw site indicate high concentrations of chlorinated herbicides, primarily 2,4-D, with lesser amounts of dicamba, picloram, 2,4,5-T, and 2,4,5-TP in surface and shallow subsurface soils. In 1998, the county hired a private consulting firm to prepare a remedial design that would examine a number of potential cleanup options. Cleanup options are limited because of the site's hazardous classification under the Resource Conservation and Recovery Act (RCRA) and the requirement that these herbicides be disposed of at a regulated RCRA facility. The preferred and most effective cleanup option, therefore, is complete removal the contaminated soils, transporting them to an out-of-state RCRA waste disposal facility (in Utah), incineration, and site restoration with clean backfill material. Unavoidably, the costs associated with this permanent cleanup alternative are high. The preferred action does not present any unusual difficulty and is readily implementable. Approximately 250 tons of soil material (less than 200 cubic yards) will be removed. Disposal fees, by far, constitute the highest proportion of total costs (estimated at \$150,000). Either other cleanup options such as containment and biological treatment are not appropriate given the hazardous classification, or they have proven only marginally successful in similar settings.

An area that deserves closer examination involves the potential for groundwater contamination. The remedial design plan prepared by the consultant did not rule out the possibility that pesticides have migrated to groundwater. The static water level at the time of sampling was at 5.4 feet below the ground surface in the monitoring well. The sample was taken in mid-October, typically a time of lower water levels. In addition, a single negative sample is probably not conclusive evidence that pesticides are not present, considering the

demonstrated vertical migration of pesticides in soil. Further investigation regarding the depth of pesticides in the soil and whether residues are present in the saturated zone or groundwater needs to be coordinated with the state Department of Agriculture.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Funds	Total
Wages and Equipment	\$0	\$13,879	\$13,879
Contracted Services	<u>\$218,466</u>	<u>\$5,000</u>	<u>\$223,466</u>
Total	\$218,466	\$18,879	\$237,345

The preceding budget reflects costs negotiated with the applicant after the application was submitted and is different from the amounts originally proposed. It is well documented and reflects accurately the costs associated with removal, transport, and incineration of the contaminated soil materials at an out- of-state facility. The county is financially unable to fund the full cost of this project but is contributing \$13,879 in the form of equipment and operator labor. An additional \$5,000 (Montana Department of Agriculture grant) will be contributed towards contractor expenses. The original amount pledged by the county amounted to \$2,400. If the county is unwilling or unable to finance the cleanup, the landowner, (U.S. Bureau of Reclamation) has indicated that it will perform the cleanup for the county and bill the county for its costs. The costs of a federally conducted cleanup would likely be several orders of magnitude higher than the amount requested through RDGP.

Environmental Evaluation:

Removal of contaminated soils will have no long-term adverse impact to the environment. Benefits to soil resources and groundwater will be long-term, since risks posed to the human health and the environment will be removed. Personnel conducting the removal will be required to follow a site health and safety plan and wear protective clothing. Dermal contact and dust inhalation hazards will be addressed in site safety plans. The project will be of short duration (less than 30 days) and conducted by personnel properly trained in the handling of hazardous waste materials.

Public Benefits Assessment:

The contamination will be removed, thereby allowing residential, commercial, or recreational use of the property. Potential threats to groundwater and surface water will be eliminated.

Recommendation:

A grant of up to \$218,466 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

Project No. 13

Applicant Name: Department of Environmental Quality

Project Name: Zortman Mine - Ruby Gulch Tailings Removal

Amount Requested: \$300,000

Other Funding Sources: \$460,000 Applicant

\$3,000,000 U.S. Army Corps of Engineers

Total Project Cost: \$3,760,000

Amount Recommended: \$300,000

Project Abstract: (prepared and submitted by applicant)

Underground mining for gold occurred upstream from the town of Zortman sporadically between 1900 and 1942. Ore recovered was milled in upper Ruby Gulch and processed by vat leaching. During this period of milling operations, several hundred thousand cubic yards of tailings were discharged into Ruby Gulch and have, over time, migrated downstream through the town of Zortman. Testing of these tailings has shown that they no longer contain cyanide or significant quantities of leachable metals; however, the tailings are highly erosive in their present location and continue to wash into town during storm events. As a result, the tailings have completely filled the stream channel through town. This causes the stream to routinely overflow its banks during storm events, resulting in substantial risk of damage to private property.

Gold Corporation (PGC) operated an open pit mining operation adjacent to the Ruby Gulch tailings site between 1979 and 1990. PGC applied for an expansion of the Zortman mine into sulfide ores during 1992. This application was approved during 1996, but was not acted upon and Pegasus declared bankruptcy in 1998 without completing reclamation of the mine. The acid-generating nature of the materials mined was not identified until after cessation of operations, and PGC did not stockpile adequate quantities of topsoil or other reclamation materials to reclaim the site consistent with Department of Environmental Quality (DEQ) guidelines for reclamation of acid-generating wastes.

The Ruby Gulch tailings have been tested and determined not to be acid-forming. In addition, these tailings can provide a suitable growth medium, provided appropriate amendments are added.

Some funding for transport of tailings to the Zortman mine for use as a reclamation cover component can be provided from the reclamation bonds; however, there is not sufficient funding within the bonds for either complete removal of the tailings or for subsequent restoration of the stream channel.

DEQ is seeking \$300,000 from RDGP to cover additional tailing removal and stream rehabilitation. With this funding, DEQ intends to address those areas of tailings deposition that constitute the greatest and most immediate threat to the community of Zortman. Complete removal and stream restoration will cost considerably more than the funding currently available.

DEQ is seeking funding from the U.S. Army Corps of Engineers (COE) to complete this tailing removal project (estimated cost, \$3 to \$5 million); however, COE funding is not assured, and at any rate, it would not be available prior to 2002, which is too late to fit with the first phase of the reclamation schedule for the Zortman mine. Other funding sources will have to be used for tailings amendment of reclamation covers of facilities reclaimed during 2000 and 2001.

The principal goals of this project are fourfold:

1. Reduce the risks associated with flooding to property in Zortman by removing the source of erosive tailings in the headwaters of Ruby Gulch and by re-establishing storm flow capacity in the channel through town.
2. Thicken the reclamation cover at the Zortman mine by utilizing Ruby Gulch tailings as additional subsoil, resulting in better long-term revegetation success and associated increased evapotranspiration. This will reduce the quantity of water infiltrating the reclamation cover, thus reducing the amount of water requiring collection and treatment at the water treatment plant.
3. Reduce costs associated with transporting off-site materials to the mine for reclamation purposes. These tailings are the closest suitable materials available for augmenting the reclamation covers.
4. Improve aesthetics, both along Ruby Gulch and on the Zortman Mine site.

These goals will be achieved via the following objectives: DEQ proposes to excavate tailings from Ruby Gulch and haul the material to the Zortman Mine, where it will be applied to the surfaces of heap leach pads and waste rock dumps prior to placement of the topsoil cover. Subsequent to removal of the tailings, the Ruby Gulch channel will be restored.

The Department of Environmental Quality, Environmental Management Bureau will be responsible for implementing the reclamation program at the Zortman and Landusky Mines, including this tailings removal project.

The Zortman Mine is located 50 miles southwest of Malta adjacent to the southern boundary of the Fort Belknap Indian Reservation. The Zortman Mine is located in Sections 7, 17, and 18, Township 25 North, Range 25 East, Phillips County, Montana. Within this area, Ruby Gulch is located zero to two miles northwest of Zortman.

Ruby Gulch tailings removal and placement on the Zortman Mine site is expected to be completed by the end of 2002. The portion of the project covered by this grant application will require approximately six months, commencing about July of 2001. Additional funds are being sought from COE to accomplish the complete cleanup and restoration of Ruby Gulch from its headwaters through the town of Zortman, which would likely extend the project by an additional 12 months.

Technical Assessment:

The construction tasks listed below will address each of the objectives listed in the abstract.

- Task 1. Through engineering design work, determine optimal equipment and scheduling for the project, phasing of removal areas, and final design of the post-reclamation channel and road system within Ruby Gulch. Task 1 is expected to be completed during 2000.
- Task 2. Commence tailings removal from upper Ruby Gulch (nearest the Zortman mine), and place the excavated tailings over the "lower" Zortman leach pads (those scheduled for reclamation during 2000). This task will likely be accomplished during the 2000 construction season.
- Task 3. Excavate tailings from the Ruby Gulch stream channel reach within the town of Zortman, and transport these tailings to the Zortman Mine site. This section of channel, which is the one that currently poses the greatest flooding risk to the town of Zortman, would be funded with RDGP funds and remaining reclamation bond funds held by DEQ.
- Task 4. Remove remaining tailings from within the lower reach of Ruby Gulch and the middle reach (between town and the Zortman Mine site), followed by restoration of the stream channel. This task would be accomplished using COE funding, which DEQ is currently in the process of acquiring, and would be accomplished primarily during the 2002 and 2003 construction seasons. The tailings would be relocated to the Zortman Mine site, and, where possible, used to complete reclamation of areas that have not been capped as of that date.

DEQ anticipates awarding contracts for a significant portion of the reclamation at the Zortman Mine during the summer and fall of 2000. Construction is projected to begin sometime during the third quarter of 2000. Targeted construction items include partial backfilling of the Zortman pits, and regrading and capping most of the Zortman leach pads during the years 2000 and 2001. All of these areas could benefit from augmentation of reclamation covers by utilizing Ruby Gulch tailings as a subsoil. Completion of reclamation of the Zortman Mine is anticipated to take until 2002 or 2003. The amount of tailings that can be removed from Ruby Gulch during this period, and the extent of channel restoration, will be dependent upon the amount and timing of supplemental project funding obtained by DEQ.

The additional funds being sought from the COE to accomplish complete cleanup and restoration of Ruby Gulch from its headwaters through the town of Zortman would likely extend the project by an additional 12 months. DEQ is in the process of negotiating a land transfer agreement with the U.S. Bureau of Land Management (BLM) in which DEQ would become the landowner and, therefore, eligible for COE funding.

Several leach pads at the Zortman Mine have already been recontoured and are ready to receive reclamation covers. These covers will be designed to promote runoff of storm water falling on the leach pads, rather than

infiltration. It is important that cover soil placement be performed as quickly as possible because unreclaimed leach pads at the Zortman Mine currently collect approximately 40 million gallons of water per year via precipitation events. DEQ must then manage (treat, then dispose via irrigation) this additional water volume using the limited reclamation funds. The greater the volume of water that collects in the leach pads, the less money remains for reclamation of the mine site. Thickening of reclamation covers by utilizing amended tailings as a subsoil will improve the water- holding capacity of the soil cover and will improve plant growth, increasing evapotranspiration. These factors will provide the long-term benefit of lessening the volume of water that will have to be pumped from the leach pads and treated.

The application is fairly well documented, clearly stated, and technically sound. Analysis of the tailings should address the potential for phytotoxicity, and the final construction design must address sedimentation control measures in the event that COE funding is delayed.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP Matching Funds		Total
Salaries and Wages	\$0	\$7,800	\$7,800
Employee Benefits	\$0	\$2,340	\$2,340
Contracted Services	\$300,000	\$427,125	\$727,125
Supplies and Materials	\$0	\$244	\$244
Communications	\$0	\$1,280	\$1,280
Travel	\$0	\$2,904	\$2,904
Equipment	\$0	\$7,200	\$7,200
Miscellaneous	<u>\$0</u>	<u>\$11,107</u>	<u>\$11,107</u>
Total	\$300,000	\$460,000	\$760,000

Costs for tailings excavation and placement are reasonable and reflect actual costs at similarly constructed projects. Matching funds from COE are anticipated (\$3,000,000) but not yet secure. DEQ's match of \$460,000 comes from bond forfeiture and will be combined with RDGP funding to address the most immediate threats to the town of Zortman.

Environmental Evaluation:

Short-term impacts to the environment will occur as the result of construction activity. Fugitive dust and heavy equipment emissions can be mitigated by water application and equipment maintenance. Permits likely will be required for operations conducted in the stream channel. Scheduling of construction should address any concerns by local residents relating to noise and vehicle traffic patterns. Sedimentation prevention measures will need to be incorporated into the removal plan.

Public Benefits Assessment:

The primary benefit from the removal of the tailings is the protection of the residents of Zortman from the risk of personal property damage, as well as prevention of infrastructure damage to community roads and water supply lines.

Under contracts let to date for reclamation work at the mine sites, local workers have been hired. The mine sites are adjacent to the Fort Belknap Reservation, and several employees currently under contract are tribal members. The addition of the Ruby Gulch tailings removal program will ensure additional employment for members of the local work force.

Recommendation:

A grant of up to \$300,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

Project No. 14

Applicant Name: Sheridan County Conservation District

Project Name: Protecting Natural Resources by Reclaiming Oil-field Brine-Contaminated Soils

Amount Requested: \$299,950

Other Funding Sources:	\$6,300	Applicant
	\$34,765	Landowners
	\$18,225	Montana Bureau of Mines and Geology

Total Project Cost: \$359,240

Amount Recommended: \$299,950

Project Abstract: (prepared and submitted by applicant)

Oil-field brines migrating from reserve pits and other oil-field sites have contaminated soil and groundwater at many locations in Sheridan County. Landowners have reported increasing problems with contaminated soils and water resources overlying and adjacent to oil-field sites in Sheridan County. These problems include sterile soils, contaminated wells, sinkhole development, and accelerated erosion.

Sheridan County Conservation District has been compiling locations of many of these problems over the past several years. Most of the problems were not as apparent during the dry climatic conditions of the 1980s, but the effects of the contamination have become obvious during the more normal climatic conditions of the 1990s. A more moist climatic cycle will likely cause greater problems than are currently observed. Wastes associated with hydrocarbon production have been typically disposed on or near each drilling site in northeastern Montana. These wastes are generally buried in lined reserve pits, but commonly the liners are breached, allowing the salt-saturated mud to move into unlined trenches. Based on conservative estimates of pit volume and brine concentrations, each pit contains as much sodium chloride salt as a 260-ton salt block. Brines are extremely mobile, and only infiltrating snowmelt or rainfall dilutes the salt load. The rate of dilution is very slow, and high concentrations of salt can be found in both the soil and groundwater below a site for decades. Migration of brine results in salt-contaminated soil and groundwater off-site. Upward migration of salt is common in areas with high water tables, resulting in the movement of salt into the soil and effective sterilization of the soil so that it cannot support vegetation. This project proposes to mitigate salt contamination by removing the source, isolating the contamination, or by other means restoring soil productivity and maintaining groundwater quality.

Technical Assessment:

These problems have existed since the 1950s and 1960s. In outwash aquifers, contamination has been identified more than one-half mile down gradient of abandoned oil well sites. Many of the sites that appeared to be adequately reclaimed and stable for more than a decade have recently subsided.

The applicant estimates that the proposed budget will be enough to clean up and reclaim 15 to 30 sites. Landowners have currently expressed interest in cleaning up about 22 sites. More than 900 oil wells have been drilled in Sheridan County, and nearly all of these have a reserved pit that was buried nearby. The applicant expects more cleanup site candidates as the project gets started.

For sites being considered to receive funds for cleanup and reclamation, the conservation district and the Montana Bureau of Mines and Geology (MBMG) must first work with the Board of Oil and Gas Conservation to determine that there is no identifiable party responsible for cleaning up the contamination.

A technical advisory committee will review the site assessment and cost estimate for each site and will develop a ranking of all the potential sites. A major consideration for the advisory committee will be to compare the environmental benefits of cleaning up an individual site with the estimated cost. Reclamation costs will be estimated based on the most economic and feasible cleanup plan.

A Montana Bureau of Mines and Geology hydrologist will be carrying out the proposed assessment, monitoring, and site inspection work. Contractors will be hired to conduct the reclamation and cleanup work. The contractors will be hired directly by the landowners. Several projects could be lumped together to reduce overall costs.

The project is anticipated to take about two years to complete. The site-assessment portion is expected to take about six months. Reclamation and monitoring work will take up to 18 months.

The goals and objectives of this project are clearly stated and adequately developed. The general approach to this project appears to be sound and technically feasible.

If remediation measures require discharge of salt water to surface waters, then DEQ will need to review the project. Water quality regulations may require a permit.

Since sodium chloride is not considered a hazardous waste, the local landfill can accept the salt-laden material. The material could be used for daily cover of the landfill waste, so it can actually benefit the landfill. However, if the cost of trucking is too high, a waste disposal pit can be developed on-site or nearby where heavy clay soils are located. Heavy clay soils can also be used to fill in subsidence pits.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Funds	Total
Salaries and Wages	\$4,500	\$4,500	\$9,000
Employee Benefits	\$1,800	\$1,800	\$3,600
Contracted Services	\$289,950	\$52,990	\$342,940
Supplies and Materials	\$2,000	\$0	\$2,000
Communications	\$200	\$0	\$200
Travel	<u>\$1,500</u>	<u>\$0</u>	<u>\$1,500</u>
Total	\$299,950	\$59,290	\$359,240

The RDGP expenses listed above for salaries and wages, employee benefits, supplies and materials, communications, and travel are for Sheridan County Conservation District to administer the project. This comes to a total of \$10,000. The reclamation costs are estimated at \$197,000. The cost for assessment and monitoring is estimated at \$92,500.

Landowners will be responsible for providing 10 percent cash match and 5 percent in-kind match for the reclamation costs. The total landowner match is estimated to total approximately \$34,765 based on the current budget.

According to MBMG, estimated reclamation costs may range from \$2,000 for simply cleaning up and capping a pit to more than \$20,000 for hauling and disposing of brine-saturated drilling waste at a landfill. It is estimated that costs will vary widely between the different types of reclamation projects. Surface damage ranges in area from 0.5 acre to more than 5 acres for each site.

The projections provided seem to be accurate, and it appears that sufficient funds are requested to initiate a good pilot project. However, it would have been helpful if rough estimates of comparative costs for particular phases of the reclamation project had been provided, such as the costs of contaminated soil removal, transportation, and disposal; impermeable caps; transporting backfill and cover soil; slope stabilization; and revegetation.

Environmental Evaluation:

Proper reclamation measures, such as reseeding and contouring the surface back to its original grade, would mitigate any long-term adverse environmental impacts. Sodium chloride is not considered a hazardous waste, so hazardous waste disposal measures would not be needed. Impacts associated with construction activities would be considered short-term and should not significantly impact human health or the environment. Short-term impacts would mainly be fugitive dust and noise. Proper dust control measures such as spraying water and limiting work to daylight hours will lessen these impacts.

Public Benefits Assessment:

This project will repair damages to soil and groundwater caused by poor disposal of oil-field wastes. Wastes at poorly reclaimed sites will be removed or isolated to prevent further degradation of natural resources. By removing and isolating the salt-saturated wastes, water quality, soils, vegetation, and wildlife resources will be allowed to recover. Crop production can be restored, and subsidence at these sites will no longer be a safety issue.

Recommendation:

A grant of up to \$299,950 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

Project No. 15

Applicant Name: Department of Natural Resources and Conservation,

Project Name: Environmental Hazard Sites on State Land

Amount Requested: \$272,500

Other Funding Sources: \$10,000 Applicant

Total Project Cost: \$282,500

Amount Recommended: \$272,500

Project Abstract: (prepared and submitted by applicant)

Through a combination of an Environmental Hazard Inventory conducted in 1998 and information provided from other state agencies, the Department of Natural Resources and Conservation (DNRC) has identified a total of seven state owned tracts of land located in various areas across the state that contain materials that are

environmentally hazardous and/or that pose threats to public health and human safety. These materials not only raise liability concerns, but also restrict the use and income-generating potential of the properties.

It is the goal of the department to take remedial actions necessary to remove the hazards so that the properties are once again safe and can be used to their full potential.

DNRC will oversee reclamation activities conducted through private contracted services.

Site 1 - Columbus Tire Pile: NE ¼ Section 36, T2S, R20E, Stillwater County
Site 2 - Caretaker Cottage Demolition: SE ¼ Section 34, T11N, R3W, Lewis & Clark County
Site 3 - Gravel/Concrete Processing Plant: NW ¼ Section 16, T24N, R8E, Chouteau County
Site 4 - Galen Dairy Barn: NE ¼ Section 36, T6N, R10W, Deer Lodge County
Site 5 - St. Regis Dump: S ½ Section 20, T18N, R27W, Mineral County
Site 6 - Sula Dump: NE ¼ Section 28, T1N, R19W, Ravalli County
Site 7 - Harper's Bridge Dump: SW ¼ Section 36, T14N, R21W, Missoula County

It is DNRC's desire to complete the necessary reclamation within 24 months of securing adequate funding.

Technical Assessment:

The Montana Department of Administration (DOA), Risk Management and Tort Defense Division reviewed all seven of these sites. From a risk management perspective, DOA recommends that the debris and contaminated material be removed as soon as possible.

DNRC researched, analyzed, and chose the most cost-effective and technically sound remedial alternatives for alleviating the hazards identified at each of the seven sites. Disposal and/or transportation of all hazardous materials will be done in compliance with state and local specifications.

Three alternatives were posed for Site 1, the Columbus tire pile. Environmental laws and air quality liabilities ruled out burning, and hauling was too expensive. Burying the tires was determined to be most cost-effective and environmentally sound and has been approved by the Montana Department of Environmental Quality (DEQ). The Solid Waste Regulatory Program of DEQ considers the Columbus tire pile a threat to human health and the environment and recommends it be cleaned up as soon as possible. Tire piles are notorious breeding areas for mosquitoes, known disease vectors for humans and livestock.

The cleanup alternatives examined for Site 2, the Lewis and Clark County caretaker cottage, were to repair, raze, or burn the structure. Repair of the structure was cost-prohibitive, and burning was ruled out because of air quality and liabilities. Razing was chosen as the safest and most cost-effective. This site poses threats to humans and is an attractive nuisance.

Site 3, the Fort Benton abandoned gravel/concrete plant cleanup site, contains some structures, large amounts of trash and debris, junk equipment and machinery, and an old crane with its boom still in the air. The preferred cleanup alternative includes dismantling and removing the physical hazards, as opposed to constructing a fence around the site. The primary hazards at this site are the large amount of debris, old outbuildings, and the crane with the elevated boom. The site presents an attractive nuisance liability to the state because young people frequent the site.

Site 4, the Galen dairy barn site, consists of an abandoned barn with adjacent living quarters and several outbuildings containing 20 boxes of asbestos pipe insulation, asbestos siding, containerized chemicals, old doors, windows, and other hardware from the adjacent hospital facility. The preferred alternative is to remove the asbestos, board up the windows and doors, and dispose of the containerized chemicals. The primary hazards at the Galen dairy barn site are the open packages of asbestos pipe insulation inside the barn and the attractive nuisance nature of the barn and associated structural hazards. There is significant evidence of vandalism to the property.

Site 5, the St. Regis dumpsite, is an old trespass dump adjacent to the Clark Fork River and consists mostly of household garbage and discarded furniture, etc. A combination of alternatives was selected and involves removal of the dumped materials and restriction of future access with fences, barricades, and signs. The primary hazard at this site is the possibility for the dumped debris entering the Clark Fork River. Access through the site appears to be frequent, as the county road is well traveled. In addition, there is a risk of new trespass dumping occurring due to the old dump materials being in open view from the county road.

Site 6, the Sula dump, covers approximately one acre and consists of a mostly covered landfill with miscellaneous debris located on the ground surface and along the toe of the dump area. The Sula dump is immediately adjacent to Andrews Creek. The Sula dump contains asbestos-containing material. Site debris will be covered with soil and the area seeded and fenced. The primary hazard at this site is the asbestos-containing material, which is exposed at the toe of the dump. Some of the exposed debris on the top and sides of the dump consists of old barbed wire, which could be a potential physical hazard to humans or range cattle. General "house cleaning" in and around the stream would mitigate potential hazards to the stream and reduce trespass dumping in the future.

Site 7, the Harper's Bridge trespass dumpsite, is located near Frenchtown and borders the Clark Fork River. This site contains mostly household garbage items and appliances; a motorcycle; and a car. A washing machine and the car are located in the high flow channel of the river. There is an old gravel pit where existing fencing has been damaged so that access to the pit is no longer limited. The uphill part of the site is used as a shooting range because of the steep cut area where gravel was removed. The dumped materials will be removed and access restricted with fences, barricades, and signs. The primary hazards at this site are the physical hazards posed by the steep banks along the Clark Fork River, trespass dumping, and recreation vehicle use around the gravel pit and the shooting range.

Conditions at all seven sites were well analyzed and defined. Cleanup methods are well documented, and cost effective alternatives were selected. Appropriate agency contacts have been made with DEQ, the State Historical and Preservation Office and the Department of Corrections.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Funds	Total
Salaries and Wages	\$0	\$7,941	\$7,941
Employee Benefits	\$0	\$2,059	\$2,059
Contracted Services	<u>\$272,500</u>	<u>\$0</u>	<u>\$272,500</u>
Total	\$272,500	\$10,000	\$282,500

Cleanup and remediation costs at each site are estimated as follows: the Columbus tire pile. \$230,000; the Lewis and Clark County caretaker cottage and the Chouteau County gravel/concrete processing plant \$10,000 each; the Galen dairy barn, \$7,500; and the St. Regis, Sula, and Harper's Bridge dumps, \$5,000 each. The cost estimates were obtained from various independent contractors.

The budget is well documented and reasonable for the work proposed.

Environmental Evaluation:

Provided there is long-term success of the remediation and proper implementation of specific aspects (i.e., proper asbestos abatement), there should not be long-term adverse impacts. Impacts associated with construction activities would be considered short-term and should not significantly impact human health or the environment. Short-term impacts of the asbestos handling and disposal can be abated by following a site-specific health and safety plan, employing appropriate personal protective equipment, and following proper operating procedures to protect on-site workers. Also, there may be minor disturbances due to the removal of wastes from streambeds. Construction activities near streams should use appropriate best management practices to control sediments until

vegetation is established. Further short-term impacts would be fugitive dust and noise. Proper dust control measures such as spraying water and limiting work to daylight hours will lessen these impacts.

Public Benefits Assessment:

Each of the seven sites described contains physical hazards that could cause injury or harm to humans, as well as materials and chemicals that have the potential to impact human health or the environment. These factors cause concern regarding liability for the State of Montana. In addition, the presence of the hazards has negatively impacted the ability to use these lands to their full potential. By taking actions necessary to alleviate the hazards, the natural resources are protected, and future income to be generated through continued leasing and licensing of these lands is increased. The purpose of these lands is to generate income for the support of Montana's public schools; this project will help return these lands to long-term productivity. These sites are also eyesores that are in some cases highly visible.

Recommendation:

A grant of up to \$272,500 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

Project No. 16

Applicant Name: Flathead County

Project Name: Assessment of Aggregate Resources for Long-Term Planning in Flathead and Missoula Counties

Amount Requested: \$167,821

Other Funding Sources: \$21,850 Applicant
\$79,691 Montana Bureau of Mines and Geology

Total Project Cost: \$269,362

Amount Recommended: \$167,821

Project Abstract: (prepared and submitted by applicant)

Mining of aggregate (crushed stone, sand and gravel) raises environmental, engineering, and economic concerns, leading to conflicts between aggregate producers and neighboring citizens that can be reduced by long-range planning. The demand for aggregate has increased substantially in Flathead and Missoula Counties because of rapid population growth. Also, construction throughout the major valleys of these counties has reduced available sites for the development of new sources. The Flathead Regional Development Office (FRDO) and the Missoula County Office of Planning and Grants (MOPG), in cooperation with the Montana Bureau of Mines and Geology (MBMG), propose a study of aggregate resources in Flathead and Missoula Counties.

The goal of this project is to provide information on potential aggregate resources in a format useful for long-range planning and resource management. Objectives include presentation of mapped data in digital and drafted form. A final report will be published by MBMG. The digital data will be managed and updated by resource planners. Planners, elected officials, and parties interested in aggregate resources will use the final report to help guide growth away from high-quality aggregate resources or to caution proposed subdividers and future property owners of the fact that high-quality aggregate resources are nearby and that mining may take place. FRDO will administer the project, provide oversight, and provide technical information. Technical information and oversight

will also be supplied by MOPG. Fieldwork, compilation of data, development of maps, and preparation of the final report will be provided by MBMG. The project will be completed within two years of the starting date.

To implement the long-range planning goal, the county will use the information created in this study when establishing new neighborhood plans and zoning districts. The county is currently working with a neighborhood northeast of Kalispell to establish zoning. This neighborhood, known as the Helena Flats neighborhood, has two existing gravel pits. If a resource analysis illustrates a high-grade aggregate resource in this area, the county could tailor the zoning district to anticipate gravel mining. The zoning would put new residents on notice that gravel extraction may likely happen in this area. The county will also use the resource information in long-range Master Plan (Growth Management) documents. If a subdivision is proposed in an area showing a high-grade aggregate resource in the plan, the county could require a note on the face of the subdivision plat stating that gravel extraction may occur within the proximity of the development.

Technical Assessment:

The goals and objectives of the project are to provide Flathead and Missoula County planners and landowners with readily usable maps and descriptions showing potential sources of aggregate within their areas of concern. The work will consist of compilation of information on aggregate resources and related hydrogeology. Mapping and sampling of potential aggregate deposits, preparation of detailed maps in digital and drafted form using GIS software, and publication of a final report by the Montana Bureau of Mines and Geology are proposed.

To accomplish these objectives, the applicant will:

- Compile available geologic and hydrologic information from aggregate producers, MBMG, DEQ, the Montana Department of Transportation, USFS, and published/unpublished geologic maps
- Evaluate areas of potential sand and gravel deposits using aerial photos and maps, and field map these areas
- Compile and interpret hydrologic data
- Compile available information on bedrock adjacent to major valleys / transportation routes
- Characterize and evaluate the best deposits of sand and gravel (fieldwork)
- Evaluate sources of crushed stone aggregate (fieldwork)
- Compile field data, convert the data to GIS format and prepare the final report

The maps and geologic/hydrologic data will be used to assist local planners in making informed decisions regarding the siting of residential developments and sand and gravel operations. The rapid growth patterns being experienced in both counties and the increased restrictions being placed on the siting of aggregate operations logically dictate the need for this type of study. Long-range planning based on knowledge of the types of aggregate available and deposit size can help reduce conflicts and conserve resources by steering growth away from these resources.

Direct costs passed on to consumers for aggregate in Montana include increasing costs for land acquisition, increasing costs due to citizen protests of permit applications for aggregate extraction operations, and increasing costs to minimize impacts to the environment and reclaim sites after mining. Direct and indirect costs are also incurred by state and local agencies to review proposed operations and address the concerns of citizens. Often proposals to start or expand extraction operations result in legal battles, which ultimately increase the cost of aggregate. Long-range planning using detailed information on potential aggregate resources and environmental constraints will help reduce the costs.

There has been no previous work completed to address the problems associated with the extraction of aggregate in Flathead or Missoula Counties. DEQ, which regulates and permits sand and gravel operations, fully supports the need and places high priority on the importance of this proposal.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Funds	Total
Salaries and Wages	\$84,952	\$43,489	\$128,441
Employee Benefits	\$27,404	\$15,222	\$42,626
Contracted Services	\$27,100	\$0	\$27,100
Supplies and Materials	\$1,155	\$500	\$1,655
Communications	\$500	\$500	\$1,000
Travel	\$21,710	\$0	\$21,710
Miscellaneous	<u>\$5,000</u>	<u>\$41,830</u>	<u>\$46,830</u>
Total	\$167,821	\$101,541	\$269,362

The majority of salaries and employee benefits are allocated to MBMG (\$102,826) over the two-year project period. Contracted services are for map compilations and report publishing. Travel expenses are largely for MBMG to conduct fieldwork. The costs are difficult to evaluate, not knowing the time needed to conduct fieldwork, compile data, and prepare maps. It is assumed that MBMG's estimates for these tasks are reflective of similar inventories conducted in the past. The requested amount seems reasonable if it will help Flathead and Missoula Counties address increasing problems between landowners, aggregate producers, and local citizens. Considerable time and money have been expended in the past addressing growth problems associated with increased populations and less space. A more efficient system (GIS / Arc View) and reliable information will add credibility to the decisions made by local planners and permitting agencies.

Environmental Evaluation:

There will be no adverse environmental impacts directly associated with this study.

Public Benefits Assessment:

Because the goal of this project is to provide information that can be used for long-range land-use planning of development around aggregate resources, the benefits to the citizens of Montana are primarily indirect and should be reflected in reduced conflicts between citizens and aggregate producers. Long-range planning could also result in lower prices for aggregate and a savings of tax dollars because of reduced conflict. Direct benefits would be realized by agencies reviewing aggregate extraction permits because less time would need to be spent collecting information and identifying potential problems. This would include potential savings by DEQ while reviewing permit applications, and savings by county agencies reviewing permits. Both private developers and public agencies attempting to identify and permit aggregate deposits would realize direct benefits by having detailed information available to evaluate potential extraction sites. Because city, county, and state departments all use aggregate and maintain extraction sites, these agencies would all realize direct benefits when trying to identify new sources of aggregate and permit new sites. Knowledge of groundwater conditions could be used in mine plan development and help mitigate potential impacts to water quality.

Recommendation:

A grant of up to \$167,821 is recommended for this project contingent upon DNRC approval of the project scope of work and budget.

PART 2. Reauthorization of 1999 RDGP Funds

The 1999 Legislature authorized the total amount of \$900,000 to the Department of Environmental Quality (DEQ) for the following projects:

Toston Smelter Reclamation Project	\$300,000
Frohner Mine Reclamation Project	\$300,000
Great Republic Smelter Reclamation Project	\$300,000

It is recommended that this \$900,000 be reauthorized to the DEQ to include the following six projects:

Mammoth Mine and Mammoth Tailing Site
Gregory Mine
Broadway / Victoria Mine
Zortman and Landusky - Organic Soil Amendments
Zortman and Landusky - Highwall Reduction Program
Coal Bed Methane Environmental Impact Statement

The total amount of \$900,000 can be used at any of the immediately preceding nine projects, not to exceed \$300,000 per project, except that the Coal Bed Methane Environmental Impact Statement project may not exceed \$250,000.

The 1999 Legislature also authorized the amount of \$300,000 to Toole County for the following project:

Toole County Plugging and Abandonment; Aid to Small Independent Oil Operators

A total of up to \$200,000 of Toole County's 1999 grant award is recommended for reauthorization to the following three counties in the amounts prescribed:

Glacier County	\$100,000
2000 Glacier County Plugging and Abandonment Project	
Pondera County	\$50,000
Pondera County Oil and Gas Well Plug and Abandonment Project	
Liberty County	\$50,000
Bear Paw Plug and Abandonment and Abandonment Aid Program for Small Independent Operators in Liberty, Hill, Blaine, and Chouteau Counties	

It is recommended that Toole County be reauthorized any remaining balance of the 1999 grant award for its aid to small oil operators program. The reauthorizations to Glacier, Pondera, and Liberty Counties are in order of rank and funding priority and dependent upon the availability of funds on June 30, 2001 from the 1999 Toole County grant. Funds reauthorized may also be supplemented by RDGP appropriations to other projects having unspent grant fund balances.

Project No. 17

Applicant Name: Department of Environmental Quality

Project Name: Mammoth Mine and Mammoth Tailings Site Reclamation Project

Amount Requested: \$300,000

Other Funding Sources: \$1,200,000 Applicant

Total Project Cost: \$1,500,000

Amount Recommended: \$300,000

Project Abstract: (prepared and submitted by applicant)

The Mammoth Mine and Mammoth Tailings sites are two inactive sites listed on the Abandoned Hardrock Mine Priority Sites list (currently ranked 48th and 28th, respectively) of the Montana Department of Environmental Quality (DEQ). The sites are located in the Tobacco Root Mountains in Madison County, Montana. More specifically, the mine site is situated in Sections 7 and 18, Township 2 South, Range 3 West; the Mammoth Tailings site is situated down gradient of the Mammoth Mine by approximately 1,000 feet. Between the two sites, there are approximately 450,000 cubic yards of mine tailings and 29,000 cubic yards of mine waste rock. Arsenic, copper, lead, and zinc are substantially elevated at the mining complex. Reclamation of the sites would be conducted by the DEQ, Mine Waste Cleanup Bureau and would most likely consist of mine waste consolidation into a single mine waste repository with an impermeable cap to be placed over the repository area, thereby eliminating receptor contact with the contaminated mine wastes. Upon completion of reclamation activities, the site will be revegetated with native plant species. Project construction is estimated to take 90 days.

Technical Assessment:

The cleanup of the Mammoth Tailings and Mine site will comply with procedures detailed in the National Contingency Plan (NCP); the federal Comprehensive, Environmental Response, Compensation, and Liability Act (CERCLA); and the Montana Comprehensive Environmental Cleanup and Responsibility ACT (CECRA). This lengthy and complex process is depicted in a streamlined fashion on page 50.

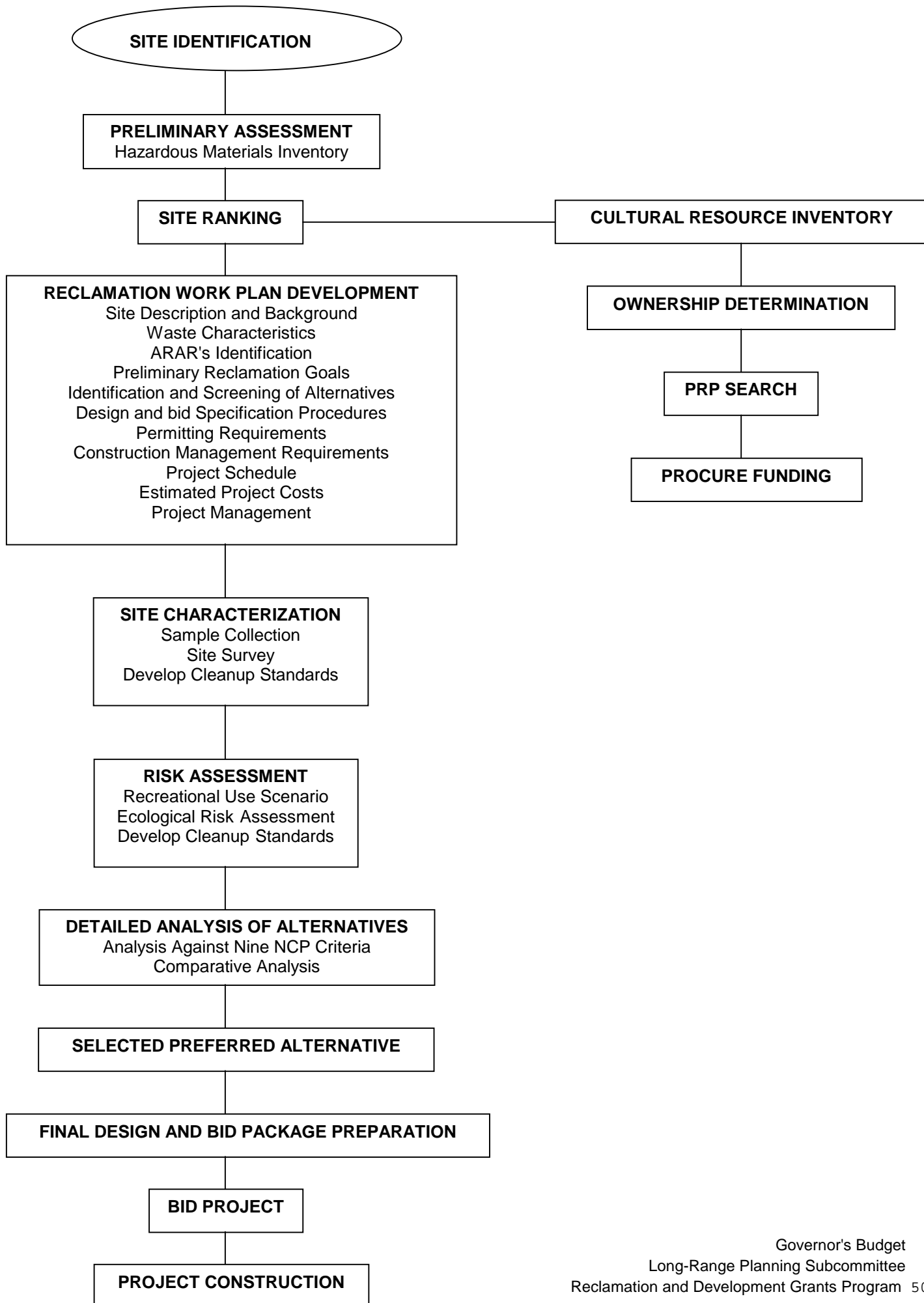
Site identification, preliminary assessment, site ranking, and the Reclamation Work Plan have been completed for the Mammoth Mine and Mammoth Tailings sites. These two sites are ranked 48th and 28th, respectively, on DEQ's priority sites listing of Montana's worst hard rock mine sites. The sites cover approximately 19 acres, including an estimated 450,000 cubic yards of mine tailings and 29,000 cubic yards of waste rock, two tailings disposal areas, a dilapidated mill, seven waste rock piles, open shafts, and open adits. The primary exposure routes of concern are the groundwater and surface water, with the two tailings impoundments being the principal sources of concern. Groundwater is presently being used for drinking water and irrigation.

The submitted Reclamation Work Plan provides fairly detailed information on:

1. Site background
2. Waste characteristics
3. Applicable laws and regulations
4. Risk analysis identifying potential contamination sources, routes of exposure, and receptors
5. Preliminary reclamation goals
6. Identification and screening of reclamation alternatives
7. Site characterization tasks necessary to determine nature and extent of contamination
8. Data quality objectives to define the quality of data to be collected and analyzed
9. Procedures for detailed analysis of reclamation alternative using NCP criteria

10. Bid package contents
11. Permitting requirements
12. Construction management (bid, pre-construction, construction, post-construction)
13. Project schedules
14. Estimated project costs
15. Project staffing

The information furnished by DEQ supports the ranking and priority of these two sites. High levels of heavy metals (copper, lead, zinc), plus arsenic, hazardous mine openings, and unstable slopes present significant threats to human health and the environment. In November 2000, DEQ will complete an Expanded Engineering Evaluation / Cost Analysis (EEE/CA) which will detail precisely the preferred reclamation cleanup alternative and associated costs. For RDGP review and evaluation purposes, the application presents sufficient documentation to justify funding in the \$300,000 amount requested.



Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Funds	Total
Contracted Services	<u>\$300,000</u>	<u>\$1,200,000</u>	<u>\$1,500,000</u>
Total	\$300,000	\$1,200,000	\$1,500,000

The total \$1,500,000 should be sufficient to reclaim the Mammoth Mine and Tailings sites provided that further site characterization does not reveal unsuspected high levels of contamination. Costs of disposal and containment could escalate the total cost, if high levels of undiscovered contamination exist. DEQ has provided assurance that budget shortfalls would be absorbed through non-RDGP sources.

Environmental Evaluation:

The project would reduce contaminant mobility at the site by removing the highest risk solid media contaminant sources and disposing of these wastes in an engineered repository. This action should result in long-term beneficial impact to the South Boulder River and surrounding area. The construction is likely to be of short duration (90 days) and will be completed in a single field season. Short-term impacts such as fugitive dust and increased vehicle traffic are expected. A 310 permit and 3A authorization will likely be required. Mitigation of adverse impacts will be addressed in the site environmental assessment to be prepared by DEQ.

Public Benefits Assessment:

Reclamation of the Mammoth Mine and Mammoth Tailings will significantly reduce or eliminate contaminant migration off-site; eliminate the possibility of human contact with contaminated soil, waste rock, and tailings; and stabilize steep slopes. Direct benefits will accrue to the environment, recreationists, and contractors and consultants hired to perform the reclamation. Surrounding public and private lands will also be enhanced, as will the water quality of the South Boulder River.

Recommendations:

A grant of up to \$300,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget. Funding authorized by the 1999 Legislature for the Toston Smelter, the Great Republic Smelter, and the Frohner Mine (totaling \$900,000) should be reauthorized to include the Mammoth Mine and Mammoth Tailings, not to exceed \$300,000.

Project No. 18

Applicant Name: Department of Environmental Quality

Project Name: Gregory Mine Reclamation Project

Amount Requested: \$300,000

Other Funding Sources: \$500,000 Applicant

Total Project Cost: \$800,000

Amount Recommended: \$300,000

Project Abstract: (prepared and submitted by applicant)

The Gregory Mine site is an inactive, abandoned lead, zinc, gold, and silver mine and smelter that was discovered in 1864. It operated with some success from 1867 until the 1930s and has for the most part been inactive since that time. Mining has created 30,000 cubic yards of waste rock and 10,000 cubic yards of tailings that have high arsenic, mercury, and lead values. High metal values prevent vegetation growth and therefore promote erosion of the material. Clancy Creek and its tributary flow through the mine site and are also contaminated by these wastes.

The goal of the project is to reduce the threats to human health and the environment that are present at the mine. In order to accomplish this goal, the Montana Department of Environmental Quality (DEQ) will most likely isolate the contaminated wastes from the public and the natural elements by placing them in an on-site repository.

The DEQ Mine Waste Cleanup Bureau (MWCB) will be the lead agency in the cleanup of the site. However, since some of the contamination is on land managed by the U.S. Bureau of Land Management (BLM), DEQ is in the process of working out an agreement to work in partnership with the BLM to clean up the site.

The Gregory Mine site is located approximately one mile north of the Montana Tunnels Mine and 12 miles south of Helena in Jefferson County, (Sections 4 and 5, Township 7 North, Range 4 West). The site is accessed from Helena by traveling south 10 miles on Interstate 15 to the Clancy exit, then proceeding 11 miles up Clancy Creek Road to the confluence of Gregory Creek.

DEQ, although still in the process of documenting and studying the site, plans to award the construction of the project to the lowest qualified bidder in 2001. The construction of the project should be completed in 60 consecutive working days.

Technical Assessment:

DEQ will follow procedures established under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP) to reclaim the Gregory Mine. Briefly, these include the following.

- A. Preliminary Assessment (PA) entails mapping, sampling, scoring, and ranking the site in terms of hazards or environmental threats to human health or the environment. The PA has been completed, with the Gregory Mine being ranked the 17th worst hard rock mine site under the Montana Abandoned and Inactive Scoring System developed by DEQ. Candidate sites were identified through the collaborative efforts of BLM, the U.S. Forest Service, DEQ, and DNRC in the 1995 Hazardous Materials Statewide Inventory.
- B. Follow-up steps will now consist of preparing a Reclamation Work Plan, Site Survey, Laboratory Analytical Plan, Field Sampling Plan, Quality Assurance Plan, and Health and Safety Plan. Site characterization (physical and chemical) and preparation of an Expanded Engineering Evaluation/Cost Analysis (EEE/CA) are scheduled for completion in fall 2000. The EEE/CA is a detailed engineering analysis that examines a number of feasible reclamation cleanup alternatives for the site and selects a preferred option for cleanup based on the following NCP criteria:
 - Overall protection of human health and the environment
 - Compliance with state, federal, and local rules and regulations
 - Long-term effectiveness and permanence
 - Reduction of toxicity, mobility, and volume through treatment
 - Short-term effectiveness
 - Implementability

- Cost
- Community acceptance

Selection of the preferred reclamation alternative, final engineering design, bid package preparation, selection of a qualified reclamation contractor (low bid), and construction complete the cleanup process.

The Gregory Mine contains approximately 30,000 cubic yards of waste rock and 10,000 cubic yards of mine tailings that are high in arsenic, mercury, and lead. The site is relatively accessible and is adjacent to Clancy Creek. The high levels of contamination are a definite threat to water quality. Although the EEE/CA has not been completed the presumptive cleanup remedy for the site will involve removing the tailings and waste rock and placing them in a lined and capped repository. The preliminary construction estimates, based on similar cleanups, project a total cleanup cost of \$800,000. Three hundred thousand dollars (\$300,000) is being requested from RDGP for construction purposes only. Funding shortfalls, if any, will be absorbed by DEQ and possibly BLM.

Construction should not present any unusual difficulty, as the proposed activities have been conducted by DEQ many times at similar sites and involve standard practices. The DEQ Mine Waste Cleanup Bureau is well qualified to oversee the project. The wet tailings may present the most difficult challenge and may require dewatering before their placement in the repository. Depending on further testing of the types and levels of contamination present, the repository design and resultant cost may fluctuate from original estimates.

In spite of the fact that the preferred alternative has not been selected, the Gregory Mine is a good candidate for use of RDGP funding. Removal of contamination sources in and adjacent to Clancy Creek will reduce or eliminate threats to human health and the environment.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Funds	Total
Contracted Services	<u>\$300,000</u>	<u>\$500,000</u>	<u>\$800,000</u>
Total	\$300,000	\$500,000	\$800,000

Given the site's high priority for cleanup and high proportion of matching funds, the Gregory Mine Reclamation Project is an excellent candidate for RDGP funding. The timing and availability of DEQ funding for the project is of critical importance. Currently (November 2000) there are three DEQ projects that were approved by the 1999 Montana Legislature (Great Republic Smelter, Toston Smelter, and Frohner Mine) in the total amount of \$900,000 that have not been initiated. Reauthorization of the \$900,000 to include the Gregory Mine should be examined.

Environmental Evaluation:

The project would reduce contaminant mobility at the site by removing the highest risk solid media contaminant sources and disposing of these wastes in an engineered repository. This action should result in long-term beneficial impact to Clancy Creek and the surrounding area. The construction is likely to be of short duration (60 days) and will be completed in a single field season. Short-term impacts, such as fugitive dust and increased vehicle traffic, are expected. A 310 permit and 3A authorization will likely be required. Mitigation of adverse impacts will be addressed in the site environmental assessment to be prepared by DEQ.

Public Benefits Assessment:

Reclamation of the Gregory Mine will significantly reduce or eliminate contaminant migration off-site; eliminate the possibility of human contact with contaminated soils, waste rock, and tailings; and stabilize steep slopes. Direct benefits will accrue to the environment, recreationists, and contractors and consultants hired to perform the

reclamation. Surrounding public and private lands will also be enhanced, as will the water quality of Clancy Creek.

Recommendations:

A grant of up to \$300,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget. Funds authorized by the 1999 Legislature for the Toston Smelter, Great Republic Smelter, and the Frohner Mine (totaling \$900,000) should be reauthorized to include the Gregory Mine, not to exceed \$300,000.

Project No. 19

Applicant Name: Department of Environmental Quality

Project Name: Broadway / Victoria Mine Reclamation Project

Amount Requested: \$300,000

Other Funding Sources: \$1,000,000 U.S. Office of Surface Mining

Total Project Cost: \$1,300,000

Amount Recommended: \$300,000

Project Abstract: (prepared and submitted by applicant)

The Broadway/Victoria Mine is a gold, silver, lead, and copper mine that was discovered about 1870. In 1881, it was sold to the Broadway Gold Mining Company, Ltd., and went into full production. In 1900, a 20-stamp mill and a cyanidation plant were constructed to work the ore, one on Cherry Creek and the other below Silver Star in Madison County. The mine reported production in nearly every year between 1905 and 1940 with a total of \$1,050,000 return on all ore. The mine has not had much production since the 1940s.

The mine created approximately 10 acres of disturbance, with 170,000 cubic yards of tailings and waste rock that are contaminated with cyanide, arsenic, cobalt, iron, manganese, antimony, cadmium, copper, mercury, lead, and zinc. There are also four open adits and an open shaft that present a safety hazard. The site is ranked 73rd worst on the abandoned mine priority list of the Department of Environmental Quality (DEQ).

The goal of the project is to reduce the threats to human health and the environment that are present at the mine. In order to accomplish the goal, DEQ will most likely isolate the contaminated wastes from the public and the natural elements by placing them in an on-site repository.

The Department of Environmental Quality, Mine Waste Cleanup Bureau will be the lead agency in the cleanup of the site.

The Broadway/Victoria Mine site is located in Section 2, Township 2 South, Range 6 West. The site is accessed from Helena, by traveling 68 miles south to Whitehall, then turning southwest on Highway 41, traveling 16 miles southwest of Whitehall and turning on a BLM road 1 mile west of Silver Star in Madison County.

DEQ, although still in the process of documenting and studying the site, plans to award the construction of the project to the lowest qualified bidder in 2002. The construction of the project should be completed in 60 consecutive working days.

Technical Assessment:

DEQ will generally follow procedures under the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the National Contingency Plan (NCP) and Montana's Comprehensive Environmental Cleanup and Responsibility Act (CECRA) to implement cleanup actions at this site. The first step is to complete a Preliminary Assessment (PA) that entails mapping, sampling, scoring, and ranking of the site in terms of threats posed to human health and the environment. The state's PA has been completed, and the site has been identified by DEQ as the state's 73rd worst abandoned hard rock mine in need of cleanup. Four open adits and one shaft present safety hazards to site visitors and wildlife. Approximately 135,000 cubic yards of tailings and 35,000 cubic yards of waste rock are contaminated with cyanide, arsenic, lead, zinc, iron, manganese, antimony, cadmium, copper, mercury, and cobalt.

The next steps in cleanup implementation are preparation of an Ownership Report, Community Relations Plan, Reclamation Work Plan, Site Survey, Laboratory Analytical Plan, Field Sampling Plan, Quality Assurance Plan, Health and Safety Plan, and detailed Site Characterization. Ultimately, an Expanded Engineering Evaluation/Cost Analysis (EEE/CA), which identifies the preferred and most cost-effective method of cleanup, will be completed, and the project designed and bid, with a projected starting date of July 2002.

While the EEE/CA has not been completed (it is expected in fall 2000), it is likely that the construction will be like most of the abandoned hard rock mine cleanups that DEQ has conducted in the recent past. The wastes will be contained in a repository, and capped, and the site will be seeded and revegetated. Variations in this strategy will be a function of the types and levels of contamination found during the proposed detailed site characterization. The threat to surface water and groundwater posed by this site is less than the threat by either the Gregory Mine or the Mammoth Mine. Surface flow is ephemeral, although the Jefferson River lies 1.5 miles to the east. The depth to groundwater is over 100 feet. There are no discharging adits or springs. Safety presents some concern, given the four open adits and one shaft.

A concern of RDGP deals with the date of expected construction start-up. The stringent protocol that DEQ follows in implementing mine cleanup is lengthy and complex. Major delays have occurred in the past, primarily as the result of the unavailability of funding and the lack of expedient decisions by federal participating agencies regarding liability. DEQ should clearly demonstrate that this project can be constructed by fall 2002.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Funds	Total
Contracted Services	<u>\$300,000</u>	<u>\$1,000,000</u>	<u>\$1,300,000</u>
Total	\$300,000	\$1,000,000	\$1,300,000

The total budget is a preliminary estimate based on past experience with similar projects, quantities, unit costs, and the expected difficulties. All RDGP funds are for construction. More reliable cost information will be presented in the EEE/CA document and after a preferred reclamation alternative has been selected (scheduled for fall 2000). The budget as proposed targets RDGP funds as contributing 23 percent of the total cost, with a 77 percent federal match.

Environmental Evaluation:

It is anticipated that construction related to the implementation of this project would be completed in a single field season. Therefore, impacts associated with construction activities would be considered short-term and should not significantly impact human health or the environment. Compliance with a site-specific health and safety plan, employing appropriate personal protective equipment, and following proper operating procedures would protect on-site workers. However, short-term air quality impacts to the immediate environment may occur due to the relatively large volume of waste excavation and hauling. Control of fugitive dusts may thus require the use of

water sprays. The predictable short-term impacts to the surrounding community would involve increased vehicle traffic with associated safety hazards, emissions, and dust generation.

DEQ will prepare an environmental assessment for the site that identifies probable impacts to the environment and mitigation measures. Necessary permits will be obtained and will address needed measures for protecting the environment.

Public Benefits Assessment:

Reclamation of this site will have a long-term beneficial impact on human health, safety, and the environment. It will reduce or eliminate the possibility of human contact with contaminated soils, tailings, and waste rock and secure hazardous mine openings. Short-term economic benefits will be realized by the contractor, suppliers, and area businesses.

Recommendations:

A grant of up to \$300,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget. Funds authorized by the 1999 Legislature for the Toston Smelter, the Great Republic Smelter, and the Frohner Mine (totaling \$900,000) should be reauthorized to include the Broadway/Victoria mine, not to exceed \$300,000.

Project No. 20

Applicant Name:	Department of Environmental Quality
Project Name:	Zortman and Landusky Mines - Organic Soil Amendments
Amount Requested:	\$300,000
Other Funding Sources:	\$413,582 Applicant
Total Project Cost:	\$713,574
Amount Recommended:	\$300,000

Project Abstract: (prepared and submitted by applicant)

Pegasus Gold Corporation operated open-pit precious-metal mines at Zortman and Landusky in the Little Rocky Mountains (Phillips County) from 1979 to 1996 and declared bankruptcy in 1998. The State of Montana assumed reclamation responsibility using reclamation bonds, but leach pad water management costs have proven greater than anticipated, leaving less money for revegetation.

At the same time, investigation shows that past revegetation at the mines is waning. Soil infertility is a primary limitation, leading to a common pattern of *low fertility = low productivity = little food for soil microorganisms = a depauperate soil food web = poor decomposition and nutrient cycling = lower productivity*. This downward spiral can be prevented by applying a good organic amendment followed by incremental fertilization of adequately thick cover soils.

That is the object of this grant: to establish permanent revegetation that maximizes water uptake by plants and primary productivity while stabilizing cover soils, providing wildlife habitat, and creating an aesthetically pleasing landscape.

The Montana Department of Environmental Quality (DEQ) will contribute funding for an equal amount of organic amendment and also contribute administration and oversight of the project. By combining RDGP and DEQ funding, this cover soil enhancement project is financially feasible. Technical feasibility is indisputable. The alternative of later surficial applications of organic amendments is almost pointless, and, without beneficial soil microbes, mineral fertilization is likewise ineffective.

Direct benefits will accrue to the tribes on the Fort Belknap Reservation and Zortman residents, with indirect benefits to all Montanans via lower water treatment costs, which could otherwise exceed reclamation bonds and continue indefinitely.

This project will begin in summer 2001, with complete cover-soil amendment by fall 2002.

Technical Assessment:

The proposed reclamation alternative lacks a simple, clear explanation of what is going to be done, why it is the best alternative, and how it is going to be implemented. The proposal takes for granted that the reviewer has been to the mines, is acquainted with the overall final reclamation plans for Zortman and Landusky, and has seen what the application is describing. A clear description of reclamation for the entire Zortman and Landusky complex and how this proposal fits in is not presented.

For example, there are four DEQ applications involving reclamation of the Zortman and Landusky Mines (trust fund, highwall reduction, Ruby Gulch tailings removal, and organic soil amendment). There is little correlation in the applications, yet there are effects between applications that would have a bearing on the need, urgency, and cost for other applications. This application, for instance, states "*cover soils and revegetation similar to past practices (meaning, assumably, without soil amendment) can reduce annual water treatment costs by \$ 350,000 per year.*" It goes on to say that "*by amending coversoils under this project...an additional \$ 250,000 can be saved annually.*" The trust fund application indicates an annual budget for water treatment of \$731,000 per year until 2017, and somewhere around \$ 1.0 million per year for perpetual water treatment. To finance the cost of perpetual water treatment, the trust fund application states that a \$15 million trust is required. The \$600,000 savings calculated under this proposal would seem to contradict the amounts deemed necessary for trust fund establishment. Which application contains the accurate and reliable amounts? This confusion was a major difficulty in RDGP review and assessment of proposed reclamation tasks and activities and the associated costs under both applications.

In this request, under Plans and Specifications, the application states that, "*In the coming months a plant ecologist will be studying past revegetation successes and failures at Zortman and Landusky and a few reference soils to identify those soil and site factors most closely related to satisfactory revegetation.*" Implicit in this statement lies the possibility of other project alternatives to the proposed project design. Serious consideration needs to be given to all feasible methods and techniques of soil and vegetation reestablishment, not limited to sawdust and disking (or ripping) into the upper 6 inches of applied cover-soil material. While this type of screening may have been conducted, it was not apparent from the brief discussion in the application.

These uncertainties aside, the application does an adequate job of justifying organic amendment of cover-soil material to enhance soil fertility, nutrient cycling, and vegetative establishment on mine disturbances. This basic concept has been well established and is supported by exhaustive scientific study. Given that, and that precise details of how this will occur will be resolved during final design, plus the fact that DEQ sees revegetation of the Zortman and Landusky Mines as the major cost-effective means of reducing highly expensive and long-term water treatment costs, the project has merit. In RDGP's opinion, in this particular instance, it would serve no purpose to not recommend funding simply because the application lacks clarity in some areas and finalization of project design. The problem is adequately demonstrated by past reclamation failures. The availability and timing of RDGP funding during the early construction phases are important to overall reclamation success for the entire complex. To a large degree, and based on lessons learned by DEQ, RDGP is confident that the specific details of the project will be sorted out during final design.

Consistent with the priority placed on this project by DEQ, any funding from RDGP should be matched by DEQ in an amount equal to or greater than the amount of RDGP funding. The combined total must be devoted exclusively to organic amendment of cover soils.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Funds	Total
Salaries and Wages	\$0	\$4,200	\$4,200
Employee Benefits	\$0	\$1,260	\$1,260
Contracted Services	\$300,000	\$359,992	\$659,984
Supplies and Materials	\$0	\$248	\$248
Communications	\$0	\$980	\$980
Travel	\$0	\$1,452	\$1,452
Equipment	\$0	\$450	\$450
Miscellaneous	<u>\$0</u>	<u>\$45,000</u>	<u>\$45,000</u>
Total	\$300,000	\$413,582	\$713,574

There are still some unresolved issues regarding haul methods and costs from Lewistown and the difficulty in reaching all the necessary areas with existing roads to apply the treatment. Generally these issues would mean potentially increased costs, that would reduce the number of acres treated with soil amendments.

Environmental Evaluation:

It is anticipated that construction activities related to the implementation of the project would be completed over two field seasons. Therefore, impacts associated with construction activities would be considered short-term and should not significantly impact human health or the environment. However, short-term air quality impacts to the immediate environment may occur due to the relatively large volume of material and hauling. Control of fugitive dusts may thus require the use of water sprays. The only foreseen short-term impacts to the surrounding community would involve increased vehicle traffic, with associated safety hazards, emissions, and dust generation.

Public Benefits Assessment:

Cover-soil amendment with organic material and successful revegetation are components of the overall reclamation plan for the Zortman and Landusky Mine complex. Ultimately, successful reclamation of the entire complex will benefit the town of Zortman, the Fort Belknap Reservation, and surrounding areas through improved water quality, decreased risk of flash flooding, and added recreational opportunities.

Recommendations:

A grant of up to \$300,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget. DEQ must contribute at least this amount for the purchase, transport, and application of organic material to mine cover soils. This project involves reauthorization of funds granted to DEQ in 1999. Please refer to page 47 for more information.

Project No. 21

Applicant Name: Department of Environmental Quality

Project Name: Zortman and Landusky Mines - Highwall Reduction Program

Amount Requested: \$300,000

Other Funding Sources: \$100,000 Applicant

Total Project Cost: \$400,000

Amount Recommended: \$300,000

Project Abstract: (prepared and submitted by applicant)

Pegasus Gold Corporation (PGC) conducted open pit mining operations at the Zortman and Landusky sites between 1979 and 1996. In 1998 PGC filed for bankruptcy protection, leaving the State of Montana with reclamation bond monies totaling \$10.1 million for the Zortman Mine and \$19.6 million for the Landusky Mine. This funding is to cover the costs of partial pit backfilling; regrading and capping of leach pads, waste rock dumps, and backfilled pits; revegetation; management and treatment of waters collecting in the leach pads; monitoring; and maintenance.

The desire to reclaim open pits left behind by metal mining operations is a growing concern among citizens of Montana. The reclamation requirements and bond amounts required by the State from PGC in 1996 addressed partial backfilling of the Zortman and Landusky mine pits to prevent the impoundment of water in the pits and the stabilization of highwalls for safety, but did not require pit highwall reduction as a means to address safety, their potential to generate acid rock drainage, or aesthetic concerns. After reclamation, a county road will be re-opened through the mine complex, and the entire area will be available for public use. The presence of pit highwalls, some hundreds of feet high, presents a very real public hazard.

The Department of Environmental Quality (DEQ) proposes to spend a small portion of the available bond money to re-contour upper portions of pit highwalls at Zortman and Landusky, especially in areas where county roads pass nearby and where public access is readily available. Highwall areas that are excavated into oxide rock that is not acid-generating will also be targeted for reduction. Pit highwalls will be recontoured by drilling and blasting to reduce the hazard presented by high cliff faces. Rock blasted down from the pit rims can be used to cover acid-generating portions of pit walls, to augment backfill of the pits, and/or to make up for deficiencies in supply of non-acid-generating rock needed for reclamation/construction purposes at the mine sites. Highwall reduction will also eliminate the unnatural looking lineations represented by pit benches that are readily visible on the pit walls. To further address aesthetic concerns, chemical staining compounds may be applied to portions of the pit walls in order to simulate natural staining resulting from weathering of cliffs which normally occurs over a period of thousands of years. This would alleviate much of the stark color contrast that presently exists between the exposed fresh rock faces of the highwalls and the natural weathering of adjacent undisturbed rock outcrops.

The principal goals of this project are fourfold:

1. To improve public safety
2. To cover portions of pit highwalls that have high incidences of acid-generating material
3. To enhance reclamation by generating additional non-acid material to be used in reclamation
4. To improve visual aesthetics

These goals would be accomplished through a combination of blasting mine pit highwalls to reduce cliff faces and subsequent regrading of the blasted material to cover remaining pit benches with non-acid-generating material. Geochemically suitable material would be provided for reclamation proposed at other locations. An indirect outcome would be the modification of the obviously man-made features of a mine pit highwall.

The Montana Department of Environmental Quality (DEQ), Environmental Management Bureau will be responsible for implementing the reclamation program at the Zortman and Landusky Mines.

The Zortman and Landusky Mines are located approximately 50 miles southwest of Malta adjacent to the southern boundary of the Fort Belknap Indian Reservation. The Zortman Mine is located in Sections 7, 17, and 18, Township 25 North, Range 25 East in Phillips County. The Landusky Mine is located in Sections 14, 15, 22, and 23, Township 25 North, Range 24 East in Phillips County.

Highwall reduction and grading are projected to be completed by the end of 2002.

Technical Assessment:

The application clearly identifies the project objectives of increasing public safety, covering acid-producing materials, and improving visual aesthetics. It further identifies that public safety is the top priority for highwall reduction. It does not, however, provide sufficient detail as to how these objectives will be achieved.

The discussion of project alternatives is limited to a no action alternative. The no action alternative (assuming that nothing is done) describes what remains as a highwall in a way that appears to be different from the highwall danger expounded in the proposal. For example, the Project Abstract represents the highwall as "*high cliff faces*," and the Problem History describes them as "*nearly vertical pit highwalls several hundred feet high*." The no action alternative indicates that the highwalls, left alone, will have "*slopes of approximately 45 degrees with 30-foot-wide benches every 60 vertical feet*." Because of this confusion as to the proper description of the highwall, it is difficult to assess whether the primary benefit of public safety would be achieved by this proposal. The absence of plan views and cross sections depicting the final configuration and location of highwall reduction further complicated RDGP review and assessment of the danger posed by the highwalls.

Descriptions of some of the tasks and activities necessary to accomplish the project goals and objectives are unclear. For example, one of the objectives is to cover portions of the highwalls that have high incidences of acid-generating material. It is not clear how covering the material with blasting rubble, which is going to be inherently permeable, is going to stop water infiltration to the sulfide ore zones and generation of acid drainage. It appears that the proposed objective merely moves the acid-generation problem from the surface to the subsurface. If the success of this alternative is dependent upon other reclamation activities - for example, revegetation - the proposal should clarify how final reclamation will result in reduced acid generation in acid-generating highwall areas.

The results of updated geochemistry tests are included in the proposal, but there is no explanation of what the tests show (in support of the application) or how they might have differed from earlier tests, such that they were necessary to update.

As far as safety is concerned, it would have helped if an analysis showed that blasting rubble on a steep slope is at least as stable (from a mass movement standpoint) as the terraced slope of the existing highwalls.

The only apparent benefits adequately discussed in the application are blasting to obtain non-acid-producing material for reclamation in nearby areas and for aesthetics. The major objectives of public safety and acid drainage prevention/reduction are not fully discussed and are inconclusive.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Funds	Total
Contracted Services	<u>\$300,000</u>	<u>\$100,000</u>	<u>\$400,000</u>
Total	\$300,000	\$100,000	\$400,000

The unit costs presented were compiled by an engineering firm hired by DEQ and are probably reliable based on the firm's extensive knowledge of local circumstances. Overall costs are difficult to assess given the concerns

listed in the Technical Assessment and absent a final design. Matching funds from DEQ reclamation bond monies total \$100,000.

Environmental Evaluation:

The environmental impact statement (EIS) and final design bid plans and specifications will adequately define and prescribe measures to mitigate any adverse impact to the environment. Impacts are expected to be short-term and limited to the construction period of 2000-2002.

Public Benefits Assessment:

After reclamation, the Zortman and Landusky Mine area will be accessible to the public. The Town of Zortman supports a year-round population, and local residents derive a significant portion of their income from tourists and recreationists. The safety of visitors is critical to the area's continued use as a recreation destination. More pleasing vistas will also help promote continued tourism and visits by hunters, hikers, and backcountry enthusiasts, who themselves will benefit directly from improved reclamation at the site.

Recommendation:

A grant of up to \$300,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget. This project involves reauthorization of funds granted to DEQ in 1999. Please refer to page 47 for more information.

Project No. 22

Applicant Name: Department of Environmental Quality

Project Name: Coal Bed Methane EIS

Amount Requested: \$250,000

Other Funding Sources: not known

Total Project Cost: not known

Amount Recommended: \$250,000

DEQ requested that \$250,000 in funding it received from the 1999 Legislature be reauthorized for preparation of a coal bed methane Environmental Impact Statement (EIS). This request was received after the application submittal deadline and will be presented directly to the 2001 Legislature. It was not evaluated and ranked by DNRC.

Project No. 23

Applicant Name: Glacier County

Project Name: 2000 Glacier County Plugging and Abandonment, Aid to Independent Operators

Amount Requested: \$300,000

Other Funding Sources: \$9,795 Applicant

Total Project Cost: \$309,795

Amount Recommended: \$100,000

Project Abstract: (prepared and submitted by applicant)

The Cut Bank field was discovered in 1926. Most of the wells in the Cut Bank field are completed in the Cut Bank and Madison formations. The field was operated for nearly 30 years before the Oil and Gas Commission bonding or well spacing regulations were in place. As production decreased, the major oil companies sold out to smaller operators, who in turn sold to yet smaller operators as production continued to decrease further. Each sale passed along the ultimate plugging liability to a smaller operator with less financial resources to maintain producing wells, and minimal if any funds to plug sub economic or mechanically unfit wells. The largest proportions of wells in this field are stripper oil wells, gas wells, injection wells for secondary recovery, or injection wells for saltwater disposal. Some of the oil wells make as little as 1/4 barrel of oil per day. While oil and gas prices have risen in response to worldwide pricing during the first quarter of 2000, the small operator is still trying to recuperate financially from several years of rock bottom prices. The price of oil is variable and unpredictable. This "boom or bust" economy barely allows the operator to make a living, much less maintain operational, economic wells. It does not allow for maintenance or plugging of shut-in, marginally profitable or mechanically compromised wells.

The purposes of the project are to:

1. Reduce the number of mechanically unfit, shut-in, and marginally producing wells
2. Promote cost sharing of the plugging of marginally producing and problem wells
3. Use the operator's knowledge and equipment to cost-effectively plug marginally producing and problem wells
4. Ultimately reduce the plugging and restoration liability of problem or non-operable oil and gas wells in Glacier County before they become a State liability
5. Reduce the amount of hydrogen sulfide, carbon dioxide, and hydrocarbon emissions being vented to the atmosphere by idle oil and gas wells
6. Reduce environmental and health hazards and problems to agriculture associated with oil and gas casing stubs, oil-field junk, surface and subsurface discharges, waste oil pits, and emissions

Glacier County will carry out the project with assistance from the BOGC Shelby office. The project area will encompass the east half of Glacier County and include approximately 13 oil and gas fields. Project funding would encompass two years of construction

Technical Assessment:

The department received three grant applications (one each from Glacier, Pondera, and Liberty Counties) that propose to cost share the cost of properly plugging and abandoning shut-in oil and gas wells and/or injection wells with private, small oil and gas operators. Non-producing wells that are idle or shut in for a year or more require plugging, according to Board of Oil and Gas Conservation (BOGC) regulatory standards. Many small operators do not have sufficient financial resources to plug these wells and would likely be forced into bankruptcy unless BOGC approves some alternative plugging schedule. BOGC indicates that there are 151 shut-in wells in Glacier County that have not produced for five years or longer. If these wells, because of operator insolvency or bankruptcy, were plugged by BOGC, the cost would be several orders of magnitude higher than if they are plugged now using operator manpower and equipment.

In 1999, the Legislature approved a pilot project in Toole County that is nearly identical to the projects proposed by the three grant applications received during the current grant cycle. In the Toole County grant (awarded for

\$300,000), a total of 42 wells have been plugged over a 14-month period at a cost of \$45,000. The cost of state-conducted plugging would have easily been 10 to 15 times this amount. The funds that BOGC would have requested to conduct this work would have come from the Reclamation and Development Grants Program (RDGP). It is clearly in Montana's best interest to address these problem wells through options like the one proposed, rather than wait for the probable operator insolvency or bankruptcy.

The number of wells that can be plugged under this proposal will be directly dependent on the availability of BOGC field inspectors, who must witness and approve the plugging operation. Based on the Toole County grant referred to previously, and considering that the Pondera and Liberty County requests will also place time demands on BOGC personnel, it is not likely that the applicant can expend the entire \$300,000 amount requested. A more conservative figure needs to be considered.

The plugging methods and site restoration proposed are standard practice in the oil and gas industry and readily implementable. Quality control will be ensured by BOGC inspection and must be a condition of any RDGP payment, should this application be approved.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Funds	Total
Salaries and Wages	\$0	\$3,016	\$3,016
Contracted Services	\$300,000	\$0	\$300,000
Supplies and Materials	\$0	\$203	\$203
Communications	\$0	\$1,200	\$1,200
Travel	\$0	\$1,699	\$1,699
Rent and Utilities	\$0	\$1,200	\$1,200
Indirect Costs	\$0	\$1,727	\$1,727
Miscellaneous	<u>\$0</u>	<u>\$750</u>	<u>\$750</u>
Total	\$300,000	\$9,795	\$309,795

The proposed cost share allows RDGP payment to Glacier County at a flat rate of \$0.75 per foot for oil and gas wells and \$1.25 per foot for injection wells. These rates are reasonable, given operator costs and geologic conditions expected to be encountered. Specific cost estimates are not known until site-specific conditions of each hole are known upon reentry. The project will plug as many holes as possible with available funds. Payment will be based entirely on well depth and type of well (oil and gas or injection). Priority should be given to the plugging of shallower wells in the Cut Bank area, ranging in depth from 1,500 feet to 3,000 feet, in order to maximize the number of wells plugged.

Environmental Evaluation:

No long-term environmental impacts should be created in the plugging and abandonment of the proposed wells, provided reclamation activities are conducted properly. It is anticipated that the reclamation of each individual well would be completed in a single field season. Therefore, impacts associated with construction activities would be considered short-term and should not significantly impact human health or the environment. Short-term adverse impacts associated with the movement of equipment to the sites are expected. Compacted soil and destroyed vegetation on access routes will be reclaimed upon project completion, and any debris will be hauled off-site and disposed of in a licensed landfill. Short-term air pollution (e.g., dust and emissions from combustion engines) would be minimal, if equipment and traffic routes are watered as necessary and mechanized equipment is in proper working condition.

Public Benefits Assessment:

Improvement and protection of surface water, groundwater, soil, air, and vegetation resources are the primary benefits of this project. Also, there would be the removal of visual eyesores. If this project results in decreased numbers of problem wells being turned over to the State of Montana by small operators, then public dollars will be saved. These savings would benefit all Montanans.

Recommendation:

A grant of up to \$100,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget. This amount is a reauthorization of a portion of an RDGP grant awarded to Toole County by the 1999 Legislature. Please refer to page 47 for more information.

Project No. 24

Applicant Name: Pondera County

Project Name: Pondera County Oil and Gas Well Plug and Abandon Project

Amount Requested: \$300,000

Other Funding Sources: \$13,257 Applicant

Total Project Cost: \$313,257

Amount Recommended: \$50,000

Project Abstract: (prepared and submitted by applicant)

Pondera County has a significant number of stripper and/or non-productive oil and gas wells in oil fields throughout the county. Many of these wells were drilled prior to the establishment of the Board of Oil and Gas Conservation (BOGC) and the development of regulations governing well and field spacing for the economic extraction of oil and gas. Due to the age of the fields in Pondera County, a large number of these wells are marginally profitable, even during periods of increased oil and gas prices. In some cases, wells are now experiencing downhole problems which can potentially cause contamination to the aquifers and ground surface areas and atmospheric contamination from hydrogen sulfide, carbon dioxide, and hydrocarbon emissions venting from idle wells.

This project will assist small, independent producers in the plugging and abandonment of nonproductive, problem wells utilizing a cost sharing program. Wells will be cost-effectively plugged utilizing the producers' knowledge and equipment. The number of problem, non-productive wells in Pondera County will be reduced. Potential environmental risks will be mitigated, and hazards in cultivated fields and to agricultural equipment will be reduced by eliminating casing stubs and oil-field junk.

The project area includes all of Pondera County: the Ballantine field, near Interstate 15 between Conrad and Brady; the Ledger field near Ledger; the Gypsy Basin field near Dupuyer; and the Pondera and Gallup City fields, southwest of Conrad.

Technical Assessment:

The department received three grant applications (one each from Glacier, Pondera, and Liberty Counties) that propose to cost share the cost of properly plugging and abandoning shut-in oil and gas wells and/or injection wells

with private, small oil and gas operators. Non-producing wells that are idle or shut in for a year or more require plugging, according to BOGC regulatory standards. Many small operators do not have sufficient financial resources to plug these wells and would likely be forced into bankruptcy unless BOGC approves some alternative plugging schedule. BOGC indicates that there are 91 shut-in wells currently located in Pondera County that have not produced for five years or longer. If these wells, because of operator insolvency or bankruptcy, were plugged by BOGC, the cost would be several orders of magnitude higher than if they are plugged now using operator manpower and equipment.

In 1999, the Legislature approved a pilot project in Toole County that is nearly identical to the projects proposed by the three grant applications received during the current grant cycle. In the Toole County grant (awarded for \$300,000), a total of 42 wells have been plugged over a 14-month period at a cost of \$45,000. The cost of state-conducted plugging would have easily been 10 to 15 times this amount. The funds that BOGC would have requested to conduct this work would have come from the Reclamation and Development Grants Program (RDGP). It is clearly in Montana's best interest to address these problem wells through options like the one proposed, rather than wait for the probable operator insolvency or bankruptcy.

The number of wells that can be plugged under this proposal will be directly dependent on the availability of BOGC field inspectors, who must witness and approve the plugging operation. Based on the Toole County grant referred to previously, and considering that the Liberty and Glacier County requests will also place time demands on BOGC personnel, it is not likely that the applicant can expend the entire \$300,000 amount requested. A more conservative figure needs to be considered.

The plugging methods and site restoration proposed are standard practice in the oil and gas industry and readily implementable. Quality control will be ensured by BOGC inspection and must be a condition of any RDGP payment, should this application be approved.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Funds	Total
Salaries and Employee Benefits	\$0	\$9,984	\$9,984
Contracted Services	\$294,000	\$0	\$294,000
Supplies and Materials	\$0	\$155	\$155
Communications	\$300	\$240	\$540
Travel	\$1,200	\$0	\$1,200
Rent and Utilities	\$0	\$1,800	\$1,800
Equipment	\$4,300	\$0	\$4,300
Indirect Costs	\$0	\$1,078	\$1,078
Miscellaneous	<u>\$200</u>	<u>\$0</u>	<u>\$200</u>
Total	\$300,000	\$13,257	\$313,257

Payments to small operators by the county will be dependent on well depth and is proposed at \$0.75 per foot. This flat rate is reasonable, based on the Toole County pilot project currently underway. Results of the Toole County grant suggest that the total amount of \$300,000 requested cannot be expended within a two- year period. A more conservative amount is recommended.

Environmental Evaluation:

No long-term environmental impacts should be created in the plugging and abandonment of the proposed wells, provided reclamation activities are conducted properly. It is anticipated that the reclamation of each individual well would be completed in a single field season. Therefore, impacts associated with construction activities would be considered short-term and should not significantly impact human health or the environment. Short-term adverse impacts associated with the movement of equipment to the sites are expected. Compacted soil and

destroyed vegetation on access routes will be reclaimed upon project completion, and any debris will be hauled off-site and disposed of in a licensed landfill. Short-term air pollution (e.g., dust and emissions from combustion engines) would be minimal, if equipment and traffic routes are watered as necessary and mechanized equipment is in proper working condition.

Public Benefits Assessment:

Improvement and protection of surface water, groundwater, soil, air, and vegetation resources are the primary benefits of this project. If this project results in decreased numbers of problem wells being turned over to the State of Montana by small operators, then public dollars will be saved. These savings would benefit all Montanans. Also, the operation of plugging and restoration would put some people to work temporarily.

Recommendation:

A grant of up to \$ 50,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget. This amount is a reauthorization of a portion of an RDGP grant awarded to Toole County by the 1999 Legislature. Please refer to page 47 for more information.

Project No. 25

Applicant Name: Liberty County

Project Name: Bear Paw Plug and Abandonment, and Abandonment Aid Program for Small Independent Operators in Liberty, Hill, Blaine, and Chouteau Counties

Amount Requested: \$100,000

Other Funding Sources: \$8,790 Applicant

Total Project Cost: \$108,790

Amount Recommended: \$50,000

Project Abstract: (prepared and submitted by applicant)

Improperly plugged and abandoned oil or natural gas wells not only represent a potential hazard to the environment, but to people and property. Oil and natural gas exploration has taken place in the project area for more than 80 years. It was common for a large number of marginally productive wells to exist in an area with a long history of production. Before the State of Montana created the Board of Oil and Gas Conservation (BOGC) and the board's subsequent development of regulations governing the spacing of fields and wells, this was often the case.

The profitability of stripper wells in the project area is directly linked to fluctuations of the worldwide price. A low price can easily make a well unprofitable, and its owner struggles. Currently, energy prices have risen to a level that makes many stripper wells profitable, but we feel that there are enough marginally productive wells in the project area to warrant this type of program.

The goals and objectives of the project are to:

1. Encourage the plugging of marginally productive and problem wells

2. Develop a partnership between local governments and the oil and gas industry by creating a cost sharing program to encourage the plugging of marginally productive and problem wells
3. Take advantage of the operators' expertise and equipment to plug marginally productive and problem wells at the lowest possible cost
4. Reduce the number of problem oil and natural gas wells in Liberty, Blaine, Chouteau, and Hill Counties
5. Eliminate a hazard to agricultural producers and their equipment by removing casing stubs and oil-field debris from cultivated fields and grazing land
6. Reduce hydrogen sulfide, carbon dioxide, and hydrocarbon emissions vented into the air by problem abandoned oil and gas wells

The project will be carried out by Liberty, Blaine, Chouteau, and Hill Counties with assistance from Bear Paw Development Corporation and BOGC. The project area will encompass all of Liberty, Blaine, Chouteau, and Hill Counties. However, the heaviest concentration of activity is expected to take place north of the Sweet Grass Hills in Liberty County and near the Bears Paw Mountains in Hill, Blaine, and Chouteau Counties. We anticipate that this project will take two years to complete.

Technical Assessment:

The department received three grant applications (one each from Glacier, Pondera, and Liberty Counties) that propose to cost share the cost of properly plugging and abandoning shut-in oil and gas wells and/or injection wells with private, small oil and gas operators. Non-producing wells that are idle or shut in for a year or more require plugging, according to BOGC regulatory standards. Many small operators do not have sufficient financial resources to plug these wells and would likely be forced into bankruptcy unless BOGC approves some alternative plugging schedule. BOGC indicates that there are 84 shut-in wells currently located in Liberty County that have not produced for five years or longer. If these wells, because of operator insolvency or bankruptcy, were plugged by BOGC, the cost would be several orders of magnitude higher than if they are plugged now using operator manpower and equipment.

In 1999, the Legislature approved a pilot project in Toole County that is nearly identical to the projects proposed by the three grant applications received during the current grant cycle. In the Toole County grant (awarded for \$300,000), a total of 42 wells have been plugged over a 14-month period at a cost of \$45,000. The cost of state-conducted plugging would have easily been 10 to 15 times this amount. The funds that BOGC would have requested to conduct this work would have come from the Reclamation and Development Grants Program (RDGP). It is clearly in Montana's best interest to address these problem wells through options like the one proposed, rather than wait for the probable operator insolvency or bankruptcy

The number of wells that can be plugged under this proposal will be directly dependent on the availability of BOGC field inspectors, who must witness and approve the plugging operation. Based on the Toole County grant referred to previously, and considering that the Pondera and Glacier County requests will also place time demands on BOGC personnel, it is not likely that the applicant can expend the entire \$300,000 amount requested. A more conservative figure needs to be considered.

The plugging methods and site restoration proposed are standard practice in the oil and gas industry and readily implementable. Quality control will be ensured by BOGC inspection and must be a condition of any RDGP payment, should this application be approved.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Funds	Total
Salaries and Wages	\$0	\$5,000	\$5,000
Employee Benefits	\$0	\$1,555	\$1,555
Contracted Services	\$100,000	\$0	\$100,000
Supplies and Materials	\$0	\$480	\$480
Communications	\$0	\$401	\$401
Travel	\$0	\$430	\$430
Rent and Utilities	\$0	\$592	\$592
Equipment	\$0	\$206	\$206
Miscellaneous	<u>\$0</u>	<u>\$126</u>	<u>\$126</u>
Total	\$100,000	\$8,790	\$108,790

The \$8,790 match comes from Bear Paw Development Corporation to administer the project. The entire \$100,000 of this grant will go to the cost share for well plugging. A flat rate of \$0.75 per foot (based on experience in the Toole County pilot project) is recommended for cost share payment to the small operators.

It does not appear likely that the entire \$100,000 requested can be expanded in a two-year time frame (again, based on the Toole County pilot project and the expected availability of BOGC inspectors). A lesser amount should be considered.

Environmental Evaluation:

No long-term environmental impacts should be created in the plugging and abandonment of the proposed wells, provided reclamation activities are conducted properly. It is anticipated that the reclamation of each individual well would be completed in a single field season. Therefore, impacts associated with construction activities would be considered short-term and should not significantly impact human health or the environment. Short-term adverse impacts associated with the movement of equipment to the sites are expected. Compacted soil and destroyed vegetation on access routes will be reclaimed upon project completion, and any debris will be hauled off-site and disposed of in a licensed landfill. Short-term air pollution (e.g., dust and emissions from combustion engines) would be minimal, if equipment and traffic routes are watered as necessary and mechanized equipment is in proper working condition.

Public Benefits Assessment:

Improvement and protection of surface water, groundwater, soil, air, and vegetation resources are the primary benefits of this project. If this project results in decreased numbers of problem wells being turned over to the State of Montana by small operators, then public dollars will be saved. These savings would benefit all Montanans.

Recommendation:

A grant of up to \$ 50,000 is recommended for this project contingent upon DNRC approval of the project scope of work and budget. This amount is a reauthorization of a portion of an RDGP grant awarded to Toole County by the 1999 Legislature. Please refer to page 47 for more information.

PART 3. Projects Not Recommended for Funding

Applicant Name: Department of Natural Resources and Conservation

Project Name: Spatial Data Conversion - Preservation of Montana Water Information

Amount Requested: \$245,249

Other Funding Sources: \$35,520 Applicant

Total Project Cost: \$280,769

Amount Recommended: \$0

Project Abstract: (prepared and submitted by applicant)

The Geographic Information System (GIS) Program Manager of the Department of Natural Resources and Conservation Water Resources Division (WRD) will implement and manage a two-year project to convert and preserve data about Montana's water-related features from two important sources of statewide water information. This information is in the water rights files, maps, aerial photos, and mylars, as well as in the Water Resources Survey mylars of the 1950s. The project goal is to create computer- and Internet-accessible GIS water data linked directly to the Water Rights Bureau's water rights database. Currently, these documents are located in WRD bureaus and regional offices. The information contained in these documents is heavily relied upon for making water rights and water management decisions and is used extensively by water resources staff as well as other governmental and public entities. The location and format of these documents are disadvantageous to those who need information from them but are not physically located near them. Additionally, many of the documents are deteriorating from age and heavy use, and are in danger of being lost.

The best method for providing access to and preservation of this information is conversion to digital spatial data, accomplished by optically scanning the maps, photos, and mylars, and geo-referencing them to a coordinate system. Then, by digitizing the diversion, ditch, and parcel information, these features will be labeled and related to the water rights database. Two personnel will travel as a team to the regional offices and the Montana Water Court as a team to convert and preserve spatial data sources. Water rights specialists at each regional office will provide expert information to answer questions the team will have concerning water rights file maps and other map and photo resources.

Technical Assessment:

The Natural Resource Information System (NRIS) personnel will integrate the water rights spatial and tabular data into an Internet mapping application. This application will be available through the DNRC WRD GIS web page and the NRIS Water Information Systems web page. Utah and Colorado have water rights information available in GIS format that can be queried in various methods, and contains water rights filing forms available for processing through the Internet.

Overall, the project appears to be technically and scientifically sound. The Bozeman Regional Office is the best site to begin this project. The entire process will be completed in Bozeman, and troubleshooting will take place before the process is started at the next site.

It is important that the new data be compatible with the DNRC regional offices' hardware and software. The software (ArcView 3.1 or 3.2) that is required to work with the product is already installed in each regional office. In the past, software upgrades have been supported as needed in the each of the regional offices. It is anticipated that this will continue to be the case with scheduled upgrades for this project.

The applicant received the necessary commitment from all of the regional offices to assist in carrying out this project. They agreed to provide space for the two information technology specialists and their equipment.

For this project to provide a useful product, it is important to have a training component. There is a built-in training component for the DNRC personnel in the regional offices. Most of these personnel have had training in GIS software, specifically ArcView. The regional offices also have in-house support from the Water Resources Division GIS program. As far as the public sector goes, DNRC will be serving the data products through the Internet. The on-line mapping, water resource surveys, and spatial aspects of the water rights database will be available through DNRC and the NRIS Water Information Systems public access web pages. For many Internet users, these types of applications could very well be confusing, but there will be options on the web pages for help on-line or a means given to contact personnel at DNRC or NRIS with questions. However, this may not be enough; further training may be needed to disseminate this information and make this a worthwhile project. The project would benefit by including training programs for conservation districts, watershed groups, and the Montana Watercourse. It would also be good to make contact with representatives of the private sector such as consultants or attorneys to see whether they are interested in training programs. The training program may require tutorials and possibly one-on-one guidance in addition to the training sessions.

The proposal mentions that the public will be providing quality control for this database. Once the database has been completed and is being used, the applicant should include in this project other procedures for field checking the data, especially the water rights data.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Funds	Total
Salaries and Wages	\$134,000	\$19,600	\$153,600
Employee Benefits	\$26,800	\$3,920	\$30,720
Supplies and Materials	\$2,820	\$0	\$2,820
Communications	\$2,000	\$0	\$2,000
Travel	\$50,633	\$0	\$50,633
Equipment	<u>\$28,996</u>	<u>\$12,000</u>	<u>\$40,996</u>
Total	\$245,249	\$35,520	\$280,769

The salaries and wages are for two grade 12 information technology specialists employed for two years. The travel budget is for the employees to travel to the seven DNRC Regional Offices around the state. The supplies and materials and equipment expenses are for the computer hardware and software. The applicant anticipates that the costs for computer equipment will go down after June 2002, based on the current pace of technological developments.

The applicant's salaries and wages budget estimates are incorrect. The salaries for two State of Montana entry-level grade 12 information technology specialists is \$88,964 rather than \$134,000. The salaries and wages match should be \$21,920 rather than \$19,600. The employee benefit costs are also incorrect. The correct RDGP employee benefits cost is \$22,241 rather than \$26,800. The correct employee benefits match is \$4,960 not \$3,920. The travel budget needs to be estimated with the new hotel rates, \$55.00 plus tax from June 1 to September 30.

Environmental Evaluation:

This project is not expected to generate any long-term or short-term adverse environmental impacts.

Public Benefits Assessment:

The project product of Internet-accessible water rights data would be useful to the general public and public and private professionals alike. This project will improve the availability of water rights data for those with access to computers and for individuals coming into DNRC offices for assistance. This information will be quality checked by members of the public when they view their own water right or other known information on water rights. They will help keep the data accurate by informing DNRC when they discover discrepancies.

A variety of users will find this information useful: water right holders, potential water right buyers, watershed groups, land use planners, subdivision review boards, resource planners and regulators, and municipal water supply planners. This information will be used for instream flow issues, drought monitoring and managing, water availability monitoring, water quality monitoring and regulating, watershed management plans, and interstate and international water basin management plans. Also, the Montana Water Courts will make use of this information when decreeing water right basins. It will be helpful to preserve the information contained on these mylars and maps for legal documentation for Water Court decisions.

Recommendation:

This project is not recommended for funding. It is more appropriately funded through an agency budget request.

Applicant Name: Flathead Basin Commission

Project Name: Implementation of the Flathead Basin Voluntary Nutrient Reduction Strategy

Amount Requested: \$280,872

Other Funding Sources:	\$23,400	Applicant
	\$44,237	Various State Agencies (DNRC, DEQ, DFWP)
	\$15,322	Local Governments (Conservation District and County)
	\$35,438	Various Federal Agencies (USFWS, USFS, EPA, U.S. Bureau of Reclamation)
	\$7,776	Confederated Salish and Kootenai Tribes
	\$42,660	Private Entities (Plum Creek Timber Company, volunteer monitors, Flathead Basin Commission citizens)
	\$31,334	International Entity (British Columbia Environment)

Total Project Cost: \$481,039

Amount Recommended: \$0

Project Abstract: (prepared and submitted by applicant)

If you ask Montanans which five Montana lakes are the most important, invariably Flathead Lake would be in the top three picks. The size of the lake, notoriety, aesthetic value, recreation benefits, and water quality are reasons why Flathead Lake is a popular destination point and considered exceptionally valuable to all Montanans. However, few Montanans know that Flathead Lake water does not meet state water quality standards (ARM 17.30.637 (1)(e) General Prohibitions) and is undergoing the eutrophication process at an accelerated rate. Excess nutrients in the form of phosphorus, nitrogen, and nitrate plus nitrite cause algae blooms and serious oxygen depletion below the hypolimnion. Action is needed to reduce nutrient loading to this huge and immensely important natural resource before the impacts are irreversible.

The lake's water quality shows clear signs of excess nutrients entering the water column. Substantial lake and synoptic stream water quality monitoring data show that nonpoint source pollution is impacting water quality and beneficial uses, and is causing violation of state water quality standards. As a result, Flathead Lake is included on the Section 303(d) list of water-quality-impaired water bodies, and is designated a high priority for developing an approved total maximum daily load (TMDL), which is close to being completed. The probable sources of impairment include atmospheric deposition, domestic wastewater lagoons, flow regulation/modification, municipal point sources, on-site wastewater treatment systems (septic tanks), urban sprawl, overland runoff, agriculture, silviculture, and an upstream impoundment. Only two percent of the nutrient load in Flathead Lake is estimated to come from point sources. The vast majority of nutrients, or 98 percent, are the result of natural and human nonpoint source pollution.

To address nonpoint source pollution, the Flathead Basin Commission (FBC) developed the Voluntary Nutrient Reduction Strategy (VNRS) and has linked the program to the TMDL process. A target TMDL was developed with the goal of achieving the 1978 primary productivity level of 80 grams carbon per square meter per year. Achieving this target is anticipated to improve Flathead Lake water quality and ensure that the lake meets human health, aquatic life, and beneficial use requirements and water quality standards. To meet the target TMDL for primary productivity, FBC determined that nitrogen, nitrate plus nitrite, and phosphorus loading into the lake must be reduced by 15 percent basin-wide. Implementation of the VNRS program was initiated in 1999; however funding is needed to keep the effort underway. Six principal components are identified for successful implementation of the VNRS/TMDL program, and include: (1) coordination and planning, (2) grant funding and contributions to complete projects (3) partnerships and public outreach, (4) watershed groups, (5) identification of opportunities, and (6) monitoring. Funding from the Reclamation and Development Grant Program and in-kind contributions from private entities, tribal partners, local government, state government, federal agencies, and British Columbia Environment are proposed to implement the VNRS and address excess nutrient loading in Flathead Lake and upstream tributaries. The proposed length of this project is six years.

Technical Assessment:

The Flathead Biological Station, the Confederated Salish and Kootenai Tribe, and the Flathead Basin Commission collected substantial data on Flathead Lake in the 1970s. Since then there is much visual and scientific evidence showing that water quality in Flathead Lake has been seriously degraded from excessive nutrient loading. At times there are algae blooms, surface scum, and lakebed odors. The 1999 mid-lake deep sample point showed a serious drop in oxygen saturation and ever increasing amounts of harmful nutrients. There is no doubt that there are problems. In the last eight years, the Flathead County population increased by 13,000, and most of these people developed land outside the city limits, requiring septic systems. Postponing further implementation could result in a situation like that at Lake Tahoe, where experts are unsure whether water quality impacts can be mitigated.

Some current VNRS activities include seven buffer zone demonstration projects along Flathead Lake and tributaries, limited stream restoration, and assessment of wetland and riparian conditions. EPA and DNRC fund these activities. More examples of on-going VNRS efforts include: legislation requiring the sale of only low or phosphorous-free detergents in the area, urban and stormwater runoff mitigation, forestry best management practice implementation, evaluation of fully or partially sewerage the lake using phosphorous and nitrogen removal technology, and upgrading failing septic systems in Dayton, Montana. The septic systems in Dayton are located in a shallow aquifer and believed to cause excess lake nutrient loading.

The grant funds will be used primarily to fund a VNRS coordinator for six years. This project is scheduled to continue through 2007. In general, the coordinator provides facilitation services to local watershed groups; works with local professionals and agency personnel to identify critical projects that reduce nutrient loading; prepares grant applications; provides in-kind services on VNRS projects; ensures that the VNRS is focused on completing good projects; provides program direction; and actively seeks grant funding, in-kind contributions, and cash matches. Partnerships are essential to the success of the TMDL implementation effort – no single entity can reduce nutrient loading in the lake by 15 percent. VNRS efforts to date have been successful in establishing strong partnerships. Watershed groups have been established in seven of the watersheds in the basin. The remaining watersheds need to have similar working groups formed and activities tailored to local issues and impacts. The VNRS coordinator, with the support of other stakeholders, is key in identification of opportunities to

meet TMDL goals. Large-scale efforts must be evaluated and impartially considered. The feasibility of proposals must be evaluated in order to propose defensible actions that make significant gains in reducing nutrient load.

The proposed solution alternatives in the application - no action, legislative action, or passing the effort off to another entity or agency - could have been more thoroughly explored. The approach recommended is voluntary rather than regulatory. This has been the approach taken in Montana in regard to nonpoint source pollution. To its credit, this program does take a proactive approach to nutrient loading attempts to head off increased pollution. For example, farming practices are promoted that reduce the amount of fertilizers used for crops and farm products, develop alternate water for cattle, fence riparian areas, and maintain instream flows on flow-impaired streams.

The VNRS coordinator position will be put out for competitive bid. FBC, a 21-member commission, provides direct input into the implementation of VNRS through its executive committee and regular meetings held every two months. The public information officer for FBC will provide project management services and will work directly with the Governor's Office on the contractual elements required for VNRS. The contractor selected to implement VNRS will be managed in the same way that the current VNRS is being managed, through direct oversight from the public information officer, frequent communications, and monthly updates. FBC, the Governor's Office, and the current project coordinator have successfully managed the VNRS program since its implementation in early 1999. It is anticipated that this project will continue to be successfully managed.

Financial Assessment:

The overall total budget for this project consists of the following:

	RDGP	Matching Funds	Total
Salaries and Wages	\$25,920	\$176,436	\$202,356
Contracted Services	\$206,150	\$0	\$206,150
Communications	\$8,640	\$0	\$8,640
Travel	<u>\$40,162</u>	<u>\$23,731</u>	<u>\$63,893</u>
TOTAL	\$280,872	\$200,167	\$481,039

RDGP grant funds will be used primarily to fund a VNRS coordinator for six years. The \$25,920 from RDGP under Salaries and Wages is to provide funding to the Governor's Office for financial management and contracting support. The \$206,150 for Contracted Services is for the VNRS coordinator services. The \$8,640 Communications budget is for telephone, postage, and community meeting support expenses. The Travel budget is for the VNRS coordinator's travel and costs for Flathead Basin Commission members to travel to meetings every two months. Cost estimates are based on the current VNRS program costs.

Environmental Evaluation:

This project is not expected to generate any long-term or short-term adverse environmental impacts.

Public Benefits Assessment:

As stated in the abstract, FBC has determined that, to meet water quality improvement targets in the TMDL, nitrogen, nitrate plus nitrite, and phosphorous loading into the lake must be reduced by 15 percent basin-wide. It is anticipated that achieving this target will improve Flathead Lake water quality and ensure that the lake meets human health, aquatic life, and beneficial use requirements and water quality standards. It is the overall VNRS program goal to reduce these pollutants. This grant pays for the organization and administration needed to achieve that goal. If this grant is fully funded, the applicant's goal is to achieve a 5 percent to 6 percent reduction in nutrients over the six-year duration of the grant period. Continued funding over a 10- to 15-year time period will be needed to pay for the actual projects and implement the best management practices necessary to meet the 15 percent reduction goal.

As resource conservation projects are completed, monitoring will be used to quantify improvements in Flathead Lake water quality. The actual completions of projects are quantifiable milestones that show progress toward improved water quality. Water quality monitoring under the volunteer monitoring program and by the University of Montana (UM) Biological Station will provide documentation needed to quantify the water quality improvement under VNRS. FBS, UM Biological Station, and the Confederated Salish Kootenai Tribes are leading the Flathead Lake monitoring efforts.

The Flathead Basin Commission conducted a basin-wide survey during the development of the VNRS. The survey results identified water quality as the biggest concern in the Flathead Valley. Nearly 100,000 people live in the Flathead Basin. Flathead Lake is at a critical crossroads where actions implemented now can prevent irreversible impacts. Implementation of the VNRS means forming partnerships with industry to minimize nutrient loading, working with communities to reduce the impacts of sewage treatment facilities, and using best management practices on agricultural lands and silvicultural operations. The project is supported by the following agencies and interest groups that are on the Flathead Basin Commission: Glacier National Park, EPA, U. S. Forest Service, U. S. Bureau of Reclamation, DEQ, DNRC, DFWP, Flathead and Lake Counties, Flathead and Lake County Conservation Districts, Confederated Salish and Kootenai Tribes, British Columbia Environment, Montana Power Company, and Plum Creek Timber Company.

Recommendations:

The project is not recommended for funding for the following reason. FBC has applied for VNRS coordinator funding under both RDGP and the Renewable Resource Grant and Loan Program (RRGLP). The RDGP application and the RRGLP application are virtually the same, except funding is requested for six years under RDGP and for two years under RRGLP. Projects are not eligible to receive funding under both RDGP and RRGLP. Funding a VNRS coordinator for two years is recommended under RRGLP.

Applicant Name:	Judith Basin Conservation District		
Project Name:	Judith Basin Artesian Well Repair Project		
Amount Requested:	\$180,000		
Other Funding Sources:	\$10,000	Applicant	
	\$87,500	Landowner Match	
Total Project Cost:	\$277,500		
Amount Recommended:	\$ 0		

Project Abstract: (prepared and submitted by applicant)

The purpose of this study is conservation of artesian groundwater resources in Judith Basin County, Montana. Repairing or plugging surface flow from artesian wells will conserve valuable artesian groundwater resources. Declining artesian pressure is widely reported by well owners in Judith Basin County. In effect, the groundwater is being "mined" by uncontrolled flow. The result is that artesian aquifers are being depleted faster than they can be recharged.

The goal of the Judith Basin Conservation District as project sponsor is to conduct well completion techniques to stop uncontrolled flow, thereby increasing aquifer pressure. The Montana Groundwater Center (GWIC) well information database has identified more than 1,048 wells drilled in Judith Basin County since 1880. Many artesian wells require rehabilitation so that well owners can control the rate and timing of water flow to coincide

with water needs. Grant money will conserve valuable artesian water resources, improve the productivity of the aquifers, and restore reliable water supplies for future ranching, farming, and domestic needs.

Judith Basin County has 141 mapped flowing wells. These wells were mapped by Feltis (1977), and Zimmerman (1966). Their maps cover the entire county and also show oil exploration wells or "dry holes," and springs. The flowing wells are located in clusters or groups. There is a group of 8 flowing wells south of Hobson, 10 wells east of Buffalo, 6 wells near Utica, 29 wells near Geyser, and nearly 80 wells around and between Stanford and Windham, and continuing northeastward along Wolf Creek, Coyote Creek, and Sage Creek. Individual well owners report that a well that formerly filled a 300- gallon spray tank in less than 2 hours now takes more than 24 hours to fill the same tank.

Individual wells to be rehabilitated or plugged will be determined by well owners and the Judith Basin Conservation District Board of Supervisors working with the project coordinator. Benefits of the project include: (1) conservation of valuable and extensive artesian water resources, (2) education of well owners and water users on the benefits of conservation, and (3) use of proven methods of well rehabilitation from similar projects in Petroleum and Fergus Counties. The project is designed to be completed in two years.

Technical Assessment:

The stated goal of this project is to demonstrate that water conservation methods can significantly reduce losses of artesian head and water supplies in the area. In 1995 and again in 1997, RDGP provided grant funds to Petroleum County Conservation District (\$232,247) and Fergus County Conservation District (\$150,000) to establish pilot programs for the control of uncontrolled artesian flows. The Petroleum County project, conducted in cooperation with the Montana Bureau of Mines and Geology (MBMG), was completed in 1998. The results were encouraging, and methods for artesian water flow control were proven effective at minimal cost. Although just commencing, the Fergus County Conservation District project promises similar results. Combined, these two efforts are expected to provide the information needed for landowners and others to control and manage artesian water supplies with minimal RDGP involvement.

Technically, the current request raised a number of concerns. First, MBMG is identified as a project participant, responsible for technical assistance and final report preparation. MBMG, when contacted by RDGP, indicated that it has no plans to participate. This apparent lack of coordination by the applicant raises questions on project management and organizational capability to design and implement the study and report on project results.

Secondly, the application does not sufficiently identify and discuss expectations of landowner participation. It is RDGP's feeling that findings of the earlier funded pilot projects should provide sufficient incentive for well owners to plug or control artesian flows without the use of RDGP dollars. The absence of the number of wells to be plugged and the list of participating landowners raises the question of local support and need for the project.

Thirdly, it is RDGP's impression that mapping information compiled for flowing wells in the 1960s and 1970s is outdated and that a current inventory and assessment are needed before project start-up. The application does not address this anticipated need and the associated cost. As in the case of the Petroleum County CD project, the success of this project is a direct function of the location and number of participating landowners, not the fact that there may be a multitude of candidate wells.

The proposed project is desirable in that it addresses an identified problem of flowing artesian wells, a definite concern. However, given the establishment of two earlier programs designed to provide solutions, and the technical knowledge necessary to address flowing well problems, the project rates low priority for RDGP funding. To a large degree, individual well owners are responsible for controlling these flows.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Funds	Total
Salaries and Wages	\$10,000	\$10,000	\$20,000
Contracted Services	\$158,000	\$87,500	\$245,500
Travel	\$5,000	\$0	\$5,000
Equipment	<u>\$7,000</u>	<u>\$0</u>	<u>\$7,000</u>
Total	\$180,000	\$97,500	\$277,500

Now that earlier projects have demonstrated the importance of water conservation of artesian aquifers and the associated cost and benefits, it is important to provide detailed information and justification for the current request. The budget is deficient in the following areas.

- Salaries and Wages - there is no description of the amount of time to be spent, wage rate, or work description for the project administrator.
- Contracted Services - well contractors are budgeted for \$120,000 without equating this amount to the number of wells plugged. There is no indication in the proposal that a firm commitment (in writing) to participate has been made by any landowner to participate. The water quality analysis does not describe the parameter analyzed, its cost, or the number of samples, and the \$8,000 is not justified. MBMG indicated that it is not participating in the study. The project manager is budgeted for \$20,000 over a two year period. Wage rate and number of hours, with task description is needed. The \$87,500 pledged in landowner matching funds is not substantiated, as mentioned previously.
- Travel and per diem costs (\$5,000) are not substantiated.
- Equipment costs (\$7,000) are not substantiated.

In summary, a more detailed budget and description of work tasks are needed before an accurate assessment of costs can be made.

Environmental Evaluation:

The project is designed to mitigate damage to artesian aquifers. Long-term impacts to the aquifers can be expected if flows are not reduced or eliminated. Plugging and/or rehabilitation measures will require access to the sites by heavy equipment, and in some cases soil and vegetation resources will be destroyed, emissions will be generated from combustion engines and vehicular traffic, and the potential for leaking of oil and other fluids on the ground surface will increase. These impacts are relatively minor and can be easily avoided and or remedied through use of well-maintained equipment, dust suppression techniques, and site grading and restoration after project completion.

Public Benefits Assessment:

Benefits could be substantial to individual landowners participating in the project if artesian flows are reestablished and properly controlled. This may save them the expense of drilling new wells or pumping the existing wells. Educational benefits will be more widespread, potentially having impacts regionally and statewide, as in the case of earlier pilot projects located in Petroleum and Fergus Counties.

Recommendation:

This project is not recommended for funding.

Applicant Name: Park Conservation District

Project Name: Governor's Upper Yellowstone River Task Force Cumulative Effects Investigation: Phase II

Amount Requested: \$300,000

Other Funding Sources: \$10,000 Applicant
\$90,000 U.S. Geological Survey - (Wildlife Study)
\$356,000 U.S. Geological Survey - (Phase II Fisheries Study)

Total Project Cost: \$756,000

Amount Recommended: \$0

Project Abstract: (prepared and submitted by applicant)

Phase II of the Governor's Upper Yellowstone River Task Force Cumulative Effects Investigation focuses on the evaluation and monitoring of the cumulative effects of river channel modifications on wildlife and fisheries. Project partners are the task force (project endorsement), Park Conservation District (grant sponsor and administrator), U.S. Geological Survey (researchers), and the Technical Advisory Committee (scientific oversight). Total cost for the project is \$756,000. Grant money requested from this RDGP 2001 grant is \$300,000. Matching and in-kind funds amount to \$456,000. Funding from RDGP will continue to give Montana a voice in the management of our resources.

The project study area extends from Gardiner to the bridge crossing at Springdale, a river distance of approximately 80 miles. It is home to more than 14,500 Montana residents and is visited by more than one million tourists each year.

The Yellowstone River represents a significant and valuable natural and economic resource. In the wake of the 1996 and 1997 floods, many independent channel modification projects were undertaken. These activities illustrated to many the need for a comprehensive and consolidated planning effort for the upper Yellowstone River. That concern led to the creation of the task force in November 1997 (by Governor Racicot) and ultimately to this investigation.

The goal of Phase II of the Fisheries Study is to determine whether certain types of channel modification are potentially more detrimental to fish populations than others. The wildlife assessment has two goals: (1) to provide information on effects that have already occurred due to natural and/or human-induced activities, and (2) to provide information that will form the basis for projecting the short-term and long-term effects of future channel modification activities. Both research teams plan to begin work in July 2001 and complete final reports by December 31, 2002.

Technical Assessment:

The overall goal behind this data-gathering effort is for the task force to use the information gathered by the proposed studies to develop a set of publicly supported river corridor management recommendations that address potential adverse cumulative effects of river channel modification and floodplain development on the human community and riparian ecosystem.

The Upper Yellowstone River Task Force is responsible for coordinating the public input and scientific direction of several multi-disciplinary natural resource studies within the project area. In 1998, Park Conservation District (CD) obtained a \$300,000 RDGP grant for three baseline studies from Gardiner to Springdale. The DNRC, Water Management Bureau is conducting a geomorphology study, the U.S. Geological Survey (USGS) is carrying out a hydrology study, and the University of Montana (UM) is doing a riparian vegetation study, all of which are components of the task force's integrated study effort. The present request would fund the fisheries and wildlife components of the overall cumulative effects investigation. It is planned that the USGS, Biological Resources Division will be contracting with Park Conservation District to complete the two studies.

The applicant did not propose any alternatives other than the no action alternative. If other alternatives were explored before the task force approved the alternative presented in the application, it is not indicated.

The fisheries project is well defined in terms of the project goals, objectives, scope of work, and data usability. This study component uses technically and scientifically defensible protocol and statistical analyses. The fisheries study report on the impacts of bank stabilizations should serve its intended use.

However, the wildlife study is not well defined and is lacking in terms of specific data to be collected and in the intended of the data use. The wildlife proposal is vague, provides no clear record of technically defensible protocols, and offers little reference to methods and procedures. More work is needed on the wildlife portion to clarify how the data help determine habitat impacts. The technical issues needing further refinement are the targeted species, a defined population sampling design, identified models, identification of sampling sites, and reference areas. A brief description of the field survey techniques or methods is quoted below:

“Avian sampling will entail point counts using distance-sampling techniques that allow for the determination of densities. All species encountered at a site will be recorded. Sampling for reptiles and amphibians will entail audio-visual surveys and automated frog loggers to determine amphibian species breeding at a site. Completion of this activity is contingent on landowner permission.”

No description is presented regarding possible survey techniques for evaluating mammal populations, nor are any thoughts given about which mammal species might be targeted for evaluations of some kind. The Wildlife Assessment Study Plan goes to great lengths about how this study would be integrated into the overall cumulative effects study, but talks very little about the nuts and bolts of the wildlife field work that this grant would be funding.

There are questions regarding the attainability of the goals and objectives of the wildlife assessment. To their credit, the project contractors admit that projecting short- or long-term effects of future stream channel modifications upon wildlife populations will be difficult. Quoting from the study goals:

“The efficacy with which the wildlife assessment achieves the first goal will depend on the availability of historical data, and the degree to which the effects of human-induced activities (such as past bank stabilization projects) on hydrologic processes (component 1), channel migration, and riparian vegetation (component 3) can be disentangled from confounding factors such as conversion of land to agriculture, logging, or urbanization.... The efficacy with which the wildlife component achieves the second goal will depend on the adequacy with which the riparian zone of the upper Yellowstone River can be sampled for the selected species, and the validity of predictions regarding riparian vegetation (component 3) at some future time.”

The goals are well stated, but the study design and how to reach these goals are unclear. There is no question that the Upper Yellowstone River Task Force is doing an excellent job of coordinating a diverse, multidisciplinary approach toward understanding the implications and effects of channel modifications upon the river's ecosystem. However, because of the scanty detail of the wildlife field study program and because the success of the wildlife assessment depends upon (and is so closely tied to) other ongoing or proposed studies, it is difficult to determine whether the site-specific wildlife findings would be quantifiable or attainable.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Funds	Total
Salaries and Wages	\$0	\$112,500	\$112,500
Employee Benefits	\$0	\$55,000	\$55,000
Contracted Services (USGS)	\$275,000	\$1,000	\$276,000
Supplies and Materials	\$0	\$9,000	\$9,000
Communications	\$0	\$1,000	\$1,000
Travel	\$0	\$2,000	\$2,000
Rent and Utilities	\$0	\$4,000	\$4,000
Equipment	\$2,900	\$180,000	\$182,900
Miscellaneous	<u>\$22,100</u>	<u>\$91,500</u>	<u>\$113,600</u>
Total	\$300,000	\$456,000	\$756,000

Park CD is requesting \$175,000 in grant funding for the fisheries study and \$100,000 for the wildlife study. Park CD is charging \$25,000 for administration and equipment which appears reasonable for this project. USGS is charging \$207,500 for salaries and wages; \$19,000 for vehicle costs; \$2,000 for publication costs; \$27,000 for travel; \$3,000 for field housing; \$2,000 for binoculars and Global Positioning System (GPS) units; and \$14,500 for field computers (special "rugged" computers that can handle rough use in the field) and computer maintenance. Total USGS charges equal \$275,000.

Costs for the wildlife portion of the study were based on similar studies conducted by USGS including a four-year bird migration study in southern Arizona, a grassland bird study in eastern Colorado, and a Great Plains shore bird study. Costs for the fisheries study were based on similar studies for the U.S. Bureau of Reclamation in Montana on the Missouri and Yellowstone rivers and for the National Park Service on the Green and Yampa rivers in Colorado.

The fisheries study budget is reasonable for the work proposed. Since the wildlife study is vague, it is hard to determine whether the costs are reasonable and whether enough money is requested to complete the job.

The total cumulative effects investigation effort, from its inception in 1997 through the finalization of management recommendations, is estimated to cost approximately \$1.5 million. To date, approximately \$500,000 of this has been secured, not including the \$300,000 requested by this application. The remainder of the funds needed is being requested from DNRC (\$25,000), Montana Department of Transportation (\$70,000), EPA (\$50,000), and Congress (\$600,000).

The 1999 Legislature approved a \$300,000 RDGP grant for start-up of the cumulative effects investigation effort with the commitment that additional funding would be obtained from other sources. It is RDGP's feeling that federal and state fish and wildlife agencies, in particular, need to financially commit to the proposed effort. Their financial resources exceed those of RDGP.

Environmental Evaluation:

This project is not expected to generate any long-term adverse environmental impacts.

Public Benefits Assessment:

A multitude of river channel modifications was undertaken in the wake of the 1996 and 1997 floods on the Yellowstone. The task force, created in 1997, was directed to ensure that future projects affecting the river are planned and conducted in a manner that will preserve the integrity, beauty, values, and function of the upper Yellowstone River. At present, the permitting process tends to focus on each individual river project, not on the accumulated effects of a multitude of these projects. Further fragmenting the process is the fact that property owners and land managers use a variety of consultants to develop solutions for site-specific river problems and often do not understand the cause-and-effect relationship linking channel modification projects. The cumulative effects investigation will provide information and tools to help the upper Yellowstone community better manage the river. A comprehensive assessment enables those involved to understand the links between biophysical river

components, while also incorporating the human component into the scenario. Finally, predictive models and input will allow the task force to develop river management recommendations that are workable both for communities and for regulatory agencies.

The fisheries component of this project will contribute to the benefits outlined above. However, as previously detailed in this evaluation, there are concerns about whether the wildlife assessment as presented in this application would result in quantifiably significant contributions to the floodplain's management. Data in the future may very well show that this study is necessary to achieve the task force's goals.

The project has documented agency and citizen support as shown by the diversity of the task force membership and the opportunity for public input during all of its meetings. The coordination, local partnership, and overall technical study efforts of the task force will potentially provide a model for the management of other watersheds in Montana.

Recommendation:

This project is not recommended for funding.

Applicant Name:	Rosebud Conservation District and Bighorn Conservation District	
Project Name:	Evaluation and Prevention of Hydrologic Impacts from Coal Bed Methane Production in the Tongue River Watershed	
Amount Requested:	\$299,226	
Other Funding Sources:	\$5,838	Applicant
	\$65,187	Montana Bureau of Mines and Geology
	\$60,000	U.S. Geological Survey
Total Project Cost:	\$430,251	
Amount Recommended:	\$0	
Project Abstract:	(prepared and submitted by applicant)	

Natural gas (methane) production from coal beds is a new and potentially important industry in southeastern Montana. However, to release methane trapped in coal beds, vast quantities of groundwater must be pumped from the aquifer and discharged to nearby drainages as a waste product. Due to this pumping, water available to wells and springs in these coal bed aquifers will be decreased for many years, potentially for miles beyond the development area. Compared to the surface water, the discharged ground-water is more saline and can degrade irrigation-water quality, increase stream bank erosion and siltation, and damage riparian ecosystems.

The goals of this project are to evaluate potential impacts of coal bed methane (CBM) industry practices on the Tongue River watershed and to provide a scientific basis for water resource decisions. The project will include development of a Tongue River watershed database that will be made available to the public via an internet web page. Existing surface water and groundwater monitoring programs in the area will be expanded to specifically evaluate CBM impacts. Aquifer hydraulic impacts will be evaluated through groundwater level monitoring and aquifer property testing. CBM well discharge water quality will be determined through water quality sampling. Watershed data will be used to revise and develop a surface water quality model of the Tongue River basin. Water quality modeling and monitoring data will provide valuable predictive tools for regulators and concerned citizens to evaluate and manage CBM development and associated water discharges in the area.

The project will be administered by Rosebud Conservation District, in cooperation with Big Horn Conservation District. Technical services will be provided by the Montana Bureau of Mines and Geology (MBMG) and the U.S. Geological Survey (USGS).

Technical Assessment:

The application is generally well thought-out and adequately documented. The co-applicants propose to conduct a study to evaluate the short- and long-term impacts of coal bed methane development in the Tongue River basin area of southeastern Montana. The project is particularly important to residents of Big Horn and Rosebud Counties, where most CBM development is likely to occur.

CBM production requires the pumping of large volumes of groundwater from the coal bed aquifers in order to release methane gas. The gas is collected at the surface; the water is discharged on the surface or into nearby receiving streams. The environmental concerns expressed most often deal with the lowering of water levels, the quality of discharged water, and the time frame to recharge depleted aquifers. Water resources (quantity and quality) are of vital importance to the region's agricultural economy.

Multiple jurisdictions are in the early stages of deciphering how best to approach a rapid evolution of issues surrounding CBM development. Permitting decisions and tentative agreements have already been challenged and resulted in legal action, and needed decisions regarding required Montana Environmental Policy Act (MEPA) compliance have been delayed. Efficient and effective coordination between agencies grows more urgent with industry pressure for permit issuance.

To date, there has been no comprehensive study to collect pre-development baseline data relative to CBM development. Scientific baseline data and a scientifically based understanding of the Tongue River basin hydrological systems are critical in order to guide sound CBM development decision making. There seems to be little question that this study, or its equivalent, should be done, but rather, who should fund it? Other possible sources of funds include the CBM industry through voluntary solicitation, or the Board of Oil and Gas Conservation, Department of Environmental Quality, and the U.S. Bureau of Land Management through MEPA/NEPA fees. It is entirely possible that these and other potential financial sources would be able to fund this study sooner than RDGP. For instance, a bill now in Congress, versions of which have passed both the House and the Senate, is before a joint conference committee. Action on this bill, which appropriates \$500,000 to MBMG for the same study, would have a direct influence on the need for RDGP funding. A clearer picture should emerge in the next few months, in time for legislative action on this proposal. Absent funding for this study, or equivalent, by other agencies the proposal is an appropriate use of RDGP funds.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Funds	Total
Salaries and Wages	\$4,170	\$4,170	\$8,340
Benefits	\$1,668	\$1,668	\$3,336
Contracted Services	\$289,960	\$125,187	\$415,147
Supplies and Materials	\$1,853	\$0	\$1,853
Communications	\$185	\$0	\$185
Travel	<u>\$1,390</u>	<u>\$0</u>	<u>\$1,390</u>
Total	\$299,226	\$131,025	\$430,251

The budget is reasonable for the work proposed. It is based on the time commitment of investigations on similar projects.

Environmental Evaluation:

The study, in itself, does not have any adverse impact on the environment. Application and use of the study by regulating agencies may result in greater or lesser development of CBM in Montana. It would likely result in mitigation strategies that would lessen the impact of CBM development should it occur.

Public Benefits Assessment:

The project will produce the information and tools necessary to better manage the watershed's resources, to evaluate CBM best management practices, and to develop resource management policies for the Tongue River watershed. The primary benefit of proper resource management is to allow responsible development of a new, and potentially economically important, industry (CBM), without sacrificing the long-term economic or environmental health of the region.

Recommendation:

This project is not recommended for funding.

Applicant Name:	Stillwater County
Project Name:	County Gravel Pit Reclamation
Amount Requested:	\$30,780
Other Funding Sources:	\$6,152 Applicant
Total Project Cost:	\$36,932
Amount Recommended:	\$0

Project Abstract: (prepared and submitted by applicant)

Stillwater County presently holds permits for open-pit gravel extraction at 21 locations throughout the county. However, not all of these sites are presently used or required to meet the county's ongoing road maintenance and repair needs. The county road and bridge superintendent has expressed interest in retiring and reclaiming six of the sites. These sites have not been used for over 20 years and pre-date the Opencut Mining Act. They are also distinguished by steeply cut slopes which must be graded to an acceptable slope before the site can be re-vegetated.

Two of Stillwater County's ongoing goals are to increase the operating efficiency of county departments and to improve the county's scenic resources by removing county-generated eyesores whenever possible. On a smaller scale, open gravel pits can also promote erosion, dust, and the proliferation of noxious weeds. They can also be an attractive nuisance to children and teenagers.

The map included with the application shows that all six sites are visible from county roads or state highways. This was one of several factors in selecting these sites for reclamation. All six sites are located in Stillwater County, and the map illustrates that they are distributed rather evenly throughout the county.

This reclamation project would be bid in late spring or early summer of 2001, and the reclamation and re-vegetation tasks would be completed prior to fall of 2001. The Stillwater County Road and Bridge Department would oversee the reclamation project, conduct on-site inspections, and provide contract management.

Stillwater County is requesting a grant in the amount of \$30,780. Stillwater County proposes to match this amount by conducting administrative tasks for this project. These consist entirely of staff time and travel and are valued at \$6,152. In this manner, it is assured that all of the grant funds will go toward the actual reclamation work.

Technical Assessment:

Stillwater County proposes to reclaim the six gravel pits listed below:

1. Van Heemst - 8 acres
2. Van Oosten - 1 acre
3. Downer - 6 acres
4. Stillwater Mining Company - 1 acre
5. Stillwater County / Arnold - 6 acres
6. Arnold / West Rosebud - 10 acres

These projects encompass approximately 32 acres. The reclamation at each site generally consists of topsoil salvage, grading, and noxious weed control. These tasks involve straightforward construction practices and are readily implemented. Reclamation would be contracted out to the lowest bidder and completed within a 60-day period during the summer of 2001.

Reclamation by the county has been put on hold due to a lack of funds. It is anticipated that reclamation of these sites won't occur soon without financial assistance from sources outside Stillwater County.

The sites present a danger to trespassers because of steep highwalls. They are considered attractive nuisances and are a potential liability. It is in the county's best interest to eliminate the safety risks. Once the sites are reclaimed, the county's interests in the gravel would be relinquished to the property owners.

This project is not eligible for RDGP funding. According to the Department of Environmental Quality, these sites are permitted under the Opencut Mining Act (Section 82-4-401) and subject to those regulations. According to the Reclamation and Grants Program Act, Title 90, Chapter 2, Part 1112 (4), MCA, a project is not eligible for funding under the RDGP if the project is permitted under Title 82, Chapter 4 or 11.

Financial Assessment:

The total overall budget for this project consists of the following:

	RDGP	Matching Funds	Total
Salaries and Wages	\$0	\$5,552	\$5,552
Contracted Services	\$30,780	\$0	\$30,780
Supplies and Materials	\$0	\$50	\$50
Travel	<u>\$0</u>	<u>\$550</u>	<u>\$550</u>
Total	\$30,780	\$6,152	\$36,932

The county worked with DEQ to determine the costs of reclamation. The costs appear to be in line with this type of project, and there does not appear to be overspending.

Environmental Evaluation:

The project is not expected to have any long-term adverse environmental impacts. It is anticipated that construction related to the implementation of this project would be completed in a single field season. Therefore, impacts associated with construction activities would be considered short-term and should not significantly impact human health or the environment. Short-term impacts would be fugitive dust and noise. Proper dust control measures such as water sprays and limiting work to daylight hours will lessen these impacts.

Public Benefits Assessment:

The primary benefits associated with this project are reduction of steep highwalls and associated danger to trespassers. Elimination of visual scars on the county's scenic landscape will better serve efforts to promote increased tourism.

Recommendation:

The project is not recommended for funding.

CHAPTER III

STATUS REPORT OF 1993 - 1999 PROJECTS

This chapter briefly summarizes the status (as of October 1, 2000) of active projects that have been completed since preparation of the January 1999 Legislative Report. The projects are grouped according to the year in which they received legislative approval; within each grouping, the projects are presented in the order of their relative funding priority.

Projects Approved by the 1999 Legislature

1. Board of Oil and Gas Conservation / "A" Orphaned Well Plug and Abandonment

BOGC has bid the project and has commenced plugging of 10 wells located in Glacier County. A total of \$300,000 was authorized for this project.

2. Board of Oil and Gas Conservation / "B" Orphaned Well Plug and Abandonment

The project has been bid in Toole and Pondera Counties for the plugging of four wells. Plans and specifications are being prepared for plugging of wells located in Petroleum and Stillwater Counties. A total of \$300,000 was authorized for this project.

3. Department of Environmental Quality / Toston Smelter Reclamation Project

The project has not been contracted. The \$300,000 authorized for this project has been recommended for reauthorization to DEQ. (See page 47 for more information.)

4. Department of Environmental Quality / Frohner Mine Reclamation Project

The project has not been contracted. The \$300,000 authorized for this project has been recommended for reauthorization to DEQ. (See page 47 for more information.)

5. Department of Environmental Quality / Great Republic Smelter Reclamation Project

The project has not been contracted. The \$300,000 authorized for this project has been recommended for reauthorization to DEQ. (See page 47 for more information.)

6. Park Conservation District / Upper Yellowstone River Cumulative Effects Investigation

This project is currently under contract and expected to be completed by December 2002. The purpose of this project is to conduct scientific and engineering investigations in support of the cooperative analysis and monitoring of cumulative effects of proposed river channel modifications from Gardiner to Springdale, Montana. DNRC, Water Management Bureau is conducting a geomorphology study, USGS is carrying out a hydrology study, and the University of Montana is doing a riparian vegetation study. The work funded through this grant is part of a larger investigation of the cumulative effects of river channel modifications on the upper Yellowstone River. The overall goal behind this data-gathering effort is for the Governor's Upper Yellowstone River Task Force to use this information to develop a set of publicly supported river corridor management recommendations that address potential adverse cumulative effects of river channel modification and floodplain development on the human community and riparian ecosystem.

7. Toole County Plug and Abandonment / Aid to Independent Small Operators

Under this project, the cost of plugging oil and gas wells is cost-shared with independent small operators. A total of 42 wells have been plugged thus far. A portion of the grant balance remaining has been recommended for reauthorization to conduct cost-share plugging in Glacier, Pondera, and Liberty Counties. (See page 47 for information.)

8. Butte-Silver Bow Local Government / Upper Clark Fork Basin: Superfund Technical Assistance

This project has not been contracted. The grantee, as the result of cost savings, is currently operating on funds approved by the 1997 Legislature. There is \$17,204 remaining in that grant. A total of \$95,236 was authorized for this project to hire a technical position that would advise Deer Lodge, Powell, Granite, and Silver Bow Counties regarding Superfund activities being conducted in the Clark Fork River basin.

9. Fergus County Conservation District / Central Montana Artesian Basin Groundwater Project

The project has been contracted, and plans are being formulated to conduct plugging of artesian wells in the spring of 2001. A total of \$150,000 was authorized for this project.

10. Toole County / North Toole County Reclamation Project

This project is essentially complete and involved cleanup and reclamation of oil and gas sites in Toole County. The grantee is currently working on a reclamation handbook describing recommended procedures that can be used at similar sites statewide. A total of \$150,000 was authorized for this project.

11. Butte-Silver Bow Local Government / Mining City Mineyard Preservation and Enhancement

This project is currently under contract and expected to be completed by July 2003. This project is part of the overall development of a Mining Heritage Park in Butte. This park is an integral part of the history of Montana and the community of Butte, and will be a resource for all of Montana. This project has four main goals: (1) maintain and maximize the safety of 10 existing headframes, (2) restore partial function to the Steward headframe, (3) gain down-shaft access to the Steward shaft, and (4) establish an experience-based education program that will provide an ongoing capability to maintain and enhance Butte's headframes.

12. Townsend, City of / East Pacific Mine Reclamation

The project has not been contracted and is waiting go-ahead notification from DEQ. DEQ is planning reclamation at the site using federal funds. The two entities would cost share the total cleanup of the hard rock mine site. A total of \$203,500 was authorized for this project.

13. Montana Tech of the University of Montana / Champion International Gravel Pit Reclamation Project

The project has been completed and involved reclamation of an abandoned gravel pit. The site would blend into a local Milltown and Bonner recreation area. A total of \$57,494 was authorized for this project.

14. Lewistown, City of / Source Location of Hazardous Organic Contaminants, Big Spring Creek Drainage

The project has been contracted and involves soil and water sampling in the area of Brewery Flats, Lewistown, Montana. The area is heavily contaminated with petroleum residue and potentially PCBs and heavy metals. The test results are being used to develop a remedial cleanup plan for the site located adjacent to Big Spring Creek. A total of \$50,000 was authorized for the project.

15. Glasgow Irrigation District / St. Mary Diversion Repairs

The U.S. Bureau of Reclamation completed the design of the cathodic protection, and installation of the system began in September 2000. The design and repair of the siphons will begin in the winter of 2000, with completion of the project scheduled for October 2002.

16. Board of Oil and Gas Conservation / Oil Well Abandonment

The project has been contracted. Funding will be used to help offset plugging costs of an oil and gas well located in Musselshell County. A total of \$20,105 was authorized for this project.

Projects Approved by the 1997 Legislature

1. Board of Oil and Gas Conservation / BALCO Disposal Facility

This project, located in Richland County, was completed in July 1999 and consisted of the removal and transport of 16,000 barrels of waste oil and material to an out-of-state disposal facility, removal of oil storage tanks, on-site disposal and solidification of sludge material, cement capping, topsoiling, and seeding. Reclamation costs were significantly higher than expected, and funds from several other BOGC grants were used to complete the project.

2. Department of Natural Resources and Conservation / Reliance Refinery Soils and Sludge Cleanup

A cleanup plan for this site, located in Kalispell, has not been finalized. Project implementation is complicated by the existence of potentially liable persons (PLPs) on adjacent lands. The Department of Environmental Quality has notified the PLPs that additional remedial actions are required before DEQ will approve a final cleanup plan. A PLP response is required no later than October 31, 2000. DNRC's position on future actions at this site will be reevaluated soon thereafter. A total of \$582,300 was approved for this project by the 1997 Legislature.

3. Mile High Conservation District / Highland Mill Reclamation

This site, located 11 miles south of Butte, has been reclaimed and the project completed. Considerable matching funds were provided by the U.S. Forest Service.

4. Butte-Silver Bow Local Government / Upper Clark Fork River Basin: Superfund Technical Assistance

The individual hired for this project provides local governments and citizens within Silver Bow, Powell, Granite, and Deer Lodge Counties with technical review of Superfund technical reports, remedial designs, and long-term cleanup plans. The project will be completed in December 2000.

5. Board of Oil and Gas Conservation / "A" Orphaned Well Plug and Abandonment and Site Restoration

This grant was approved for \$164,222. All funds were used at the Balco Disposal Facility to help offset cost overruns.

6. Carbon County / Dry Hydrant Demonstration Project

This project has been completed. The purpose of this project was to effectively demonstrate the use of dry fire hydrants as a means to improve fire protection for Montana residents. Approximately 122 dry fire hydrants were installed throughout 30 Montana counties.

7. Toole County / North Toole County Reclamation Project

This project was completed in March 2000. A total of \$38,362 was expended for cleanup of sludge pits, debris, and abandoned pipelines.

8. Butte-Silver Bow Local Government / Mine Subsidence Reclamation

The purpose of this project is to remediate abandoned mine openings and subsidence problems in Butte in the most effective, cost-efficient manner. Another objective of the project is to identify and hold accountable responsible parties on applicable sites, to investigate the liability issues associated with these hazards, and to develop a response process that prevents the local government from increasing or assuming responsibility for the hazard by responding to the problem.

Through the first four fiscal quarters of the grant project, four subsidences have been remediated directly by the grantee, and the use of the grant as an incentive for responsible parties to mitigate hazards on their own (to prevent having liens placed on their properties) has resulted in the remediation of several others. Tasks to be undertaken during the winter months will concentrate on liability investigations, development of a computer database, and public education.

9. Rosebud Conservation District / Hydrologic and Geologic Feasibility of Coal Mine Pits as Water Impoundments

This project is currently under contract and expected to be completed by November 2000. The purpose of this project is to encourage coal mine reclamation techniques that provide beneficial surface water resources for post-mining land users through the use of final mine-pit impoundments, where appropriate. This broad purpose is further divided into two specific purposes: (1) to develop a thorough understanding of existing mine-pit impoundments in southeastern Montana, and (2) to develop new methods and identify existing techniques that can be used in current and future mine reclamation to determine in advance the feasibility of final-pit impoundments.

10. Deer Lodge Valley Conservation District / Development of Acid/Heavy Metal Tolerant Cultivars

The project's goal is to release native plants for use on acidic, metalliferous sites common at the 10,000 abandoned mine sites in Montana. Currently, there are no acid/metalliferous-tolerant releases on the market. The testing and subsequent release of superior ecotypes will aid reclamationists in the re-establishment of a diverse plant ecosystem on affected lands. In the 1995-1997 grant period, two Initial Evaluation Plantings (IEPs) were constructed on the Anaconda Smelter Superfund Site in southwestern Montana. The plant materials evaluated in this study were assembled from wildland collections at mine-impacted sites throughout western Montana and from commercial seed sources. The IEPs collectively tested 95 species consisting of 51 grass, 29 forb, and 5 shrub species. After three growing seasons, the superior performing accessions were identified.

During the 1998-2000 grant period, the project focused on large-scale seed collection of the superior performing accessions identified in the IEPs. These accessions were subsequently put into ~five acres of seed/plant production at the Bridger Plant Materials Center (BPMC). These 13 grasses, 6 forbs, and 7 shrubs are being grown to determine cultural techniques and to increase the amount of seed. In 1999, a Comparative Evaluation Planting (CEP) was installed to compare these promising accessions to other sources of the same species. The results from the CEP and the success of seed production will provide valuable information for the selection of plant materials. Other project activities have included symposium and conference presentations, newsletter articles, Planting Guides, poster presentations, symposium proceedings, technical papers, and quarterly project reports. Releases are anticipated to start in 2001 through the Pre-Varietal Release process at the "Source-Identified" and "Selected" level. Foundation quality seed for the releases will be maintained at BPMC for distribution through the Montana and Wyoming Crop Improvement Associations to commercial seed producers.

Projects Approved by the 1995 Legislature

1. Montana State University / Clean Tailings Reclamation

This project is currently under contract and expected to be completed by December 2000. The purpose of this project is to test a new mineral mine reclamation technique that separates sulfide mineral contaminants from mine tailing material. This new method uses a field-deployable mineral separation technology. Sulfide mineral contaminants are contributors to acid mine drainage.

2. Department of Environmental Quality / Nonpoint Source Pollution Control

This project is currently under contract and expected to be completed by May 2001. This project funds several of Montana's voluntary nonpoint source pollution control projects. Funds are used for watershed project implementation, installation of best management practices, water body assessments, training, educational materials, and technical assistance.

3. Glacier County Conservation District / Water Quality Demonstration and Reclamation, Red River Drainage

The purpose of this program is to clean up oil and gas drilling sites and saline seep areas. Three wells have been plugged and the sites restored. Work continues on reclamation of saline discharge/recharge areas through incentive payments to landowners. The project is scheduled for completion in January 2001.

Projects Approved by the 1993 Legislature

Department of Environmental Quality / Nonpoint Source Pollution Control

This project is currently under contract and expected to be completed by December 2000. This project funds several of Montana's voluntary nonpoint source pollution control projects. Funds are used for watershed project implementation, installation of best management practices, water body assessments, training, educational materials, and technical assistance.