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Reclamation and Development Grants Program

Department of Natural Resources and Conservation

Conservation and Resource Development Division

Volume 5

Reclamation and Development Grants Program

Project Evaluations and Funding Recommendations
For the 2017 Biennium

and

2007 Through 2013 Biennia Status Report

Prepared by the

Montana
Department of Natural Resources
and Conservation

Conservation and Resource Development Division
Resource Development Bureau

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LIST OF TABLES and MAP

LIST OF ABBREVIATIONS

AIP..... aquatic invasive plant
AIS..... aquatic invasive species
AMD ..... acid mine drainage
AML ..... abandoned mine land
ARC..... Assessment, Revolving Loan Fund, and Cleanup
ARD..... acid rock drainage
ARRA ..... American Reinvestment and Recovery Act
BHR..... Big Hole River
BIA..... Bureau of Indian Affairs
BLM ..... Bureau of Land Management, U.S. Department of the Interior
BLMS..... Berg Lumber Mill Site
BMP..... Best Management Practices
BNSFR ..... Burlington Northern Santa Fe Railroad
BPM..... Black Pine Mine
CARDD..... Conservation and Resource Development Division
CBM ..... coalbed methane
CD ..... conservation district
CECRA ..... Comprehensive Environmental Cleanup and Responsibility Act of 1989
CLP ..... Curly Leaf Pondweed
CMRWA ..... Central Montana Regional Water Authority
CSKT..... Confederated Salish and Kootenai Tribes
CWA..... Clean Water Act
cy..... cubic yards
DEQ..... Montana Department of Environmental Quality
DEQ-AML ..... Montana Department of Environmental Quality–Abandoned Mine Lands Program
DNRC..... Montana Department of Natural Resources and Conservation
DNRC–WRD ..... Montana Department of Natural Resources and Conservation–Water Resources Division
DSL ..... Montana Department of State Lands
EA..... Environmental Assessment
EEE/CA ..... Expanded Engineering Evaluation/Cost Analysis
EPA ..... U.S. Environmental Protection Agency
EWM..... Eurasian Watermilfoil
FEMA ..... Federal Emergency Management Agency
ft ..... feet
FTE..... full-time employee
FWP ..... Montana Fish, Wildlife and Parks
gpm ..... gallons per minute
GWAP ..... Montana Ground Water Assessment Program
GWIC..... Montana Ground Water Information Center
HDPE ..... high-density polyurethane
ID..... Irrigation District
LiDAR ..... Light Detection and Ranging
LUST ..... Leaking Underground Storage Tank
MBMG ..... Montana Bureau of Mines and Geology
MCA ..... *Montana Code Annotated*
MDT..... Montana Department of Transportation
MODFLOW..... Model of Groundwater Flow
MSCA..... Montana Salinity Control Association
MSU ..... Montana State University
MWCB..... Mine Waste Cleanup Bureau
NEPA..... National Environmental Policy Act

OSMRE ..... Office of Surface Mining Reclamation and Enforcement
PCB ..... polychlorinated biphenyls
PCP ..... pentachlorophenol
RDGP ..... Reclamation and Development Grants Program
RIT..... Resource Indemnity Trust
RRGL ..... Renewable Resource Grant and Loan
SFLWC..... South Fork Lower Willow Creek
SSRA..... State Special Revenue Account
TU..... Trout Unlimited
USACE ..... U.S. Army Corps of Engineers
USFS..... U.S. Forest Service
USFWS ..... U.S. Fish and Wildlife Service
USGS ..... U.S. Geological Survey
VCP ..... Voluntary Cleanup Plan
VCRA ..... Voluntary Cleanup and Redevelopment Act
WRD..... Water Resources Division
WTP ..... Water Treatment Plant

PROJECTS SUBMITTED FOR FUNDING IN THE 2017 BIENNIUM

Following is a list of projects submitted for funding in the 2017 biennium. For easy reference, the list is alphabetized by the names of the project sponsors. However, in Chapter II the project assessments and recommendations are presented in the order of their ranking by the DNRC and the Governor.

APPLICANT NAME – Project Title **Page**

CHAPTER I
Program Description and Procedures

Program Information

The 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 DNRC.

In December 2013, DNRC notified all Montana communities, counties, the university system, CDs, state agencies, state legislators, and others who might benefit by program participation that the grant application for 2014 was available electronically. Application materials were also printed for distribution. The application deadline was May 15, 2014. DNRC received 20 applications for RDGP funding totaling over $8.7 million. One project subsequently withdrew, so DNRC ranked 19 projects requesting a total of over $8.5 million. These projects are listed alphabetically by applicant on page v. A map of the proposed projects is included at the end of this chapter on page 7.

Since 1986, previous Legislatures have authorized nearly $58 million for 274 projects. DNRC gives statutory priority of $600,000 per biennium to the BOGC. The BOGC may also submit additional grant requests that are ranked by DNRC in the same manner as other grant requests. DNRC is also statutorily required to give priority to abandoned mine reclamation projects in the amount of $800,000 (90-2-1113 [3] MCA). These projects may not include personnel costs or operating expenses.

The 2007 Legislature revised the funding structure of the RDGP by establishing two Natural Resources, SSRAs: 1) the Natural Resources Projects SSRA; and 2) the Natural Resources Operations SSRA. The Projects SSRA receives revenue to be used exclusively for grants for designated projects authorized in statute. Funds from this account are shared by the RDGP and RRGL program. The Natural Resources Operations SSRA pays for expenses necessarily incurred in the administration of these two natural resource grant programs. Other related agency expenses are also charged to the operations account. This change in funding structure is designed to ensure that RIT funds are expended consistent with the original intent of the RIT.

The 2013 Legislature approved authorization of $1,000,000 in project planning grant funding. Chapter IV describes DNRC's role in the administration of planning grants and lists the 32 projects that were approved for funding.

The 2013 Legislature authorized $525,000 in aquatic invasive species control funding. Chapter V describes DNRC's role in the administration of aquatic invasive species control and lists the 15 control projects and direct contracts for technical support that were approved for funding.

The 2013 Legislature authorized $300,000 in groundwater baseline sampling funding. Chapter VI describes DNRC's role in the administration of groundwater baseline sampling grants and lists the 12 projects and direct contracts for technical support that were approved for funding.

In 2009, the State of Montana received an infusion of federal funds from the ARRA. The Legislature invested some of these funds in existing state programs that, in turn, freed up state general funds for other programs. The 61st Legislature passed House Bill 645, which transferred $4,148,796 from the state general fund to the Natural Resources Projects SSRA for RDGP. This amount supplemented the $4,505,797 contributed to the Projects SSRA by the RIT and other resource extraction revenue sources for a total appropriation of $8,654,593 to fund all eligible resource projects for the 2011 biennium.

The RDGP 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 (Table 1). Administrative rules further provide that the DNRC must furnish to the Legislature a status report on previously funded projects (Chapter III). This report fulfills the requirements of those directives.

Project Eligibility
The following excerpt from the RDGP Act (90-2-1112, MCA) establishes project eligibility criteria:

1. Except as provided under subsection (2), to be eligible for funding under the RDGP, 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 a crucial state need exists to protect Montana's environment, the DNRC 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 RDGP.

Funding Limits
No grant may exceed $500,000 and there is no minimum funding limit. An applicant proposing more than one project may submit a separate application for each.

Application Review and Ranking Procedures
The grant applications were evaluated for the technical and financial feasibility of the proposed projects, provision of public benefits, need and urgency, and impacts on the environment. Reviewers included DNRC staff members of the CARDD, contracted engineering firms, and federal, state, and university personnel with expertise in specific project areas. For each application, project reviewers wrote a descriptive project assessment incorporating their concerns, ideas, and comments.

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 RDGP;
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; and
8. Any other criteria DNRC considers necessary to carry out the policies and purposes of the RDGP.

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

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

Recommendations

After ranking the projects and recommending funding, the CARDD made its recommendations to the DNRC director. The director then presented the recommendations by DNRC to the Governor for final ranking of the proposed projects (Table 1), along with funding recommendations.

An appropriations bill listing the Governor's recommendations will be introduced to the 2015 Legislature. By appropriation or other means, the Legislature may approve grants for those projects it finds consistent with the policies and purposes of the RDGP.

The appropriations bill will also contain a request for RDGP planning grant funds, aquatic invasive species grant funds, and oil and gas mitigation funds. These funds, to be administered by DNRC, can be accessed by local governments statewide to assist in planning and developing local natural resource projects within their jurisdictions, to address threats of aquatic invasive species, and to collect baseline groundwater information in areas impacted by oil and gas well drilling.

Table 1. Ranking and Funding Recommendations

Rank	Applicant	Project Name	Amount Requested	Amount Recommended	Cumulative Amount
The first 17 projects below this line are recommended for funding.					
1	Montana Board of Oil and Gas Conservation	2015 Southern District Well Plug and Abandonment, and Site Restoration	$300,000	$300,000	$300,000
2	Montana Board of Oil and Gas Conservation	2015 Northeastern District Well Plug and Abandonment, and Restoration	$300,000	$300,000	$600,000
3	Montana Department of Environmental Quality	Belt Water Treatment Project	$500,000	$500,000	$1,100,000
4	*Montana Department of Environmental Quality*	*Black Pine Mine - South Fork Lower Willow Creek Fluvially Deposited Mill Tailings*	$500,000	$500,000	$1,600,000
5	*Missoula County*	*Martina Creek and Ninemile Creek Reclamation*	$410,000	$484,000	$2,084,000
6	*City-County Board of Health Lincoln County*	*Assessment and Development of Protocols to Ensure Public Health Protection from Impacts of Vermiculite Mining in Lincoln County*	$430,595	$430,595	$2,514,595
7	*Deer Lodge Conservation District*	*French Gulch Placer Mining Restoration*	$500,000	$500,000	$3,014,595
8	Montana Department of Environmental Quality	Landusky Bio-Reactor Rehabilitation	$500,000	$500,000	$3,514,595
9	Montana Department of Environmental Quality	Basin Creek Mine-Site Stability Project	$500,000	$500,000	$4,014,595
10	*Montana Department of Environmental Quality*	*Sand Coulee Acid Mine Drainage Source Control*	$332,443	$332,443	$4,347,038
11	*Deer Lodge Conservation District*	*Moose-French Placer Mining Restoration*	$500,000	$85,000	$4,432,038
12	Montana Department of Environmental Quality	Mitigation of Threat to Harlowton Public Drinking Water Supply	$500,000	$82,440	$4,514,478
13	*Madison County*	*North Willow Creek Reclamation*	$499,828	$499,828	$5,014,306

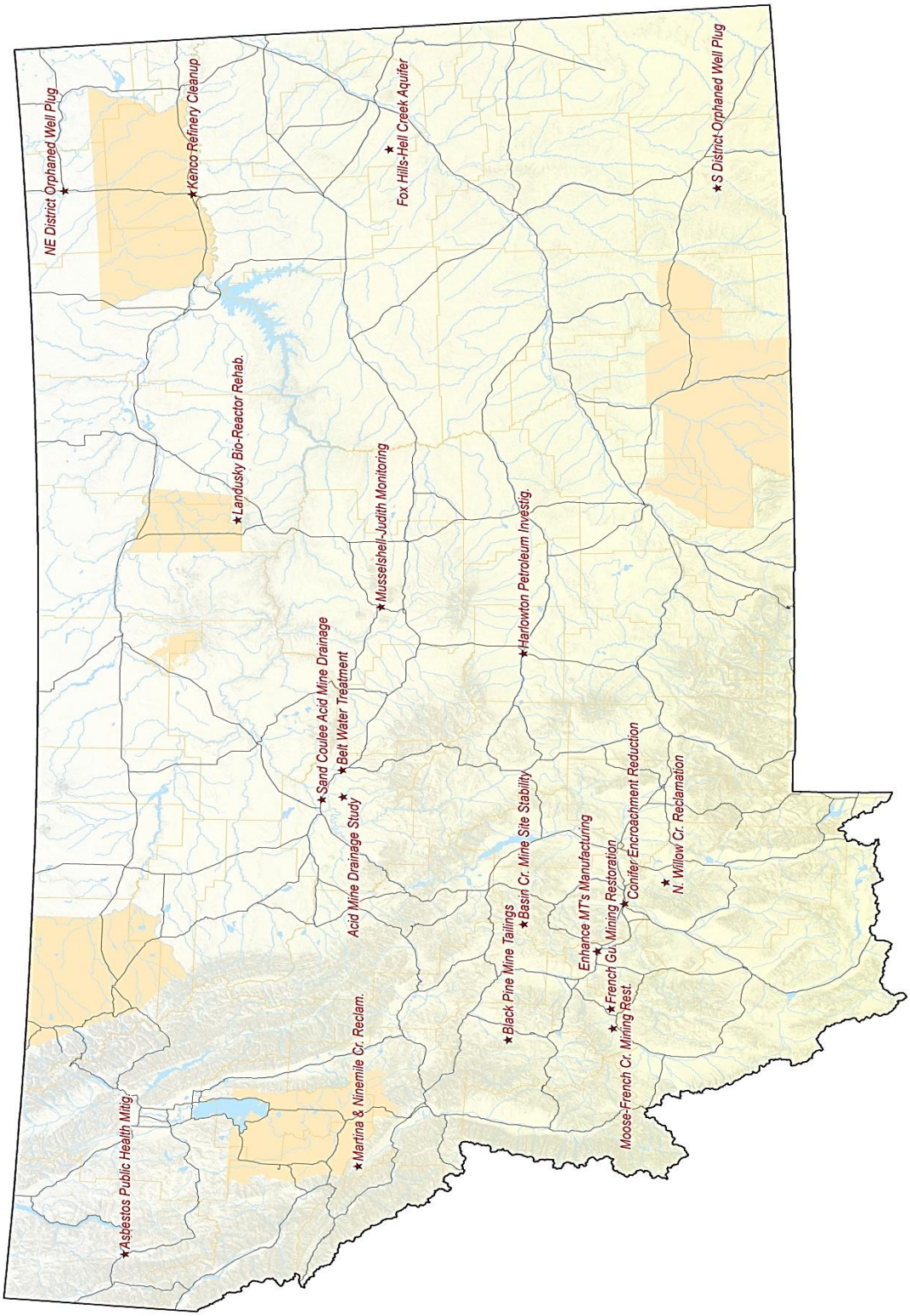
Rank	Applicant	Project Name	Amount Requested	Amount Recommended	Cumulative Amount
14	Cascade County	Identifying the Fate of Acid Mine Drainage and Sources of Poor Water Quality in the Madison Aquifer	$441,109	$327,322	$5,341,628
15	Montana Bureau of Mines and Geology	Enhancing the Monitoring Infrastructure to Track Long-Term Changes and Improve Management of the Fox Hills-Hell Creek Aquifer in Eastern Montana	$499,109	$499,109	$5,840,737
16	Montana Bureau of Mines and Geology	Enhancement of Montana's Manufacturing Growth through Production of Commodities from Remediation of Natural Resource Development Impacts	$498,171	$498,171	$6,338,908
17	Roosevelt County	Kenco Refinery Highest-Priority Cleanup	$500,000	$150,000	$6,488,908
The two projects listed below were not recommended for funding.					
*	*Central Montana Regional Water Authority*	*Water Resources Monitoring for the Musselshell-Judith Rural Water System*	$441,848	$0	$6,488,908
*	Mile High Conservation District	Conifer Encroachment Reduction in Southwest Montana	$421,221	$0	$6,488,908
	Cumulative Total		**$8,574,324**	**$6,488,908**	**$6,488,908**

Italics indicate the project had a planning grant.

Note: The first five projects are funded based on statutory requirements ($600,000 to the Montana BOGC and $800,000 for abandoned mine reclamation projects).

* Not recommended for funded.

Reclamation and Development Grants – Proposed Projects Map



CHAPTER II
Project Evaluations and Recommendations for the 2017 Biennium

This chapter combines summary evaluations of 19 projects submitted for funding consideration. The 17 projects recommended for funding are presented in the order of their ranking. The cumulative amount for the projects is $6,488,908. Part 2 contains other projects that were submitted for funding consideration.

To find any particular evaluation quickly, refer to the alphabetical listing of projects by the name of the applicant on page v.

For projects recommended for RDGP funding, “Total Project Cost” is the sum of “Other Funding Sources” plus the “Amount Recommended.”

Part 1. Projects Recommended for Funding

Project No. 1

Applicant Name	Montana Board of Oil and Gas Conservation	
Project Name	2015 Southern District Orphaned Well Plug and Abandonment, and Site Restoration	
Amount Requested	$ 300,000	
Other Funding Source	$ 26,645	Applicant
Total Project Cost	$ 326,645	
Amount Recommended	$ 300,000	

Project Summary
BOGC will plug eight orphaned oil and gas wells in the southern part and two wells in the northeast part of Montana and reclaim the disturbed land around the wells. The owners declared insolvency, the wells were abandoned, and the owners forfeited their reclamation bonds.

Public Benefits Assessment
Abandoned oil and gas wells could leak oil, gas, or salt water into area aquifers or discharge the contaminated material on the ground surface. One well proposed for plugging in this application (ANNA <>9-9-53-10) is currently leaking fresh water to the surface. Details are described in the technical evaluation section of this report. The potential contamination is mostly an environmental problem with minor risk to human health.

The project helps conserve natural resources by preventing the discharge of hydrocarbons and contaminated water to the environment. Surface reclamation will restore the areas surrounding the wells to pre-drilled conditions and allow for multiple uses by the public or private landowners.

Risk to humans is minor, but the project will help protect public health, safety, and welfare by preventing the release of contaminated materials. The project will benefit Montanans directly by preventing the release of hydrocarbons and contaminated water to groundwater and to the surface. Secondarily, it could prevent the release of hydrocarbons to mineral bearing formations, allowing the formations to remain untainted. A secondary reviewer of the application noted that unplugged wells may vent methane gas to the atmosphere. The EPA and state oil and gas regulatory agencies are concerned about the venting of methane because methane gas is over 20 times more potent at trapping heat in the atmosphere than carbon dioxide (http://www.epa.gov/methane/). Oil and gas wells also have the potential to produce hydrogen sulfide, a poisonous gas that can be deadly at even at very low concentrations.

The secondary reviewer also noted that plugging of the wells will aid in protecting the environment and public safety. It also will help to conserve the hydrocarbon bearing formations from losing gas that escapes to the atmosphere. The unplugged wellbore can act as a pathway of communication between different formations. By plugging the wells, the wellbore will be sealed and each formation will be protected from migrating fluids.

The project will help prevent property damage by preventing the discharge of oil, gas, and tainted water to the surface, which might otherwise be used for farming, grazing, or recreation. The secondary reviewer noted that once the wellbores are properly plugged, the surface pad site can be reclaimed back to its native state by tilling and reseeding with a native seed mixture or be converted into productive agricultural land. Any existing surface equipment can be moved off of the site and contaminated soils can be reclaimed.

The project would create short-term highly paid jobs, which would be a boon to the economy of northeast Montana. Due to mobilization costs, local contractors will likely be successful in bidding on the project, enhancing local economies.

The benefits of the project are reasonably certain over the long-term because past plugging efforts have proven to be effective in preventing leakage and contamination of aquifers. This project is a preventative measure. Most well casings are steel. If the wells are not reclaimed, the well casings could deteriorate and leak contaminants, or spill contaminants on the surface. The rate of deterioration is dependent on the site and application, but leakage from the wells will eventually occur.

The cost associated with this project has been well documented. However, the economic benefits are not as clearly defined in the application. The basic premise is that the funding that goes into plugging the wells would be a small amount compared to the cost of plugging a well that leaks plus the cost of remediation from damage from the leaking well. The applicant did not provide evidence of public support for this project.

Technical Assessment
The priority and funding amount for the BOGC application, 2015 Southern 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 a total of $600,000 for the biennium, from the BOGC. The BOGC shall use a grant that received priority under this subsection (2) (a) 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 BOGC under subsection (2) (a) does not preclude the BOGC from submitting additional grant requests. The department shall evaluate additional grant requests from the BOGC in accordance with the provisions of subsection (1).

BOGC is obligated to manage and mitigate any affects that may result from orphaned oil and gas wells they control. Although these wells may produce minor amounts of residual oil and gas, they are not economical to produce. These wells have been abandoned by their original owners and in most cases the bonding agents no longer exist. The applicant has plugged and abandoned many of these wells over the years because it is necessary to proactively mitigate these potential pollution sources as they arise.

These wells are in direct communication with the production formations and would provide a direct conduit to surface or shallow potable water aquifers should casing or surface structures fail. The longer these unattended wells are left in place, the greater environmental risk they become. The applicant explains that if these wells are left unplugged, they will leak or blow out and the cost of plugging and restoration will increase considerably.

The following table shows the wells proposed for plugging. All wells have been abandoned and much of the original equipment at the wellheads has been removed. One of the wells listed below, ANNA<>9-9-53-10, is currently leaking fresh water between the surface casing and production casing strings. The well is plugged down the production casing.

Well	County	Depth (ft)	Year Completed	Estimated Cost
Castle Rock 1P	Powder River	676	2001	$20,000
Castle Rock 2P	Powder River	1,026	2001	$20,000
Castle Rock 3P	Powder River	1,036	2001	$20,000
Castle Rock 4P	Powder River	289	2001	$20,000
Castle Rock 5AP	Powder River	1,100	2001	$20,000
Castle Rock 6AP	Powder River	1,482	2001	$20,000
ANNA<>9-9-53-10	Powder River	4,550	1969	$5,000
Wm Wagner 2	Fallon	2,000	1948	$15,000
Fugere 3-30	Daniels	6,850	1992	$90,000
Fisher 1-24	Daniels	4,506	1990	$70,000

The surface owner is at the most risk for environmental damage should these wells remain unplugged. Although surface disturbances would be minimal under reclamation, it would provide a stable vegetation base for the affected area. If left unplugged the potential for soil contamination, fire, or leakage into shallow aquifers would affect the surface owner significantly and for the long-term. Environmental degradation of resources would be far greater should the wells be left in place compared with the short-term impacts that might result from plugging and reclamation.

The goal of this application is to plug and reclaim as many wells as practicable in a local area to minimize mobilization costs. The plugging and reclaiming of these wells will eliminate the current property and environmental problems with some of these wells and eliminate possible future problems with the remainder. The objectives are to properly plug and abandon these orphaned wells and to restore their surface locations to their previous function and use.

The preferred alternative for plugging and reclaiming these wells would be to find the responsible owner and require them to properly abandon the well and reclaim the site. When the bonded operator is insolvent, the BOGC is responsible for the prevention of surface, subsurface, or groundwater contamination. The applicant is actively seeking any and all other funding sources to fulfill this need. Properly plugging and reclaiming these wells will remove the sources of contamination and effectively eliminate any environmental consequence. Because these wells are orphaned, methods for plugging and abandonment will be contingent upon the well conditions once plugging operations start. Normal and routine oil field methods will be employed to seal/cement the wells.

The applicant is the regulatory authority responsible for management and control of these orphaned wells. The applicant will require all the appropriate permits and authorizations needed to conduct this work. The applicant will coordinate activities with the landowner, the CD, and other governmental entities.

The applicant is proposing a 24-month construction schedule to complete the work stipulated in the application. The actual construction progress will be heavily weather dependent, however one field season is anticipated to conduct this work. The applicant is proposing to advertise a request for proposal and plug/reclaim as many wells as funding allows.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Task 1 Reclaim wells	$300,000	$26,645	**$326,645**
Total	**$300,000**	**$26,645**	**$326,645**

Contracted services include costs to plug and abandon two wells with depths of 6,850 ft and 6,896 ft at estimated costs of $90,000 each; six wells ranging in depth from 289 to 1,482 ft at estimated costs of $20,000 each; one well with a depth of 2,000 ft at an estimated cost of $15,000; and one well with a depth of 4,550 ft at an estimated cost of $5,000, for a total of $320,000. This amount exceeds the requested grant amount of $300,000.

A detailed breakdown of abandonment costs was not included in the application. The applicant indicates that costs were developed based on previous costs associated with abandonment of similar wells in the area. Costs could change depending on site and well conditions. If actual abandonment costs are less than those estimated, additional wells will be plugged according to funds available and with approval from the DNRC. Matching funds are strictly associated with BOGC costs for supervision and administration, so they are secure. No backup plan was presented in the application.

Environmental Evaluation
The applicant supplied a detailed environmental checklist discussing the environmental effect from the project. The checklist included items concerning potential impacts to the physical environmental and potential impacts on the human environment.

The project will result in mostly minor beneficial impacts for the natural and human environment. Impacts to water quality and demands on environmental resources could be major or moderately beneficial. Impacts on government services and demands for energy would be minor. Impacts to environmental plans and goals (both local and regional) would be beneficial. Mitigation measures would be limited to those activities needed to properly plug and reclaim those wells.

For More Information
The project abstract, prepared by the applicant, can be found at:
http://dnrc.mt.gov/cardd/ResourceDevelopment/Abstracts/2014/2014RDGProjectAbstracts.pdf

Funding Recommendation
As per the priority contained in 90-2-1113 (2), MCA, a grant of $300,000 is recommended for the 2015 Southern District project, contingent upon DNRC approval of the project scope of work and budget.

Project No. 2

Applicant Name	Montana Board of Oil and Gas Conservation	
Project Name	2015 Northeastern District Orphaned Well Plug and Abandonment, and Site Restoration	
Amount Requested	$ 300,000	
Other Funding Source	$ 17,506	Applicant
Total Project Cost	$ 317,506	
Amount Recommended	$ 300,000	

Project Summary
BOGC will plug six orphaned oil and gas wells in northeast Montana and reclaim the disturbed land around the wells. The owners declared insolvency, the wells were abandoned, and the owners forfeited their reclamation bonds.

Public Benefits Assessment
Abandoned oil and gas wells could leak oil, gas, or salt water into area aquifers or discharge the contaminated material on the ground surface. The potential contamination is mostly an environmental problem with minor risk to human health. The project conserves natural resources by preventing the discharge of hydrocarbons and contaminated water to the environment. Surface reclamation will restore the areas surrounding the wells to pre-drilled conditions and allow for multiple uses by the public or private landowners.

Risk to humans is minor, but the project will help protect public health, safety, and welfare by preventing the release of contaminated materials. The project will benefit Montanans directly by preventing the release of hydrocarbons and contaminated water to groundwater and to the surface. Secondarily, it could prevent the release of hydrocarbons to mineral bearing formations, allowing those formations to remain untainted. A secondary reviewer of the application noted that unplugged wells may vent methane gas to

the atmosphere. The EPA and state oil and gas regulatory agencies are concerned about the venting of methane because methane gas is over 20 times more potent at trapping heat in the atmosphere than carbon dioxide (http://www.epa.gov/methane/). Oil and gas wells also have the potential to produce hydrogen sulfide, a poisonous gas that can be deadly even at very low concentrations.

The secondary reviewer also noted that plugging of the wells will aid in protecting the environment and public safety. It also will help to conserve the hydrocarbon bearing formations from losing gas that escapes to the atmosphere. The unplugged wellbore can act as a pathway of communication between different formations. By plugging the wells, the wellbore will be sealed and each formation will be protected from migrating fluids.

The project will help prevent property damage by preventing the discharge of oil, gas, and tainted water to the surface, which might otherwise be used for farming, grazing or recreation. The secondary reviewer noted that once the wellbores are properly plugged, the surface pad site can be reclaimed back to its native state by tilling and reseeding with a native seed mixture or be converted into productive agricultural land. Any existing surface equipment can be moved off of the site and contaminated soils can be reclaimed.

The project would create short-term highly paid jobs, which would be a boon to the economy of northeast Montana. Due to mobilization costs, local contractors will likely be successful in bidding on the project, enhancing local economies.

The benefits of the project are reasonably certain over the long-term because past plugging efforts have been successful in preventing leakage and contamination of aquifers. This project is a preventative measure. Most well casings are steel. If the wells are not reclaimed, the well casings could deteriorate and leak contaminants or spill contaminants on the surface. The rate of deterioration is dependent on the site and application, but leakage from the wells will eventually occur.

The cost associated with this project has been well documented. However, the economic benefits are not as clearly defined in the application. The basic premise is that the funding that goes into plugging the wells would be a small amount compared to the cost of plugging a well that leaks plus the cost of remediation to repair damage from the leaking well. The applicant did not provide evidence of public support for this project.

Technical Assessment

The priority and funding amount for the BOGC application, 2015 Northeastern 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 a total of $600,000 for the biennium, from the BOGC. The BOGC shall use a grant that received priority under this subsection (2) (a) 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 BOGC under subsection (2) (a) does not preclude the BOGC from submitting additional grant requests. The department shall evaluate additional grant requests from the BOGC in accordance with the provisions of subsection (1).

BOGC is obligated to manage and mitigate any affects that may result from orphaned oil and gas wells they control. Although these wells may produce minor amounts of residual oil and gas, they are not economical to produce. These wells have been abandoned by their original owners and in most cases the bonding agents no longer exist. The applicant has plugged and abandoned many of these wells over the years because it is necessary to proactively mitigate these potential pollution sources as they arise.

These wells are in direct communication with the production formations and would provide a direct conduit to surface or shallow potable water aquifers should casing or surface structures fail. The longer these unattended wells are left in place the greater environmental risk they become. As the application states, if these wells are left unplugged, they will leak or blow out and the cost of plugging and restoration will increase considerably.

The following table shows the wells proposed for plugging. All wells have been abandoned and much of the original equipment at the wellheads has been removed.

Well	County	Depth (ft)	Year Completed	Estimated Cost
Saturn State 1	Daniels	7,806	1985	$70,000
Gendreau 1-24	Daniels	7,690	1997	$70,000
Fugere 4-19	Daniels	7,048	1992	$70,000
Fugere 1	Daniels	6,664	1990	$70,000
20105 JV-P Lockman 1	Roosevelt	2,025	2004	$10,000
20105 JV-P Clark 1	Roosevelt	2,135	2004	$10,000

The surface owner is at the most risk for environmental damage should these wells remain unplugged. Although surface disturbances would be minimal under reclamation, it would provide a stable vegetation base for the affected area. If left unplugged the potential for soils contamination, fire, or leakage into shallow aquifers would affect the surface owner significantly and for the long-term. Environmental degradation of resources would be far greater should the wells be left in place compared with the short-term impacts that might result from plugging and reclamation.

The goal of this application is to plug and reclaim as many wells as practicable in a local area to minimize mobilization costs. The plugging and reclaiming of these wells will eliminate the current property and environmental problems with some wells and eliminate possible future problems with the remainder. The objectives are to properly plug and abandon these orphaned wells and to restore their surface locations to their previous function and use.

The preferred alternative for plugging and reclaiming these wells would be to find the responsible owners and require them to properly abandon the wells and reclaim the sites. When the bonded operator is insolvent, the BOGC is responsible for the prevention of surface, subsurface, or groundwater contamination. The applicant is actively seeking any and all other funding sources to fulfill this need. Properly plugging and reclaiming these wells will remove the sources of contamination and effectively eliminate any environmental consequences. Because these wells are orphaned, methods for plugging and abandonment will be contingent upon the well conditions once plugging operations start. Normal and routine oil field methods will be employed to seal/cement the wells.

The applicant is the regulatory authority responsible for management and control of these orphaned wells. The applicant will require all the appropriate permits and authorizations needed to conduct this work. The applicant will coordinate activities with the landowner, the CD, and other governmental entities.

The applicant is proposing a 24-month construction schedule to complete the work stipulated in the application. The actual construction progress will be heavily weather dependent, however one field season is anticipated to conduct this work. The applicant is proposing to advertise a request for proposal and plug and reclaim as many wells as funding allows.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Task 1 Reclaim Wells	$300,000	$17,506	**$317,506**
Total	**$300,000**	**$17,506**	**$317,506**

Contracted services include costs to plug and abandon four wells ranging in depth from 6,470 to 7,690 ft at estimated costs of $70,000 each, and two wells with depths of 2,025 and 2,135 ft at estimated costs of $10,000 each.

The applicant's financial estimate in the application brief did not match the estimate listed in the financial assessment section. Clarification was obtained from the BOGC that the financial statement cost estimate of $17,506 was the correct match amount. A detailed breakdown of abandonment costs was not included in the application. The applicant indicates that costs were developed based on previous costs associated with abandonment of similar wells in the area. Costs could change depending on site and well conditions. If actual abandonment costs are less than those estimated, additional wells will be plugged according to funds available and with approval from the DNRC. Matching funds are strictly associated with BOGC costs for supervision and administration, so they are secure. No backup plan was presented in the application.

Environmental Evaluation
The applicant supplied a detailed environmental checklist discussing the environmental effects from the project. The checklist included items concerning potential impacts to the physical environmental and potential impacts on the human environment.

The project will result in mostly minor beneficial impacts for the natural and human environment. Impacts to water quality and demands on environmental resources could be major or moderately beneficial. Impacts on government services and demands for energy would be minor. Impacts to environmental plans and goals (both local and regional) would be beneficial. Mitigation measures would be limited to those activities needed to properly plug and reclaim those wells.

For More Information
The project abstract, prepared by the applicant, can be found at:
http://dnrc.mt.gov/cardd/ResourceDevelopment/Abstracts/2014/2014RDGProjectAbstracts.pdf

Funding Recommendation
As per the priority contained in 90-2-1113 (2), MCA, a grant of $300,000 is recommended for the 2015 Northeastern District project, contingent upon DNRC approval of the project scope of work and budget.

Project No. 3

Applicant Name	Montana Department of Environmental Quality	
Project Name	Belt Water Treatment Project	
Amount Requested	$ 500,000	
Other Funding Source	$ 3,916,656	OSMRE
	$ 80,000	Applicant
Total Project Cost	$ 4,496,656	
Amount Recommended	$ 500,000	

Project Summary
Abandoned coal mines near Belt discharge AMD to Belt Creek. The project is to construct and operate a conventional lime-based WTP to treat the drainage and restore water quality in Belt Creek.

Technical Assessment
Coal mining and coke production occurred in Belt from the 1890s through the 1940s. Although mining ended about 80 years ago, four AMD sources still exist that discharge directly to Belt Creek. Together, they produce an average flow of approximately 150 gpm. The AMD contains numerous metals including arsenic, beryllium, cadmium, chromium, iron, manganese, nickel, thallium, and zinc at concentrations exceeding DEQ human health and aquatic life standards, and has a pH of 2.9. From late summer to early spring, the AMD can make up over half of the flow in Belt Creek. Based on the long history of AMD

drainage at this site and the fact that these metals do not significantly degrade naturally, this problem will continue for the foreseeable future. Belt Creek supports multiple beneficial uses including boating, fishing, and swimming that are adversely affected by the AMD discharges.

Mitigation efforts were initiated in the 1980s when the Montana DSL extinguished burning coal wastes and graded and covered 27 acres of waste. In addition, a mine adit was closed and a pipe was installed to carry the AMD from the mine downhill where it combined with AMD discharging from other adits. DSL constructed four engineered wetlands to treat the AMD from 1986 through 1992. The wetlands proved to be ineffective, required frequent maintenance work, and were eventually abandoned.

Since 1994 multiple state and federal agencies have investigated water quality issues related to the AMD discharges near Belt. These agencies include the USGS, MBMG, DEQ, and MSCA. Site characteristics and problems have been thoroughly studied and are very well documented; the area has been qualified as a high-priority cleanup site due to the proximity to people and the extent of the pollution.

Studies indicate that the most likely source of groundwater recharge to the mine workings is the infiltration of precipitation from the land surface directly overlying and up-gradient of the mine areas. They also conclude that the Madison Limestone aquifer, which is an important water source for the region, is almost 400 ft below the mine workings and does not appear to be hydrologically connected to the mines.

MSCA is working to reduce infiltration of precipitation to the mine workings using water consumptive cropping practices. While these efforts may reduce loading, they are unlikely to eliminate the discharge and may have other unintended consequences related to partial dewatering of currently flooded mine workings.

Natural resources surrounding Belt, especially water resources, are adversely affected by AMD. The groundwater that enters the abandoned mines and surface water in Belt Creek above discharge locations is of excellent quality and supports a healthy ecosystem. Water discharging from mine locations and Belt Creek below discharge locations does not support terrestrial or aquatic life and the health of the ecosystem and is extremely poor due to high AMD pH (2.9) and high concentrations of pollutants. Samples collected from Belt Creek during low flow conditions indicate that iron and aluminum exceed aquatic life standards; despite a healthy fish population above AMD discharge areas, Belt creek below those discharges cannot support fish populations. Loading analysis indicates the approximately 718 pounds of iron, 478 pounds of aluminum, and 7,455 pounds of sulfate are discharged to Belt Creek each day.

Belt residents continue to be threatened by overexposure to metals and other pollutants entering Belt Creek. Acidic groundwater has previously corroded metal piping serving the Belt municipal water system, ditches that convey AMD are open and freely accessible to the public, and Belt City Park (utilized as a swimming area by residents) is directly across the river from the combined Anaconda Mine and French Coulee discharges.

The project goal is to return Belt Creek to a condition where it fully supports its beneficial uses and reduces the threat to human life and health by exposure to AMD. The objective for this project is to construct a conventional lime-based WTP that will mitigate ongoing discharges of AMD from abandoned coal mines surrounding the community of Belt.

Four project alternatives were evaluated:

1. No action;
2. Active treatment of the AMD discharges;
3. Passive treatment of the AMD discharges; and
4. Source control measures implemented to reduce the volume of AMD discharges.

Under the no action alternative, AMD discharges would continue unabated. Discharges exceeding DEQ human health standards for arsenic, beryllium, cadmium, chromium, nickel, thallium, and zinc would continue to impact the community of Belt and the Belt Creek Watershed.

Passive treatment of AMD employs treatment technology to improve water quality without requiring continuous inputs of chemical reagents or routine operations and maintenance. The DSL constructed four wetland treatment systems for AMD treatment between 1986 and 1992. The operating experience with these wetlands indicated that none of the four functioned as low-maintenance systems or provided sufficient treatment of metals to comply with water quality standards. Due to the extreme acidity, high daily loads of metals, and extended winter season, passive treatment methods are not considered feasible at the Belt site.

Source control measures include mechanisms to reduce or eliminate the AMD discharges. The methods evaluated included plugging of the adits, reducing local recharge through strata overlying the mines, and intercepting groundwater before it enters the mines. DEQ evaluated plugging of the adits in 2010; however, this approach was deemed not feasible due to safety concerns and the potential for diffuse seepage of AMD through the coal. DEQ, MSCA, and MBMG have investigated the use of water consumptive crops to reduce recharge of water into the mines. Water quality sampling of Belt Creek has indicated that an order of magnitude reduction of AMD loading is needed to return Belt Creek to fully supporting its beneficial uses. While previous attempts using alfalfa planting has not demonstrated significant flow reductions of AMD, it is possible that reductions could occur that would reduce WTP operational costs. Even if changes in agricultural practices significantly reduce the flow of AMD, there will likely still be sufficient discharge to warrant active treatment. DEQ Water Quality Planning Bureau staff reviewed the application and recommended that adequate adaptability is incorporated into the WTP to accommodate potential reductions in AMD realized by changes in agricultural practices. Lime-based WTPs are highly scalable, with the primary limitation being peak, rather than low flows.

The preferred alternative is active treatment using conventional lime-based water treatment technology. DEQ directed an assessment of treatment options that concluded that lime-based treatment would be a robust solution for treating AMD to meet DEQ-7 water quality targets for all constituents polluting Belt Creek except thallium, which can be addressed using chemical sorption processes.

The applicant has identified seven tasks to meet the project goals:

1. Conduct EEE/CA;
2. Acquire the property where a treatment plant could be constructed;
3. Public outreach with stakeholders and interested parties;
4. Bid the project;
5. Construction and plant startup;
6. Treatment plant operations; and
7. Final reporting.

Property investigations are ongoing. In 2014 and 2015, a portion of property that could potentially be used for the location of the plant was identified and it is currently owned by MDT. Public outreach is anticipated to begin in 2015, and this work will include standard DEQ consultations with the Montana State Historic Preservation Office, evaluation of any threatened and endangered species, and all NEPA activities required by the OSMRE. Bidding of the project will take place in 2015 and 2016 using standard DEQ procedures. Treatment plant construction is anticipated to begin in 2016 with plant startup and shakedown procedures taking place in 2017. The plant will be fully operational in 2018 and optimization of plant operations will take place in 2018 and 2019. A final project report will be completed documenting the construction of the treatment plant, the processes employed to optimize the treatment, and the influent and effluent water quality sampling results.

The design of this project is technically sound and the preferred alternative should meet the project goals. DEQ received an encroachment permit from MDT for the construction of monitoring wells in Coke Oven Flats in 2013. The project will require building permits and electrical inspections. Per standard practices, DEQ will place the responsibility on the contractor for obtaining all required permits. No other information is necessary for this project to proceed.

Public Benefits Assessment

Water quality sampling in Belt Creek upstream of AMD discharge locations demonstrates water quality that meets DEQ-7 standards and supports a healthy ecosystem. Below the AMD discharge location, Belt Creek is extremely acidic and contains numerous pollutants that exceed the DEQ-7 levels and prohibit aquatic life. By constructing a WTP that utilizes lime-based neutralization methods, AMD will be remediated, natural resources are expected to recover rapidly to fully supporting beneficial uses, and water quality should improve to levels that are protective of human health.

Direct benefits to Montanans include improved water quality, decreased chance of exposure to potentially harmful AMD, and increased ecosystem health promoting increased recreational opportunities. Furthermore, this project will be put to bid in the seven major Montana newspapers and, in accordance with DEQ contract requirements. At least 50% of the work will be completed by Montana residents, thus promoting job growth. A diverse set of jobs is anticipated to be created as a result of the project. The demand for lime from the plant could potentially create demand from the lime plant in Townsend. Given the small population of Belt, the construction of the plant, including the short-term and long-term jobs it would create represents a tangible economic boost.

The current situation has the potential to cause ongoing threats to human health and the environment. Because AMD does not rapidly naturally degrade, these threats will continue for the foreseeable future if no action is taken.

The project has letters of support from the Belt Mayor, State Senator for District 10, and a Belt resident.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Task 1 EEE/CA	$0	$115,000	**$115,000**
Task 2 Property Acquisition	$0	$28,000	**$28,000**
Task 3 Public Outreach	$0	$8,000	**$8,000**
Task 4 Project Bidding	$0	$8,000	**$8,000**
Task 5 Plant Construction	$500,000	$2,710,406	**$3,210,406**
Task 6 Plant Operations	$0	$1,119,250	**$1,119,250**
Task 7 Reporting	$0	$8,000	**$8,000**
Total	**$500,000**	**$3,996,656**	**$4,496,656**

Preliminary engineering and construction cost estimates for the Belt Water Treatment Facility are $4,496,656. The DEQ's Belt WTP application is requesting $500,000 of RDGP funds for construction at the Belt Water Treatment Facility. Only costs associated with the direct construction of the plant are requested in the application. The remainder of the $3,916,656 for construction of the plant will be provided by the DEQ, as will any costs over the estimated cost for construction.

Total annual operation and maintenance cost for the plant are approximately $548,000. Net present value calculations were performed to estimate treatment funding to build the facility and operate it for a 100-year period. The estimated net present value was $24 million.

In 2012 an internal DEQ financial account was established to hold funds in an interest bearing account to pay for long-term treatment of the Belt site. This account was set up to receive funds from the OSMRE, as well as income from DEQ owned property at Belt. Approximately $7 million was placed into the account in 2013 and an additional $8 million was placed into the account in 2014.

The projected budget is reasonable, clear, complete, and supported in the project application. Cost effectiveness of the selected alternative is demonstrated in the project application. Although the selected alternative is expensive, the option allows discharge from both sides of Belt Creek to receive treatment and employs a proven treatment technology. The applicant does not specify a backup plan in case the RDGP grant is not awarded, but based on funds available it is likely that the project could still move forward.

Environmental Evaluation
The project will result in a number of positive environmental impacts, including improved water quality in Belt Creek, restored aquatic and terrestrial ecosystem health, and restored aquatic and terrestrial life in the riparian area and in the stream itself.

The adverse environmental impacts associated with the project are short-term and associated with construction. There is a potential for fugitive dust emissions and stormwater runoff, both of which can be controlled with BMP. Construction will also place minor demands on energy resources. Long-term environmental impacts include the demand for lime, the need for sludge disposal areas, and energy demands associated with running the plant.

For More Information
The project abstract, prepared by the applicant, can be found at:
http://www.dnrc.mt.gov/cardd/ResourceDevelopment/Abstracts/2014/2014RDGProjectAbstracts.pdf

Funding Recommendation
DNRC recommends grant funding of $500,000 upon DNRC approval of the project scope of work, administration, budget, and funding package.

Project No. 4

Applicant Name	Montana Department of Environmental Quality	
Project Name	Black Pine Mine – South Fork Lower Willow Creek Fluvially Deposited Mill Tailings	
Amount Requested	$ 500,000	
Other Funding Sources	$ 3,947,850	Applicant
	$ 569,700	USFS Beaverhead-Deerlodge National Forest
Total Project Cost	$ 5,017,550	
Amount Recommended	$ 500,000	

Project Summary
Mine mill tailing deposits containing heavy metals (antimony, arsenic, cadmium, copper, lead, mercury, and zinc) have been transported downstream of the BPM and are impacting the SFLWC. DEQ will delineate the fluvial mill tailing deposits on property downstream of the BPM, remove mill tailings, and transport waste material to an approved repository.

Technical Assessment
The proposed project is for mine reclamation to minimize human and environmental exposure to historical mining wastes at the BPM, 12 miles northwest of Philipsburg, within the Beaverhead-Deerlodge National Forest. Although a trust account is available for cleanup of the BPM, this property is outside the site boundary and thus not eligible for cleanup with trust account funds. However, cost savings would be realized by completing the projects in conjunction with each other as proposed.

The BPM began mining operations in the late 1880s and continued intermittently into the 1990s. The mine tailings have been transported and deposited throughout the downstream reaches of the SFLWC drainage with continued increasing heavy metal concentrations. DEQ has coordinated and referenced several soil and surface water investigations and environmental monitoring activities completed from 1981 through 2012. The studies and monitoring results have shown increasing heavy metal (antimony, mercury, arsenic, cadmium, copper, and lead) concentration and loading downstream of the BPM along the SFLWC. The increasing heavy metal concentrations have migrated downstream onto USFS administered lands and private property.

In 2009, the State of Montana reached a $17.3 million settlement with Asarco for cleanup of the BPM. The settlement created a trust to own all former Asarco properties and be responsible for expenditures of cleanup funds. DEQ is acting as the lead agency for conducting the reclamation activities, which is one phase of a multi-phase project and is being conducted in a joint effort between the DEQ, Granite County CD, and Beaverhead-Deerlodge National Forest. The proposed project scope under this grant will focus on reclaiming the private lands downstream from the Black Pine-Combination Mill tailings impoundment, which are lands outside of, but adjacent to the trust designated property.

The goals and objectives of the proposed project are:

1. Minimize human and terrestrial biota exposure to heavy metals;
2. Reduce runoff and sedimentation into the SFLWC and Lower Willow Creek Reservoir;
3. Determine the nature and extent of contamination in the floodplain of SFLWC;
4. Remove and consolidate the tailings within the floodplain into a repository;
5. Reconstruct SFLWC and associated floodplain; and
6. Revegetate all disturbed areas.

The applicant completed a preliminary alternative analysis that evaluated remedial options based on effectiveness, ability to implement, and cost. Some preliminary alternatives were eliminated. Three site alternatives were then evaluated consisting of no action, onsite consolidation, and offsite disposal. Alternatives 2 and 3 include the same methods for tailings removal, but have different disposal locations (off-site vs. on trust property). The preferred alternative chosen was Alternative 2, onsite consolidation on trust-designated property. The applicant presents two tasks to meet the project goals:

1. Conduct grid sampling to determine the nature and extent of contamination in the floodplain and provide information needed to support a refined reclamation plan. Design engineering and prepare bid documents. Consult with outside agencies to document that activities are conducted according to state and federal law. Bid the project publically to comply with State of Montana procurement policies and to provide a fair and competitive bidding process; and
2. Reclamation construction.

Alternative 2, the preferred alternative, is a well-proven method for addressing reclamation and disposal of historic mine tailings to minimize human and terrestrial biota exposure. The tasks presented will adequately address the necessary activities in a chronological manner to properly address the contaminated sediments and their proper disposal. Limited details were provided on the specifics of the reclamation activities, but the applicant has significant experience implementing mine reclamation projects, and questions can be addressed in the design process. The applicant presented the necessary permits currently needed to conduct the reclamation activities, and noted they have been in contact with the downstream property owners.

DNRC awarded a planning grant to the Lower Willow Creek ID in October 2014 to accomplish the work identified in Task 1. The DEQ proposed to reallocate the funds from Task 1 to construction.

The project is scheduled to begin in July 2015 and be completed by January 2017. The proposed schedule for major tasks and dates include field investigation and reporting (July 2015–October), agency consultation and permitting (January 2016), engineering design and bid document preparation (April–May 2016), public bidding (May 2016), contract award (June 2016), construction (July–October 2016), and final reporting (January 2017). The proposed schedule looks appropriate and should be achievable. Engineering design, bid document preparation, and public bidding may take longer than two months, so it is recommended that more time be added for these tasks; however, there is enough float in the proposed schedule to accommodate more time.

Public Benefits Assessment

Mill tailings from the BPM have migrated into the SFLWC and have been deposited along the riparian areas. Tailings contain elevated levels of heavy metals, specifically mercury, antimony, arsenic, cadmium, copper, iron and zinc. The mill tailings continue to be transported downstream and increase in concentration downstream. Removal of tailings and sediments from the channel and floodplain will remove a major source of contamination from the headwaters of Willow Creek, a major irrigation and

fishery resource in the Flint Creek Watershed. The SFLWC provides habitat for Westslope cutthroat trout in the Upper Clark Fork River drainage along with other diverse wildlife. It also is a major source of irrigation water to area ranchers. During the summer, the area is used by ranchers and recreationists for fishing, hunting, hiking, and grazing. A higher quality resource would indirectly lead to increased use and economic benefits to the area. The benefits would be long-term and certain as the reclamation activities will mitigate continued environmental impacts caused by years of mining in the area and preserve irrigation opportunities and fishery resources. The project is not urgent, but is needed to prevent further impacts to the local water resources and downstream resources. If no action is taken, the toxicity, mobility, and volume of the heavy metals will continue to increase downstream and continue to impact natural resources and associated property, thus providing a pathway to affect human health and aquatic life.

The project is supported by DEQ, Granite County CD, Beaverhead-Deerlodge National Forest, Clark Fork Coalition and TU. Letters of support were provided by the Clark Fork Coalition and TU.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Task 1 Conduct Grid Sampling and Design	$57,100	$43,200	**$100,300**
Task 2 Reclamation construction	$442,900	$4,466,150	**$4,909,050**
Administration	$0	$8,200	**$8,200**
Total	**$500,000**	$4,517,550	**$5,017,550**

The majority of funding for this project will be provided by a private trust fund created for reclamation of the BPM property. The applicant explained the cost share for this project, stating that RDGP grant money would be used for assessment and construction work conducted only on private lands downstream of the trust-designated property, where trust funds may not be used. The overall project costs are estimated at $5,017,550, with $3,947,850 secured from the Montana Environmental Trust Group and $569,700 from USFS. Administrative costs will be borne by each respective agency as a match. Detailed unit cost estimates were provided and appeared appropriate to complete the work.

There was an initial question related to the financial assessment on why the applicant chose to build an on-site repository at a cost of $4.4 million instead of using off-site disposal methods at a cost of $1.0 million. Upon discussion with the applicant, the repository cost is associated with the entire project, which will remove an estimated 400,000 cy of tailings compared with an estimated 10,000 cy for this grant. As a result, the overall project is more cost-effective to haul tailings to an on-site repository. Additionally, repository costs will be paid for by trust fund dollars. The overall project reclamation cost estimates provided in the application did not balance with the project budget summary form; a slight discrepancy of $2,650 was noted. It appeared that one number presented in the form was added twice. The table above presents what is believed to be the corrected costs, based on the information provided. This discrepancy is minor and can be rectified prior to signing the contract and scope of work.

Although a trust account is available for cleanup of the BPM, this property is outside the boundary and thus not eligible for cleanup with trust account funds. Use of grant funds to address off-site impacts will result in cost savings realized by doing both projects in conjunction with each other as proposed.

Environmental Evaluation

Environmental impacts associated with this project were reviewed and the majority of all impacts are beneficial based on the information provided. Major benefits to soil, groundwater, surface water, and vegetation will be realized through the proposed remedial action. Additional benefits to local ranchers and economy will also be realized. Adverse impacts on government services, environmental resources of land, water, air, energy, and traffic flows will be short-term and can be mitigated through administrative and engineering controls. The benefits to natural resources, human health, and the local economy far outweigh the temporary adverse effects.

For More Information
The project abstract, prepared by the applicant, can be found at:
http://www.dnrc.mt.gov/cardd/ResourceDevelopment/Abstracts/2014/2014RDGProjectAbstracts.pdf

Funding Recommendation
DNRC recommends grant funding of $500,000 upon DNRC approval of the project scope of work, administration, budget, and funding package.

Project No. 5

Applicant Name	Missoula County Community and Planning Services	
Project Name	Martina Creek and Ninemile Creek Reclamation	
Amount Requested	$ 410,000	
Other Funding Sources	$ 58,000	Lolo National Forest
	$ 15,000	Lolo National Forest In-kind
	$ 50,000	TU
	$ 17,000	TU In-kind
	$ 200,000	319 Grant
	$ 30,000	Montana Future Fisheries
	$ 15,000	Landowner In-kind
Total Project Cost	$ 795,000	
Amount Recommended	$ 484,000	

Project Summary
Missoula County will reclaim placer mining impacts to Martina Creek, a tributary to Ninemile Creek, and restore nearly 3,500 ft of Ninemile Creek and its floodplain. The project is a continuation of previous, successful placer mining reclamation efforts in the Ninemile Creek watershed.

Technical Assessment
Martina and Ninemile creeks experienced extensive placer mining 140 years ago that resulted in tailings piles that isolate the stream from its floodplain, excessive bank erosion, channel instability, and loss of riparian functions. The problem is severe in the sense that it has completely disrupted an important watershed and will not improve for hundreds of years without intervention. While the problem is not immediate, nor is it worsening, it is chronic and persistent in harming the environment. Impacts have adversely affected fisheries, wildlife, wetlands, riparian habitat, and water quality. Those affected include water users, sportsmen, the recreational public, and conservationists.

The applicant presents two main goals: 1) to improve water quality and reclaim mining impacts to Martina Creek; and 2) to rehabilitate stream, floodplain, and hill slope processes impaired by placer mining on Ninemile Creek. The applicant presented six alternatives to achieve these goals. The alternatives ranged from no action to a variety of approaches to reclaim the floodplains and channels. The applicant selected an alternative that best meets goals while controlling costs. The selected alternative will expand the width of the floodplain by removing some of the tailings piles and reconstructing the stream channels. A more natural stream channel alignment will be constructed through the restored floodplain using natural channel design and construction methods. The reclaimed floodplain will be revegetated with native plants and the stream channel will be improved with diverse instream habitat features. The applicant has identified 25 subtasks to meet the project goals. The desired project outcome appears to be attainable with the designs and methods presented by the applicant.

The project is a collaborative effort between Missoula County, TU, and the USFS and is being coordinated with local landowners and natural resource agencies. Because this is a continuation of previous work, the applicant is well aware of permitting requirements and has demonstrated the ability to implement projects of this nature.

Public Benefits Assessment
The project is needed to reverse damage to a watershed that no longer provides the environmental functions and services of a healthy watershed. Every aspect of the proposed project will involve reclaiming and restoring impacts from mineral development (placer mining). When implemented, the project will conserve water quality, fish and wildlife, wetlands, riparian vegetation, and fish passage.

The project has little public health or safety benefits, but will improve the welfare of Montanans and especially the environment. Direct benefits will accrue to water users, anglers, and sportsmen. The project will also provide improved habitat and water quality for recreational fisheries and hunting on public lands. Jobs will be mostly temporary and serve individuals who are already employed, but the applicant will attempt to use underemployed people when possible.

The problem area includes 16 miles of stream and its floodplain, but the project will address a much shorter reach as part of an ongoing reclamation program. Barring a natural catastrophe (e.g. large flood), which can affect any project, the benefits of this project are certain and long-term if properly designed and installed. The project received letters of support from Missoula CD, the USFS, FWP, TU, the Ninemile Wildlife Workgroup, and two private citizens who are residents of the valley.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Task 1 Final Design and Permitting	$0	$37,790	**$37,790**
Task 2 Construction Oversight	$52,000	$17,225	**$69,225**
Task 3 Construction	$337,500	$329,985	**$667,485**
Administration	$20,500	$0	**$20,500**
Total	**$410,000**	**$385,000**	**$795,000**

The project budget is relatively clear and complete, and the selected restoration alternative is cost effective. Project partners (TU, USFS, and landowners) are being asked to contribute approximately 20% of funding and at least 20% of all funding will come from non-state contributions. Of the total amount needed, $108,000 has been secured. The applicant will pursue $240,000 in additional grant funds to make up the difference, assuming the RDGP awards the full amount requested.

The budget does not include a contingency to cover unknown conditions, nor does it include any factor for inflation. A reasonable contingency would be 10% to 15% for this project. In addition, estimated mobilization costs are approximately 50% low. For this project the contingencies would total approximately $74,000. DNRC recommends adding this amount to the awarded grant to be sure the project can be completed. However, given the applicant's experience working in this area, the budget shortcomings may not present a problem.

Environmental Evaluation
The project is anticipated to have significant positive environmental benefits. Short-term environmental impacts will occur during construction, but these will be minimized through BMP and will be overwhelmingly outweighed by the project's long-term positive benefits.

For More Information
The project abstract, prepared by the applicant, can be found at:
http://www.dnrc.mt.gov/cardd/ResourceDevelopment/Abstracts/2014/2014RDGProjectAbstracts.pdf

Funding Recommendation
DNRC recommends grant funding of $484,000 upon DNRC approval of the project scope of work, administration, budget, and funding package. This amount adds contingency and mobilization costs.

Project No. 6

Applicant Name	City-County Board of Health for Lincoln County	
Project Name	Assessment and Development of Protocols to Ensure Public Health Protection from Impacts of Vermiculite Mining in Lincoln County	
Amount Requested	$ 430,595	
Other Funding Source	$ 9,475	Applicant
Total Project Cost	$ 440,070	
Amount Recommended	$430,595	

Project Summary
This project will identify asbestos in the environment, assess potential health threats from various activities (e.g. logging, firewood cutting, recreational activities) in areas containing asbestos, and develop recommendations for mitigating exposures in areas outside of the Libby Asbestos Superfund site boundary.

Technical Assessment
Activities at a former mine in Lincoln County released asbestos as a byproduct of vermiculite production. Exposure to asbestos can cause severe health problems, including asbestosis, mesothelioma, cancer, pleural plaques, diffuse pleural thickening, asbestos warts, and high mortality rates. Asbestos-related health impacts in the Libby area prompted the EPA to declare parts of Lincoln County a federal Superfund site in 2002. Studies conducted within the Superfund site boundary have identified asbestos in tree bark, duff, soil, sediment, surface water, and wood waste. Studies have also documented mild to significant health risks while performing commercial logging, forest service work, residential firewood harvesting, and recreational activities such as wood cutting, stacking, building camp fires, off-road vehicle use, bicycling, and fishing. The Superfund site was established to remediate asbestos within the Superfund site boundary. However, studies have shown that asbestos is present in tree bark, soil, duff, and wood waste throughout Lincoln County beyond the Superfund site. Contact with these materials through various activities may present a health threat and has created a stigma that recreating and harvesting timber in Lincoln County is unsafe.

Most of Lincoln County outside the Superfund site boundary is not eligible for federal Superfund money. The Lincoln County Board of Health is concerned that county residents and visitors continue to be exposed to asbestos outside of the Superfund site boundary. A limited number of studies outside of the Superfund site boundary have been conducted documenting the presence of asbestos in tree bark, duff, soil, and wood waste. Furthermore, the potential for exposure to asbestos outside the Superfund site boundary during timber management, recreation, and wood waste disposal has not been assessed. These data gaps could result in serious consequences for both human health and economic development in the county.

Asbestos has been, and continues to be, released to the air at and surrounding the former mine site. Asbestos is a mineral that does not degrade at an appreciable rate. Without action, the potential threat from asbestos exposure would continue for the foreseeable future.

The project goals include:
1. Improve commercial use of timber products in Lincoln County;
2. Reduce or eliminate the public perception that it is “unsafe” to recreate in Lincoln County;
3. Identify a safe method for disposal of wood waste at the Libby and Troy landfills; and
4. Recommend mitigation measures and institutional controls for activities where exposures are identified.

The project objectives are to design and implement studies to fill the data gaps in asbestos distribution and activity based exposure outside of the Superfund site boundary in Lincoln County. Four project alternatives were evaluated, including: no action; institutional controls with no additional study;

institutional controls with additional targeted study; and institutional controls with additional comprehensive study. The no action alternative would leave numerous data gaps in the understanding of asbestos impacts and the potential for exposure, resulting in adverse consequences for human health and economic recovery. The institutional controls with no additional study alternative would require highly restrictive institutional controls in order to prevent asbestos exposure and would perpetuate current uncertainties about the safety of timber products and recreational activities in Lincoln County; implementing these institutional controls would be both expensive and impractical. Institutional controls with additional targeted study would allow Lincoln County to cost-effectively assess risks, identify areas where asbestos exposure is unlikely, and develop mitigation measures where appropriate. Institutional controls with additional comprehensive study would provide the highest level of certainty, but would drive project costs into the millions.

The preferred alternative selected by Lincoln County is institutional controls with additional targeted study. This approach was selected based on the balance between project costs and ability to meet project objectives. The RDGP grant would provide the majority of funds necessary to conduct the targeted study.

The following tasks have been identified to meet the goals and objectives of the proposed project:

1. Prepare project plans (e.g. health and safety, field sampling, and data analysis plans);
2. Conduct field sampling; and
3. Data analysis and reporting.

Bark and duff sampling is planned at a number of locations around the county where commercial and recreational activities occur. If asbestos is present in the bark and duff samples, activity-based sampling for those activities will occur during the wet and dry season. Waste wood sampling and activity based sampling for wood grinding will be performed at the Libby and Troy landfill sites. Recreational activity based sampling will take place during the wet and dry seasons. Activity-based sampling will include collection of time-weighted air samples from the breathing zone of samplers involved in various activities. The data will be validated and entered into the Lincoln County Asbestos Database. A feasibility study will be developed that identifies contaminated areas of Lincoln County and evaluates methods for reduction of exposures to asbestos to assist Lincoln County in the development of institutional controls, where needed. Furthermore, the study will evaluate whether grinding, the current method of waste wood disposal at Libby and Troy landfills, liberates asbestos to the atmosphere at levels that are hazardous to human health.

The approach to the study is technically sound, and the preferred alternative will meet project goals. However, due to the high cost of asbestos analysis the study is limited to six sample locations. This limited data set may serve to identify data gaps and areas where additional sampling is needed rather than provide sufficient information for developing institutional controls. The study will still yield valuable information for identifying areas of concern and will guide additional studies as needed.

Lincoln County has notified a variety of stakeholders associated with the Libby Asbestos Superfund site about the project and the data will be shared in the Lincoln County Asbestos Database. Other agencies notified about the project include the EPA, USFS, DNRC, USACE, Libby Area Technical Advisory Group, and Lincoln County Port Authority/Kootenai River Development Council. No permitting will be required for the project; the county has received preliminary approval to perform the studies on USFS, DNRC, and USACE-owned property.

The DNRC Libby unit manager reviewed the application and noted that the study design is consistent with EPA, DEQ, and DNRC testing and activity-based sampling protocols. Additionally, the data will provide a more complete understanding of the nature and extent of asbestos distribution and further establish possible patterns of existence based on topography, distance, prevailing winds, and background concentrations.

The project is scheduled to begin in September 2015. Project plan preparation would be completed in October 2015 and sampling would occur from November 2015 through September 2016. Project reporting will be completed by the end of March 2017. No additional information is necessary for this project to proceed.

Public Benefits Assessment
The project will prevent or mitigate future health effects associated with asbestos exposure caused by past vermiculite mining in Lincoln County. Benefits to Montanans include the ability to safely recreate, conduct commercial and personal timber harvest, and dispose of waste wood within Lincoln County. Montanans and natural resources benefit through increased areas available for timber harvest, recreation, and fire management. The project is intended to better characterize the threat from asbestos and develop protocols, guidelines, or regulations that will ensure public safety in all parts of the county.

Unemployment in Lincoln County is seasonally dependent and has recently ranged from 12–18%. Data produced from the study will provide certainty that conducting timber harvests and recreational activities in Lincoln County are safe. Increased acreage for timber management and recreation will increase economic activity and lead to job growth.

The current situation has the potential to cause ongoing impacts to human health and safety. Because asbestos does not naturally degrade, these threats will continue if no action is taken.

The project has letters of support from Senator Jon Tester, Representative Jerry Bennett, Board of Lincoln County Commissioners, USFS, DNRC, Lincoln County Port Authority, Kootenai River Development Council, Inc., and the city of Libby.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Task 1 Work Plan Preparation	$28,000	$0	**$28,000**
Task 2 Field Work/Analysis	$296,660	$0	**$296,660**
Task 3 Reporting	$94,360	$0	**$94,360**
Administration	$11,575	$9,475	**$21,050**
Total	**$430,595**	**$9,475**	**$440,070**

The project budget is reasonable, clear, complete, and supported in the project application. Cost effectiveness of the selected alternative is demonstrated in the project application. The matching fund source is the Lincoln County Board of Health, and they have committed to funding the project. Although the project will evaluate health threats associated with asbestos generated from the Superfund site, the study area is outside the site boundary and not eligible for federal superfund money. Alternative funding sources have not been identified for the project. The project application does not outline a contingency plan in case RDGP grant money is not allocated.

Environmental Evaluation
Identifying areas where asbestos is present in tree bark, duff, and soil and then restricting activities in those areas will benefit air, soil, and water quality by reducing the amount of asbestos that would otherwise be released during those activities. This will also allow for timber management and reduction of fire hazards in areas where asbestos is determined to be absent. Understanding asbestos distribution and risks will address uncertainties associated with exposure during recreational and timber management activities and reduce the stigma associated with these activities in Lincoln County.

For More Information
The project abstract, prepared by the applicant, can be found at:
http://www.dnrc.mt.gov/cardd/ResourceDevelopment/Abstracts/2014/2014RDGProjectAbstracts.pdf

Funding Recommendation
DNRC recommends grant funding of $430,595 upon DNRC approval of the project scope of work, administration, budget, and funding package.

Project No. 7

Applicant Name	Deer Lodge Conservation District	
Project Name	French Gulch Placer Mining Restoration	
Amount Requested	$ 500,000	
Other Funding Sources	$ 190,000	Future Fisheries
	$ 60,000	Western Native Trout Initiative
	$ 35,000	USFWS
	$ 55,000	State Wildlife Grants
	$ 12,500	Volunteer Labor
	$ 200,000	DEQ 319
	$ 4,000	TU George Grant Chapter
	$ 4,000	BHR Foundation
	$ 4,000	Montana Trout Foundation
	$ 4,000	Skyline Sportsmen
Total Project Cost	$ 1,068,500	
Amount Recommended	$ 500,000	

Project Summary
The proposed project is to reclaim the most significant placer mining impacts to 8,076 ft of French Gulch at the Mount Haggin Wildlife Management Area.

Technical Assessment
Placer mining in French Gulch in the early 1900s caused large scale destruction of the stream and floodplain in a headwaters watershed important to the state's conservation efforts to preserve and restore populations of Westslope cutthroat trout and fluvial Arctic grayling. More than five miles of stream were affected, resulting in a straightened stream channel confined by large piles of dredge spoils, impaired fish habitat, a fish passage barrier, increased stream gradient, reduced riparian and wetland habitat, and isolation of the stream from its floodplain. Six different natural resources have been impacted, including water quality, aquatic habitat, fisheries, wildlife, riparian vegetation, and wetlands.

The goal of the project is to restore stream and floodplain function to the most significantly impacted three miles of channel and floodplain. Impacts to be addressed include: channelization, floodplain confinement by placer piles, loss of riparian vegetation and wetlands, loss of instream habitat, water quality, and impaired fish passage. The applicant identifies 23 subtasks to meet the project goals. Specific restoration actions will include reconstruction and stabilization of the stream channel, improvement of instream habitat, removal and/or leveling of some placer piles to reconstruct a functional floodplain, revegetation with native plants, creation of floodplain wetlands, and provision of fish passage at an existing culvert. Major components of these tasks include funding procurement, final design, permit acquisition, contractor selection, and construction. Final design is expected to start in September 2015 and construction should be completed by November 2017.

Alternatives included no action and:

1. Complete restoration of five miles of French Gulch and its floodplain plus two miles of First Chance Creek;
2. Partial restoration of most the highly impacted reaches of French Gulch and its floodplain, habitat improvements in less impacted reaches, and construction of stream banks with bioengineering treatments; and
3. Same as Alternative 2, except for construction of stream banks with transplanted sod mats (the selected alternative).

The alternatives were not fully developed enough to allow robust comparison and selection of the best alternative. The preferred alternative is the least expensive one that still meets project goals and objectives. The designs for the preferred alternative are at best 50% complete, which is adequate for the

grant planning process. However, the application stated the designs were 80% complete. This discrepancy may lead to cost overruns for the final design task or result in inadequate plans and specifications to ensure project success and guide construction without costly change orders.

Some concerns about the design could significantly affect cost and project success. For example, depressional wetlands designed adjacent to the channel may capture flow and lead to channel instability. The application did not identify sources for borrow materials such as topsoil and vegetation. There was no materials balance, so it is unclear whether there will be a surplus or shortfall of earth materials needed to complete the project. In addition, a geomorphology memorandum and a wetlands memorandum referenced in the application were not included and subsequently were not provided although requested. Finally, the applicant did not adequately address questions submitted by the reviewer. In summary, the application presents a strategy to address many of the problems resulting from historic mining, but the plan lacks sufficient detail to assure success.

This project is a partnership between the Deer Lodge CD and FWP. FWP is the technical lead and will provide project oversight.

Public Benefits Assessment

The project will make steps toward reversing 100 years of impacts caused by placer mining by conserving fish and wildlife, riparian and wetlands species, and water quality. The project is needed as part of the state's efforts to preserve native aquatic species (Westslope cutthroat trout, Arctic grayling, and pearlshell mussels) and to meet water quality through CWA requirements. Although the problems caused by mining are neither immediate nor are they worsening, they are chronically and persistently harming the environment and will continue to do so if not addressed.

The project is on public land and will directly benefit visitors to the Mount Haggin Wildlife Management Area and downstream water users. It will also have some benefit in protecting water quality for the Butte water intake on the BHR by reducing sediment loading and stabilizing mercury-contaminated sediments. Most benefits will be local, with the exception of fish and wildlife, and water quality benefits, which may extend outside of the project area.

The project will provide a short-term economic benefit to Anaconda and Butte. Employment that may be associated with the project will be mostly temporary and serve individuals who are already employed. The applicant intends to use Montana Conservation Corps or Job Corps for labor.

Public support for the project has been offered by FWP, the Big Hole Watershed Committee, Skyline Sportsmen, and George Grant Chapter of TU.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Task 1 Final design	$11,520	$31,141	**$42,661**
Task 2 Construction oversight	$19,954	$36,524	**$56,478**
Task 3 Construction	$453,496	$500,835	**$954,331**
Administration	$15,030	$0	**$15,030**
Total	**$500,000**	**$568,500**	**$1,068,500**

The budget lacks detail and estimated costs are 25–50% high compared to similar placer mining reclamation projects being funded through the RDGP. This observation was corroborated by a secondary reviewer with relevant experience. The budget includes $11,300 for permitting. If FEMA approval is required for the floodplain permit, the budgeted amount may be low, but may be covered by contingency amounts allocated to other parts of the budget. About 10% of funding will come from non-state contributions. The applicant's contributions of $7,000 in in-kind and $12,000 in volunteer services are small relative to the budget of over $1 million. However, additional match is to be provided by FWP in the form of borrow materials (dollar value not estimated). None of the matching funds has been secured.

Environmental Evaluation
The project will cause short-term environmental disturbance in pursuit of long-term environmental gains. The project will have a significant net positive impact on the environment within the French Creek watershed.

For More Information
The project abstract, prepared by the applicant, can be found at:
http://www.dnrc.mt.gov/cardd/ResourceDevelopment/Abstracts/2014/2014RDGProjectAbstracts.pdf

Funding Recommendation
DNRC recommends grant funding of $500,000 upon DNRC approval of the project scope of work, administration, budget, and funding package. DNRC further recommends the final designs and scope of work be reviewed and approved by qualified stream restoration design consultant as a condition for receiving full funding.

Project No. 8

Applicant Name	Montana Department of Environmental Quality	
Project Name	Landusky Bio-Reactor Rehabilitation	
Amount Requested	$ 500,000	
Other Funding Sources	$ 674,800	Reclamation Account
	$ 2,925	Applicant
Total Project Cost	$ 1,177,725	
Amount Recommended	$ 500,000	

Project Summary
DEQ will repair and improve the operation and maintenance of a water treatment system at the Landusky mine site near Malta.

Technical Assessment
The DEQ is responsible for reclaiming the Landusky Mine. Pegasus Gold Corporation conducted open-pit mining at the Landusky Mine before declaring bankruptcy in 1998. This project will upgrade an existing bio-treatment facility that collects water from the mine's leach pads. The facility was built in 2001 to remove nitrate and selenium from the water. When the treatment system was designed, anticipated need was about 10 years, by which time residual nitrate concentrations in the leach pads were expected to decline to levels not requiring treatment. However, nitrate concentrations remain elevated (up to 350 mg/L). Assessment of the three bio-reactor tanks during 2012 resulted in tank 3 being taken off-line because accumulated sludge was causing the treated effluent to be odorous and black in color. The media in tanks 1 and 2 were estimated to have residual lifespans of three and two years, respectively. DEQ replaced the media in tanks BR-2 and BR-3 during 2013–2014.

The primary goal of the project is to improve the water treatment system so that the water leaving the plant will meet surface water human health standards. The applicant presents five tasks to meet the project goals:

1. Remove and dispose of the existing media in treatment tank BR-1;
2. Repair the tank and tank internal plumbing;
3. Replace the media in tank BR-1;
4. Inoculate the media with new microbes; and
5. Install electrodes in tank BR-1 to increase the efficiency of the microbes.

Because of its age and the changing water chemistry at the site, portions of the WTP are not functioning to the level of performance required. The system requires maintenance and upgrades to meet human health standards for nitrates and selenium in its discharge water. If these upgrades and maintenance are

not performed, the system could fail in the next several years. The problem is well documented in the supporting reports.

To meet the stated goals, three technologies are evaluated in the grant application; the current technology (a bioreactor); an electro-bioreactor; and reverse osmosis. Bioreactors can be unreliable and the contents need continual replacement when toxic contaminant levels accumulate enough to destroy the microbial populations. However, bioreactors are relatively cheap to operate. Reverse osmosis is a more reliable technology, but is much more expensive because of the high-installation costs, as well as the costs for operating, energy, and reject water disposal. Although the electro-bioreactor does not have an extensive historical track record, it has been pilot tested at the site with promising results and is the preferred alternative. A no-action alternative was not evaluated.

The project is managed and coordinated by DEQ. The technical design appears to be sound. The plant has operated since 2001 with mixed success. The preferred alternative has been pilot tested at the site and appears to function as expected. A long-term cost/benefit analysis of a 20-year performance period for the electro-bioreactor versus reverse osmosis would have been helpful to review to ensure that the electro-bioreactor is cheaper overall.

Public Benefits Assessment
This project will treat water collected from former leach pads at the Landusky Mine site to reduce elevated levels of selenium and nitrates to state surface water standards for discharge of the water to Montana Gulch. This project conserves natural resources by reducing the amount of selenium and nitrates added to a minor tributary to the Missouri River. This project benefits Montanans by preventing discharge of contaminated water, thereby protecting human health and the environment. It prevents property damage by preventing deposition of nitrates and selenium along stream banks from Montana Gulch to the Missouri River. No jobs are created by this project. The benefits are certain, but they will be temporary. The replacement media for the bioreactor and more maintenance will likely be necessary in another 10 to 15 years. The Fort Belknap Indian Community supports this project.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Task 1 Purchase Carbon Media	450,000	259,000	**$709,000**
Task 2 Replace Media in Tank	$0	$80,000	**$80,000**
Task 3 Repair Tank	$0	$41,000	**$41,000**
Task 4 Coat Tank	$0	$80,000	**$80,000**
Task 5 Inoculate Media	$0	$180,000	**$180,000**
Task 6 Install Electro-bioreactor	$50,000	$34,800	**$84,800**
Administration	$0	$2,925	**$2,925**
Total	**$500,000**	**$677,725**	**$1,177,725**

The budget is clear and concise. There was one addition error in the first line of the application, but it only affects the total amount of the project, not the amount of RDGP funding. All materials, hours, and construction are described in detail. Based on pilot test results, the electro-bioreactor alternative seems to be the most cost-effective alternative. Fifty-five percent of this project will be funded with matching funds from DEQ that have been secured. There are no non-state matching contributions.

Environmental Evaluation
The pilot-test results of the electro-bioreactor suggest that the environmental impacts are achievable and positive. However, these positive results have yet to be demonstrated on a large scale. Electro-bioreactor is one of the few techniques to reduce concentrations of selenium and nitrates in water. Installing the new media and upgrading the system to an electro-bioreactor should have a large, positive impact on the water quality in Montana Gulch. However, this remedy is short-term. Media will likely have to be replaced in another 10 to 15 years.

For More Information
The project abstract, prepared by the applicant, can be found at:
http://www.dnrc.mt.gov/cardd/ResourceDevelopment/Abstracts/2014/2014RDGProjectAbstracts.pdf

Funding Recommendation
DNRC recommends grant funding of $500,000 upon DNRC approval of the project scope of work, administration, budget, and funding package.

Project No. 9

Applicant Name	Montana Department of Environmental Quality	
Project Name	Basin Creek Mine-Site Stability Project	
Amount Requested	$ 500,000	
Other Funding Source	$ 46,294	Applicant
Total Project Cost	$ 500,000	
Amount Recommended	$ 546,294	

Project Summary
DEQ will reduce sediment production from the Basin Creek Mine by reducing the width of haul roads still needed for reclamation purposes and reclaiming unused roads.

Technical Assessment
The Basin Creek Mine is an inactive, open-pit gold mine 17 miles southwest of Helena that was operated from 1989 until its bankruptcy in 1998. About 3,000,000 tons of ore were mined before Basin Creek Mine went into bankruptcy. A bankruptcy trustee began conducting remediation activities in 1998 and continued until 2003 when the site was transferred to the State of Montana. Reclamation activities thus far have consisted of closure of two cyanide heap leach pads, backfill of two open pits, management of stormwater systems, auctioning of equipment, general site reclamation, construction of an impermeable cap on Leach Pad-1, erosion control, mine building dismantling, and drainage control. EPA is using the remaining open pit, Luttrell Repository, as a mine waste repository.

Since 2013, DEQ has been managing the Basin Creek Mine property and has been responsible for conducting mine closure activities. Funds from the reclamation bond were inadequate to complete site reclamation. Ongoing remediation activities include erosion control and site stabilization. These activities will be completed as funding becomes available. In accordance with the mine permit reclamation plan, mine roads are to be graded to blend with the surrounding topography. However; remediation activities are ongoing and some of the mine access roads are still needed for current and future site activities.

The access roads are considerably oversized because the mining operations required roads wide enough to accommodate large haul trucks and other mining equipment. The oversized mine roads and associated steep road cuts produce substantial quantities of sediment during runoff events. Sediment ponds constructed to protect surface water resources quickly become filled and become ineffective at preventing sediment transport to nearby streams. Ongoing maintenance is required to remove sediment from the ponds. Sediment production from the Basin Creek Mine roads has been an ongoing problem at the site since 1998 and will continue to occur until road reclamation has been completed.

Sediment loading south and west of the mine affects Clear Creek and Grub Creek, which are tributaries to Basin Creek and ultimately the Boulder River. Runoff to the north and east of the site carries sediment from the mine roads to Monitor and Ruby creeks. Ruby Creek discharges to Scott Reservoir, which is used by Helena for water storage. Monitor Creek, Ruby Creek, and Scott Reservoir provide water to the Tenmile WTP for distribution of potable water to Helena. Sediment loading increases operational costs for the WTP and adversely impacts aquatic and terrestrial habitat in the drainages.

The overall project goal for reclamation of the Basin Creek Mine is to establish environmental conditions that are compatible with existing land uses for this area. These include use of the watershed for public water supply, grazing, wildlife habitats, and recreation. The objective is to reduce sediment discharge through mine road remediation and stabilization. Two project alternatives were evaluated-—no action and mine road reduction/stabilization.

Under the no action alternative, substantial erosion will continue from the oversized mine roads and contribute to sedimentation in downstream watersheds. Adverse effects to wildlife, aquatic habitat, and recreation quality and opportunities will continue. Runoff to the south and west will continue to deposit mine road sediments to the Boulder River watershed. Runoff to the north and east will continue to deposit mine road sediment into Scott Reservoir and associated creeks, ultimately affecting Helena's water storage capacity and the Tenmile WTP.

The mine road reduction/stabilization alternative will decommission certain roads, reduce the size of other roads, stabilize road slopes, and provide revegetation of disturbed locations. The application did not specify which segments of road will be reclaimed, nor indicate the total miles that will be reclaimed. This information should be provided upon contracting. The Basin Creek Mine site is 1,234 acres in size; the road surfaces to be addressed comprise approximately 20 acres of that. The reclamation will result in reduced off-site sediment migration, which will improve aquatic and terrestrial habitat, enhance recreational opportunities, and reduce operating costs for the Tenmile WTP. The preferred alternative is to conduct mine road reduction/stabilization as funding becomes available.

Project tasks include:

1. Conduct a study that will prioritize roads for reduction or obliteration;
2. Based on the priorities, develop a phased reclamation plan; and
3. Conduct road remediation/stabilization work.

DEQ will hire an environmental consulting/engineering firm to conduct the prioritization study, develop the reclamation plan, prepare the bid package, and assist DEQ with construction oversight and project management. A separate contract will be awarded for mine road reduction/stabilization construction.

The approach to the study is technically sound and the prioritization study will maximize the benefit of the phased approach. The preferred alternative will meet project goals as funding becomes available. DEQ project staff will periodically monitor the site for vegetation establishment, use by wildlife species, and site stability. No permitting will be required for the project. The Basin Creek Mine is surrounded by USFS lands. The USFS supports the project and can tier from this road rehabilitation plan to seek matching funds for work on adjacent federal lands.

The project is scheduled to begin, pending RDGP grant allocation, in May 2015 when a consulting firm will be hired to further characterize the mine site roads and erosion source areas. In August 2015 a contract for road reduction/steep slope stabilization construction will be awarded, construction will occur from September to November 2015, and a final report will be completed in January 2016.

Public Benefits Assessment

The project will reclaim and stabilize roads constructed during development of the Basin Creek Mine. Natural resources will be conserved by reducing sediment loads in nearby watersheds; this will eliminate continued degradation of the Upper Tenmile and Basin Creek watersheds. By eliminating mine roads as a significant source of sedimentation in surface and groundwater, terrestrial and riparian areas will thrive. Public health and safety will be improved through site stability, diversifying ground and surface water features. Direct benefits to Montanans include job creation, reduced operating costs of the Helena WTP, increased recreation quality and opportunity, and overall improved water quality in the Upper Tenmile and Basin Creek watersheds. Economic benefits, including job creation, will extend into Jefferson and Lewis and Clark counties. Eliminating the major source of sediment in the Upper Tenmile and Basin Creek watersheds will have long-term and tangible benefits.

A portion of the Basin Creek Mine is in the headwaters of Tenmile Creek, which is one of the two primary water sources for Helena. According to the Helena Water Treatment Superintendent, the impact of no action would be that sediments discharged from the mine roads would continue to increase turbidity to the makeup water for the Helena treatment plant, which increases direct operating costs at the plant. In addition, sediment produced from the mine roads also accelerates filling of the Scott Reservoir, which stores water for the Helena treatment plant. Filling of the reservoir reduces storage capacity and creates shallow water that promotes algae growth, which increases municipal WTP costs. Eventually, sediment fill in the reservoir would require dredging to increase storage capacity and reduce algae growth. Ongoing sediment loading would also continue to adversely affect the riparian and terrestrial ecosystems surrounding these watersheds.

No letters of public support were provided with the application. The USFS On-Scene Coordinator reviewed the application and recommended funding for the project based on road-sedimentation issues as documented by the USGS, the benefit that planning would have on resolution of road-related public issues between the State and surrounding federal lands, and the ability to seek additional outside funding using the proposed rehabilitation plan. Helena's WTP Superintendent voiced support for the project and confirmed that it would reduce plant operating costs and sediment loading to Scott Reservoir.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Task 1 Engineering Design	$100,000	$0	**$100,000**
Task 2 Road Stabilization	$400,000	$0	**$400,000**
Administration	$0	$46,294	**$46,294**
Total	**$500,000**	**$46,294**	**$546,294**

The grant will fund the initial phase of road reduction and stabilization. Although backup documentation was not provided, DEQ estimates that approximately $2 million will be needed to complete all of the road reduction and stabilization at the mine. DEQ staff has substantial reclamation experience at other mine sites, and this professional experience provides the basis for the cost estimate. DEQ has contracting procedures in place that will ensure that the work will be completed at costs that are typical and reasonable. DEQ has committed to providing the administrative overhead resources to complete the project. The projected budget is reasonable, clear, complete and supported in the project application. Cost effectiveness of the selected alternative is demonstrated in the project application. Alternative funding sources have not been identified for the project. The project application does not outline a contingency plan in case RDGP grant money is not allocated.

Environmental Evaluation

The project will result in a number of positive environmental impacts, including increased slope stability, establishment of vegetation in areas that are currently barren, and reduced sediment loads to multiple watersheds. Increased vegetation will add to usable wildlife habitat and grazing land. Reduced sediment loads to the watersheds will improve aquatic habitat.

The adverse environmental impacts associated with the project are short-term and associated with construction. There is a potential for fugitive dust emissions and stormwater runoff, both of which can be controlled with BMP. Construction will also place minor demands on energy resources.

For More Information

The project abstract, prepared by the applicant, can be found at:
http://www.dnrc.mt.gov/cardd/ResourceDevelopment/Abstracts/2014/2014RDGProjectAbstracts.pdf

Funding Recommendation

DNRC recommends grant funding of $500,000 upon DNRC approval of the project scope of work, administration, budget, and funding package.

Project No. 10

Applicant Name	Montana Department of Environmental Quality	
Project Name	Sand Coulee Acid Mine Drainage Source Control	
Amount Requested	$ 332,442	
Other Funding Sources	$ 14,000	Applicant
	$ 100,000	OSMRE
Total Project Cost	$ 446,442	
Amount Recommended	$ 332,442	

Project Summary
The proposed project is a source-control remedy to mitigate ongoing discharges of AMD from abandoned coal mines surrounding the community of Sand Coulee.

Technical Assessment
The Great Falls Coal Fields included extensive underground coal mines in the area of Sand Coulee and Stockett. The mines were in operation from the late 1870s to the mid-1950s and supplied coal for operation of the Great Northern Railway and Anaconda Copper Company. Once the coal mining ended, groundwaters began infiltrating from the overlying formation into the abandoned mine workings and chemically react with sulfur minerals and oxygen to produce AMD. The contaminated water flows out of the mine portals and springs disappearing into the alluvium and impacting local streams (Sand Coulee Creek) and the alluvial aquifer in the area. The AMD contains high concentrations of metals including: arsenic, cadmium, chromium, iron, manganese, nickel, thallium, and zinc.

The project goal is to reduce the loading of metals and improve the surface water and groundwater quality in Sand Coulee, and mitigate the ongoing loading of AMD to the Madison limestone. The project objective is to mitigate ongoing discharges of AMD from abandoned coal mines located proximal to the community of Sand Coulee.

The proposed approach to address the AMD problem is to mitigate ongoing impacts by intercepting clean groundwater before it enters the abandoned mines. The water entering the abandoned mines appears to originate from the overlying Kootenai Formation. The applicant supported this approach with multiple documented studies, which provided estimated flow rates and water quality concentrations, identified and prioritized several AMD treatment options, and evaluated treating to DEQ-7 water quality standards using lime-based technologies. Cost estimates for active treatment were included. The treatment options were found to be cost prohibitive or not effective at treating all metals to DEQ-7 water quality standards.

A recent study investigated the feasibility of groundwater interception using horizontal and vertical wells. Results indicated that multiple up-gradient wells could be used to intercept clean groundwater and reduce acid mine outflow from the abandoned mines. Based on this study, the applicant has proposed to test the viability of the groundwater interception method further. The basis of this method is to use natural hydraulic head pressure in the wells to intercept and drain the groundwater prior to entering the abandoned mines. This approach appears viable, but further field testing is required to evaluate its effectiveness. Two well designs (horizontal and vertical) are proposed for construction and evaluation of effectiveness to intercept and reduce AMD impacts to the local shallow aquifers. The results developed by this proposal will provide crucial information for future reclamation projects and could provide a cost effective method for mitigating AMD impacts from abandoned mines.

To meet the stated goals, the applicant evaluated three project alternatives—no action; treatment alternatives employing active and passive treatment of AMD discharges; and source control measures to reduce AMD discharges.

A formal ranking of alternatives was not conducted; however, alternatives are discussed and the applicant chose source control using groundwater interception as the preferred alternative. This alternative was chosen based on the technical challenges of passive treatment, high costs of active treatment, and the limited budgetary means to construct a treatment plant. A recent study indicated that groundwater infiltration from the overlying Kootenai sandstone can be captured with vertical and horizontal wells, thereby reducing the amount of AMD produced. This approach would cost significantly less than active treatment, or could greatly reduce the volume of water requiring treatment.

The applicant presents the following six tasks to conduct and accomplish the project goals and objectives:

1. Install mine discharge monitoring stations (install flumes to monitor discharges from the adits);
2. Hydrogeologic investigation to determine aquifer characteristics for the design of the horizontal and vertical wells;
3. Install a 4- to 6-inch vertical drainage well 200 ft into the Madison Formation, up gradient of the abandoned mines;
4. Install a 4- to 6-inch horizontal drainage well into the Kootenai aquifer, estimated 1,500 ft long with 500 foot screen;
5. Model the capture system using USGS MODFLOW or similar model to develop a model of the Sand Coulee area and to evaluate the drainage wells effectiveness; and
6. Final reporting.

The proposal presents a general approach to the design and application of the interception system, but there were several details that were not addressed that may present problems with the proposed approach. Regarding the horizontal well, the proposed well will not daylight and will be deadheaded, which may create difficulties with screen placement and well development. Also not addressed is how backflow will be controlled during drilling, or the specifics of the discharge water and how it will be managed. A groundwater discharge permit may be required depending on water use. Concerns about the vertical well include the potential legal and technical issues with allowing water to drain from one formation to another. The potential exists for plugging and chemical precipitation from the mixing of water from two different aquifers. Related to both wells, staff from the DNRC Lewistown district office noted that there may be water rights issues that will need to be addressed prior to completing the project. The applicant has indicated coordinating activities with DNRC, but this is a concern that should be addressed ahead of time.

To accomplish this project, the applicant must coordinate activities with the DNRC and local landowners. All permitting that will be determined necessary will be coordinated with DNRC and be the responsibility of the contractor to obtain.

The project is scheduled to begin with the hydrogeologic investigation in August and September 2015, with well installations in July/August 2016, and a final report proposed by October 2017. Monitoring of the system is proposed monthly and quarterly for a two-year period from 2015 to 2017. Monitoring data will be compiled by the consultant with oversight and direction by DEQ-AML. The proposed schedule appears reasonable to achieve the project goals, barring water right permit issues.

Public Benefits Assessment

The proposed project area surrounding Sand Coulee has been documented with AMD impacts from historical coal mining activities, with AMD impacting surface water and groundwater resources. The benefits would be certain and long-term if this approach proves to have a positive effect in reducing AMD. Results would provide for improved groundwater and surface water resources, and would protect public health, safety, and welfare of the environment. Intercepted water could be beneficially used at the discharge points, with appropriate water rights permits. A direct benefit would be realized by the residents of Sand Coulee, Tracy, and the surrounding area, while indirect benefits would be realized to Montana residents through improved water quality and aesthetics of the area.

This project is reasonably urgent due to the documented and direct impact it has had on the residents and the environment for decades. If no action was taken, the cause and magnitude of AMD will continue to impact the area, as prior studies have indicated no reduction in the AMD has occurred over the past 40 years. Studies indicate the AMD metals concentrations have exceeded DEQ-7 standards for human health and aquatic life standards and are likely seeping into the Madison Aquifer, which is a high-quality groundwater resource for the entire region.

Letters of support were provided the president of the Sand Coulee Water District and Senator Brad Hamlett (SD-10).

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Personnel Costs – Invoicing and Reporting	$0	$2,000	**$2,000**
Task 1 Mine Discharge Flume Stations	$25,580	$5,000	**$30,580**
Task 2 Hydrogeologic Characterization	$128,859	$5,000	**$133,859**
Task 3 Vertical Drainage Well Install	$34,920	$5,000	**$39,920**
Task 4 Horizontal Drainage Well Install	$143,083	$6,409	**$149,492**
Task 5 MODFLOW Model	$0	$38,006	**$38,006**
Task 6 Reporting	$0	$33,233	**$33,233**
Contractor Fixed Fee	$0	$19,352	**$19,352**
Total	**$332,442**	**$114,000**	**$446,442**

The applicant provided an adequate budget justification narrative that described estimated costs for the proposed tasks, outside funding sources, and funding for future plans to install additional interception wells. The budget includes in-kind and matching funds totaling $114,000, which comprise approximately 25% of the total cost. Sources of matching funds are secured, and are provided by DEQ with in-kind labor and federal funding through OSMRE. The costs presented appear to be reasonable, although no detail was provided on well installation and aquifer testing costs, which were budgeted for $230,400. If funded, the applicant should identify how many wells will be installed, and how they will be maintained and monitored after the grant project has been completed. The applicant does not have an alternative plan identified if the grant is not approved. There are no non-state contributions.

Environmental Evaluation

There was limited information provided in the environmental checklist; however, environmental impacts associated with this project were evaluated and were interpreted as primarily beneficial. Major beneficial elements are related to protection of groundwater and surface water resources and related protection of human health by reducing the volume of AMD generated by historic mining activities. A potential adverse impact to property owners with water rights within or near the area of influence is possible and should be mitigated through permitting and monitoring activities. The project will have a positive long-term impact if successfully and properly implemented by providing a cost effective and efficient technology to address AMD and its known environmental impacts.

For More Information

The project abstract, prepared by the applicant, can be found at:
http://www.dnrc.mt.gov/cardd/ResourceDevelopment/Abstracts/2014/2014RDGProjectAbstracts.pdf

Funding Recommendation

DNRC recommends grant funding of $332,442 upon DNRC approval of the project scope of work, administration, budgeting, and funding package. A letter from the DNRC regional water rights office approving the proposed approach is recommended prior to funding of well installation activities.

Project No. 11

Applicant Name	Deer Lodge Conservation District	
Project Name	Moose-French Creek Placer Mining Restoration	
Amount Requested	$ 500,000	
Other Funding Sources	$ 148,984	Future Fisheries Improvement
	$ 25,000	DEQ 319
	$ 50,000	MDT
	$ 10,000	State Wildlife Grants
	$ 20,000	BLM
	$ 30,450	Volunteer Labor
Total Project Cost	$ 784,434	
Amount Recommended	$ 85,000	

Project Summary
The proposed project will repair and reclaim the most significant placer mining impacts to Moose Creek, and other channel straightening impacts to a portion of French Creek on the Mt. Haggin Wildlife Management Area.

Technical Assessment
The goal of the project is to restore stream and floodplain function to the most significantly impacted reaches of Moose and French creeks. Six different natural resources will be improved, including water quality, aquatic habitat, fisheries, wildlife, riparian vegetation, and wetlands.

Placer mining in Moose Creek in the early 1900s caused large-scale disturbance along approximately 2,300 ft of stream and floodplain, resulting in a straightened stream channel confined by large piles of dredge spoils, impaired fish habitat, increased stream gradient, reduced riparian and wetland habitat, and isolation of the stream from its floodplain. Specific restoration actions for Moose Creek include reconstruction and stabilization of the stream channel, improvement of instream habitat, removal and/or leveling of placer piles to reconstruct a functional floodplain, revegetation with native plants, and improving fish passage between French and Moose creeks. The project sponsor also plans to reconnect Moose Creek to French Creek in a new channel. Reviewers noted that changing the confluence of these two streams may negatively affect the downstream wetland complex and, if the project is funded, it is recommended the reconnection to French Creek be excluded and that Moose Creek be allowed to continue to flow into the French Creek wetland complex.

French Creek is impaired by channelization (straightening) of the stream that most occurred during construction of the roadway that is now Highway 569. Impacts from possible placer mining in French Creek are not as evident as those in Moose Creek. Channelization has caused an overly steep channel with reduced sinuosity. This has led to bank erosion and loss of instream habitat. Moreover, the existing highway fill has isolated the stream from much of its historic floodplain. Restoration actions for French Creek include creation of nearly 5,600 ft of new stream to restore channel grade, sinuosity, bank stability, and fish habitat; and removal of several sections of the Highway 569 road prism to restore floodplain connectivity.

Removal of the Highway 569 road prism is feasible because MDT plans to abandon the section of road that traverses the French Creek floodplain and relocate the road to an upland alignment. MDT has road removal and wetland design plans and federal funding to remove the entire road prism within the floodplain and restore the road footprint to wetlands. However, FWP, as the project technical lead, has requested that the MDT remove only the pavement. The FWP proposes to remove most of the underlying fill during channel restoration using RDGP grant funds instead of the existing wetland design plans and federal funds already available. MDT believes the project as proposed will unnecessarily disturb wetlands, impact beaver complexes, and moose habitat if Moose Creek is reconnected directly to French Creek. French Creek may recover naturally once the road prism is removed.

There were two alternatives presented. The first would construct stream banks on both streams and use bioengineered treatments to restore one-half mile of Moose Creek floodplain, reconnect Moose Creek directly to French Creek, and restore 4,000 ft of French Creek. The second alternative is identical to the first except stream banks would be stabilized with transplanted sod mats. The minor difference between alternatives did not allow a robust analysis of alternatives. Nevertheless, the applicant did select the least costly, Alternative 2.

The technical design was very basic and lacked sufficient detail to evaluate likelihood of success. However, the designers will be replicating channel conditions upstream and downstream of the project site, so design details could be developed later. Nonetheless the application presents a reasonable and achievable strategy to address impacts to Moose and French creeks. Major tasks remaining include funding procurement, final design, permit acquisition, contractor selection, and construction. Final design is expected to start in September 2015 and construction should be completed by November 2016.

This project is a partnership between the Deer Lodge CD and Montana FWP. Montana FWP is the technical lead and will provide project oversight.

Public Benefits Assessment

The project will make substantial steps toward reversing 100 years of impacts caused by placer mining and highway construction. The project is needed as part of the State's efforts to preserve native aquatic species (Westslope cutthroat trout, Arctic grayling, pearlshell mussels) and to meet water quality through CWA requirements. Although the environmental impacts to be addressed by the project are neither immediate, nor are they worsening, they are chronic and persistent in harming the environment.

The project is on public land and will directly benefit visitors to the Mt. Haggin Wildlife Management Area and water users downstream. It will also have some benefit in protecting water quality for the Butte water intake on the BHR by reducing sediment loading. Most benefits will be local, with the exception of fish and wildlife, and water quality benefits, which may extend outside of the project area. The application did not include letters of support.

The project will provide a short-term economic benefit to Anaconda and Butte. Employment that may be associated with the project will be mostly temporary and serve individuals who are already employed.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Tasks 1 and 7 Final Design	$26,422	$19,080	**$45,502**
Tasks 2-6 Construction Oversight	$31,168	$10,000	**$41,168**
Tasks 2-6 Construction Moose Creek	$66,610	$99,484	**$166,094**
Tasks 8-12 Construction French Creek	$355,800	$149,950	**$505,750**
Administration	$20,000	$5,920	**$25,920**
Total	**$500,000**	**$284,434**	**$784,434**

The budget lacks detail and estimated costs are 25–50% high for a project of this scope and magnitude. Furthermore, the project budget states that MDT has set aside $50,000 to reclaim the highway 569 roadbed and French Creek channel after the project is complete. MDT representatives said that MDT has not set aside funds to reclaim the road, but they have completed designs and federal funding in hand and could include the removal and reclamation of the Highway 569 roadbed and wetland as part of their highway project planned for 2015. According to the applicant's budget, it is estimated costs could be reduced by $68,000 to $75,000 (approximately 10% of total budget) by allowing MDT to remove and reclaim the road prism as originally planned.

Approximately 36% of the proposed project budget will come from other grants, which have yet to be secured. The project was awarded $225,000 in 319 Program grant funds in October 2014. Non-state matching funds (BLM and volunteer labor) are $50,450, which is approximately 6.5% of the total budget.

The applicant's matching contributions of $30,450 in volunteer labor services are small relative to the budget of $785,450.
Costs for a project that would reclaim Moose Creek only, as recommended by the technical review, would require the following:

Task 1. Final design	$ 6,427
Task 2. Construction Oversight	$ 7,582
Task 3. Construction	$ 56,961
Administration	$ 14,030
Total	**$ 85,000**

Environmental Evaluation
The project will provide significant positive benefits to the environment within the French Creek watershed. Despite these gains, the applicant proposes to remove approximately 855 ft less of the Highway 569 road fill than MDT had planned. This will result in approximately one acre less of wetland being produced. In addition, reconnecting Moose Creek directly to French Creek will bypass a significant beaver pond/wetland complex that provides important moose winter habitat, fish rearing habitat, and water quality functions. These ancillary impacts were not addressed by the application.

For More Information
The project abstract, prepared by the applicant, can be found at:
http://www.dnrc.mt.gov/cardd/ResourceDevelopment/Abstracts/2014/2014RDGProjectAbstracts.pdf

Funding Recommendation
DNRC recommends grant funding of $85,000 upon DNRC approval of the project scope of work, administration, budget, and funding package. This amount reflects a reduction in project scope to exclude restoration of French Creek and reconnection of Moose Creek to French Creek. It is further recommended that the applicant renegotiate to allow MDT to complete removal and reclamation of the Highway 569 road fill within the project area.

Project No. 12

Applicant Name	Montana Department of Environmental Quality	
Project Name	Mitigation of Threat to Harlowton Public Drinking Water Supply	
Amount Requested	$ 500,000	
Other Funding Source	$ 76,094	LUST Trust Fund
Total Project Cost	$ 576,094	
Amount Recommended	$ 82,440	

Project Summary
DEQ proposes to continue efforts to remediate petroleum contamination that threatens the Harlowton municipal water supply.

Technical Assessment
Significant hydrocarbon contamination exists in the groundwater under Harlowton. Contamination includes free product and dissolved chlorinated and non-chlorinated hydrocarbons, which threaten the Thompson supply well, one of the three Harlowton drinking water supply wells. Free product has been present in a monitoring well about 180 ft northeast of the Thompson supply well and samples obtained from the Thompson supply well have reported detections of dissolved chlorinated and non-chlorinated hydrocarbons in 2003, 2007, 2008, and 2011. The reported contaminant concentrations, except for a detection of benzene, are below the method reporting limits and thus are estimated concentrations. The presence of these chemicals in the Thompson supply well indicates a connection between the well and a plume of refined petroleum. The petroleum contamination threatens public health through potential

migration of contamination from the source areas to the Thompson supply well and domestic wells within the study area.

DEQ has been involved with the investigation of the petroleum-contaminated groundwater under Harlowton since 2000 and will continue to be until the site is closed out. Past investigations have established the type and extent of contamination, identified sources of the contamination, explored other potential sources, and evaluated the area hydrogeology. Future proposed activities include alternatives analysis, dissolved-phase contamination remediation, and continued free product recovery. This site will require significant financial and technical resources to complete many more years of remediation.

The project goals are: 1) to mitigate the threat to the Thompson supply well by chemical oxidation or other appropriate technology selected through a remedial alternatives analysis and pilot test results; 2) to continue to recover free product with the existing free product recovery system, thus reducing environmental impacts associated with the petroleum releases; 3) to identify the sources of the dissolved and free product plumes; and 4) to determine if there are vapor intrusion risks. The project sponsor has identified 14 tasks, listed in the project budget, to accomplish the above goals.

A preliminary alternatives evaluation was provided in the application; however, the applicant is in the process of conducting the final remedial alternatives analysis. The costs and evaluation are based on the assumption that in-situ chemical oxidation will be the selected remedial alternative. This assumed final alternative includes conducting a pilot test in a semi-isolated area of contaminated groundwater to evaluate the effectiveness of the chosen alternative. Groundwater samples will be collected before and after the pilot test to help evaluate the efficacy of the test. A report will be prepared after the pilot test is completed and the analytical data are collected.

Assuming the pilot test shows positive results, a remediation system will be designed and installed in an area closer to the municipal water supply. Again, groundwater samples will be collected before and after the remediation system is operated to evaluate the efficacy of the remediation. The remediation system will likely actively operate for one month and then shut down to allow attenuation of the groundwater contamination for six months. Approximately one year later, the system will be operated again for an estimated month, shut down for six months, and groundwater will then be sampled. After the two remediation system periods of operation, a groundwater monitoring and treatment assessment report will be prepared.

In addition to implementing the preferred alternative, vapor intrusion will be investigated, additional free product recovery wells will be installed in another area with known floating product, and free product will continue to be recovered.

Technical reviewers expressed concerns with several components of the proposed plan. First, the application assumed DEQ will select a final remedial alternative of chemical oxidation. If this alternative is not selected, the cost estimates and alternatives evaluation may not be accurate. If chemical oxidation is selected, caution will be needed when the chemical oxidant is used in bulk, especially in a public setting. Corrosion and exothermic reactions occur when a chemical oxidant is used. A suitable site safety plan must be included with the work plan and should be followed. Furthermore, there is a slight potential that the Thompson supply well could be impaired by the oxidizing chemical. Second, contamination was not detected the last three times the Thompson supply well was sampled (November 2012 and 2013 and January 2013). The Thompson supply well depth is significantly deeper than the contamination plumes, pump tests indicate the Thompson supply well is not impacting the plume, and two other supply wells exist so the public health impact may not be as urgent as indicated. The Thompson supply well should be sampled on a more regular schedule to ensure the water is safe for public consumption. Third, DEQ has not been able to obtain access to private property for vapor sampling in the past, so the proposed vapor sampling may not be completed. If vapor intrusion sampling indicates significant human health risks from vapor intrusion, the overall work plan and available money would need to be re-evaluated.

Previously, DEQ has obtained about $340,000 from the LUST Trust Fund, $200,000 in 2012 from the Environmental Rehabilitation and Response Account funds, and a $300,000 RDGP grant in 2013 to install and sample groundwater monitoring wells, to expand the free product recovery system, to do a chemical oxidation pilot test, and to install and operate a full-scale remediation system. Harlowton provided a support letter.

Public Benefits Assessment
The primary benefit of this project will be to reduce or eliminate the threat to the public drinking water supply for Harlowton. Other benefits include shrinking the plume of free product by reducing the volume of free product in contact with groundwater, which in turn will reduce the amount of contamination dissolving into the groundwater. Additional benefits include identifying contaminant sources and evaluating the vapor intrusion risks.

This project will indirectly benefit area residents through preservation of property values by maintaining usable groundwater and will reduce potential exposure to volatilized contaminants. The remediation, as proposed, would require the services of well drillers, electrical and plumbing contractors, a laboratory, and consulting engineers. According to the application, no action could result in a contaminated water supply well. The project is scheduled to begin in July 2015 and be completed in September 2017.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Task 1 Baseline Sampling	$5,102	$0	**$5,102**
Task 2 Install Wells	$37,311	$0	**$37,311**
Task 3 Post Pilot Sampling	$5,102	$0	**$5,102**
Task 4 Evaluate Vapor Intrusion	$13,667	$0	**$13,667**
Task 5 Pilot Test Report	$8,000	$0	**$8,000**
Task 6 System Design	$12,000	$0	**$12,000**
Task 7 Groundwater Sampling	$36,197	$13,381	**$49,578**
Task 8 Install System	$160,260	$0	**$160,260**
Task 9 Operation System	$48,225	$0	**$48,225**
Task 10 Final Report	$10,000	$0	**$10,000**
Task 11 Free Product Recovery	$22,928	$ 0	**$22,928**
Task 12 Operate System	$48,225	$0	**$48,225**
Task 13 Groundwater Sampling	$32,583	$16,995	**$49,578**
Task 14 Monitor/Treat Report	$60,400	$0	**$60,400**
Electrical Costs	$0	$7,200	**$7,200**
Equipment	$0	$6,750	**$6,750**
Administration	$0	$31,768	**$31,768**
Total	**$ 500,000**	**$76,094**	**$576,094**

A detailed but estimated budget is provided, although the remedial alternatives analysis is not complete. Although none of the tasks includes a contingency line item, the contingency is likely included in the units estimate. The analytical costs appear close to actual costs. Chemical oxidation costs are estimated because the remedial alternatives analysis is not complete, and a pilot test must still be completed. The matching funds are not secured; however, this project has obtained matching funds in the past. The matching fund amount is a 13% of the total proposed project cost.

Environmental Evaluation
The short-term environmental impact will likely be to reduce additional loading of the contaminated plume. Based on the assumptions provided in the technical assessment, the long-term impact will be reduced groundwater contamination and information on the vapor intrusion impacts.

For More Information
The project abstract, prepared by the applicant, can be found at:
http://www.dnrc.mt.gov/cardd/ResourceDevelopment/Abstracts/2014/2014RDGProjectAbstracts.pdf

Funding Recommendation
DNRC recommends grant funding of $82,440 upon DNRC approval of the project scope of work, administration, budget, and funding package. This amount includes free product recovery (Task 11), a portion of the proposed groundwater sampling (Task 7), and vapor intrusion sampling (Task 4). Pilot testing of a remedial system was already funded by the 2013 Legislature. DNRC recommends that DEQ reapply in 2016 when the sources of contamination have been identified and if DEQ anticipates having eligible costs not covered by the LUST Trust or Petrofund.

Project No. 13

Applicant Name	Madison County	
Project Name	North Willow Creek Reclamation	
Amount Requested	$ 499,828	
Other Funding Sources	$ 10,000	Applicant
	$ 144,420	Gold Recovery Profit
	$ 20,000	Private Foundations
	$ 30,000	Other State Agencies
	$ 40,000	Businesses
	$ 30,000	Bond Recovery
Total Project Cost	$ 774,248	
Amount Recommended	$ 499,828	

Project Summary
The project proposes to reclaim six abandoned mines in the Pony and Cataract Creek drainages within the North Willow Creek watershed in Madison County and reprocess the waste at Golden Sunlight Mine.

Technical Assessment
The proposed project is on the east side of the Tobacco Root Mountains in the Pony Mining District. Most mining activities were conducted from 1867 through 1877. Mining methods during this time period consisted of placer, lode, and stamp mill. Some mining activities continued into the 1930s.

Mine waste dumps are proposed to be assayed, and those meeting reprocessing criteria will be hauled to the Golden Sunlight Mine for gold reprocessing to assist with reclamation costs. The project is being proposed by Madison County, which is part of a local partnership of non-profit organizations, local governments, state and federal agencies, environmental scientists, and the mining industry.

The applicant completed a phase I activity in which they screened existing state and federal abandoned mine databases to determine feasible sites for reclamation within a reasonable distance from Golden Sunlight Mine. The applicant's final review selected six abandoned mines based on three models that evaluated environmental, wildlife, and landscape criteria. The six mines selected are a combination of patented and unpatented claims consisting of the Bozeman Mine Dump, Lone Wolf Cataract Mine Complex, Ben Harrison, Mountain Meadow, Strawberry/Keystone, and Lower Strawberry/Keystone (mines).

The applicant presented four project alternatives consisting of: 1) no action; 2) contaminated material removal and placement in a repository; 3) in-situ capping of contaminated materials; and 4) remove and reprocess viable mine waste at off-site facility.

Alternative 4 was chosen as the preferred alternative. The applicant chose this alternative as it provides the most benefits with few restrictions on the feasibility of implementation. This alternative also provides for direct and permanent benefits by removing the mine waste off site and preventing further exposure and risk to human and ecological receptors, plus improvements of aquatic life. Per DEQ, the cost estimate for alternative 2 appears to be high and the applicant likely overstates the uncertainty related to

construction of the repository; however, potential long-term legal issues are valid and the potential cost offset from gold reprocessing make the preferred alternative the only financially viable option.

The applicant provided a preliminary engineering design and proposed reclamation plan including post-construction monitoring. The applicant's approach is to sample mine waste piles, soil, Pony and Cataract creeks, and adit drainages to identify the magnitude of heavy metal impacts. Mine waste piles will be assayed for precious metal content and reprocessed, if economically feasible, to generate funding to help support the project. The applicant indicated that the identified source of heavy metal impacts (mine waste piles) will be removed followed by restoration and post monitoring activities to evaluate the reclamation completed. Mine and adit openings will be evaluated and are proposed for limited closure allowing for bat habitat use.

The overall project design and reclamation activities are viable and generally accepted methods to abandoned mine sites; however, there are several issues related to the proposal. The applicant did not submit and has not collected sufficient sample data confirming that the mine waste piles and adit drainages are significantly impacting the proposed project areas. Preliminary investigation and sampling data are limited. Mine waste pile volumes and precious metal content values were estimated to provide an estimated reprocessing profit. No gold assay information was provided. The heavy metal concentrations presented are low and do not show if aquatic or human health risks are occurring. Also, mine adit flows will not be treated or addressed, which will not result in benefits to human or aquatic health. The applicant indicated that additional investigation/sampling will occur during summer and fall 2014. This information was not provided in time to be included in this project evaluation. The data should be provided before the project starts to determine if the proposed reclamation will address significant environmental impacts.

A key part of this proposal is to provide additional funding by reprocessing mine waste piles to extract gold; however, the applicant does not provide sufficient information to determine if this reprocessing will be financially feasible to provide the proposed funding. There was no letter of commitment from Golden Sunlight Mine to accept the tailings. The proposal does not address what will be done with the mine waste that is not economically feasible for reprocessing. It appears that this mine waste will be left in-place and continue to be a sediment and potential heavy metals source. The applicant does not plan to place remaining waste in a repository.

The project goals are to: 1) improve the environment and protect human health by removing hazardous substances in the watershed; 2) augment ecological habitat through enhanced reclamation; 3) administer a landscape-scale clean-up reducing health risks to downstream ecological and human receptors; and 4) promote local economic stimulus through job creation. The objectives of the project are to remove contaminated mine waste, reduce impacts to human and ecological receptors, improve water quality, and reduce sediment into Pony and Cataract creeks. These actions will provide overall improvement to the watershed function.

The applicant presents five tasks to conduct and accomplish the project goals and objectives:

1. Administration and project management;
2. Project preparation and planning;
3. Construction;
4. Reclamation; and
5. Monitoring and maintenance.

The applicant presents a time schedule with work beginning May 2014 and concluding in October 2017. The proposed task schedules and activities appear to be reasonable and achievable. Permit applications deemed necessary are presented with application submittal and anticipated approval dates. Coordination and cooperative efforts are being conducted with private landowners, private organizations, and government agencies to include BLM, USFS, DNRC, and DEQ. The applicant does not explain how the reclamation activities will be documented or how the information will be disseminated. These reporting tasks should be added to the project scope.

Public Benefits Assessment
Removal of mine waste from the proposed locations will lead to certain and long-term public benefits to terrestrial and aquatic habitat. One advantage of the proposal is the plan to remove as much waste as possible from the site instead of building a repository, which would require long-term maintenance. Removal of contamination sources will prevent future impacts to the creeks and watershed; however, if some mine waste piles will not be removed, these benefits could be limited. The project will protect public health, safety, and welfare by removing contamination sources and associated exposure pathways. Indirect benefits would be realized by area residents and downstream residents through improved watershed health leading to increased public use and the resulting economic benefit. This project is not considered urgent as the proposed mine sites are small in nature and the degree of environmental impact has not been completely defined with the information provided. The Strawberry Mine is the only site listed on the DEQ Abandoned Mine Land Reclamation priority list and is ranked at #33.

Another benefit of this project is related to the unique partnership that was formed to address small mine site reclamation. If the project is successful, this type of partnership could serve as a model for future reclamation projects. The project received letters of support from BLM, DEQ, and TU. No letter was received from Golden Sunlight Mine, which is critical to the success of this project, but Golden Sunlight has provided financial support for the project in the past.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Task 1 Administration/Project Management	$55,863	$25,000	**$80,863**
Task 2 Project Preparation and Planning	$37,870	$0	**$37,870**
Task 3 Construction	$343,554	$234,420	**$577,974**
Task 4 Reclamation	$24,278	$15,000	**$39,278**
Task 5 Monitoring/Maintenance	$38,263	$0	**$38,263**
Total	**$499,828**	**$274,420**	**$774,248**

The applicant provided a detailed budget justification narrative and specific unit cost estimates for the proposed tasks and outside funding sources. Grant funds will be used to pay for administration, project management, contingency, construction, reclamation, and monitoring. The budget presents proposed cost estimates and matching funds totaling $274,420, which comprises approximately 35% of the total cost. The applicant is contributing $10,000 to the project. The applicant proposes to sole source work on this project; however, the reclamation work is not considered specialized and a sole source approach likely does not comply with state procurement laws. Multiple matching fund sources are presented, but the following concerns are noted:

- Applicant $10,000 – $5,000 of this is unsecured;
- Gold recovery $144,420 – Total mine waste volume unknown, and no assay data of gold content to base this value on;
- Other state agencies $30,000 – unsecured, proposed grant funds;
- Private business $40,000 – $20,000 unsecured; and
- Bond recovery $30,000 – contingent on final reclamation.

The applicant indicates that some matching funds are grants that will be applied for during the course of the project, but there is no guarantee that they will be approved. The applicant includes a $30,863 inflationary contingency, in addition to a $49,157 contingency for dirt work. Funding shortfalls may occur if some or all of these matching funds are not received; however, contingencies could fill these gaps. The biggest financial concern is the unknown value of the gold recovery, which may significantly impact the ability to complete the scope of work. There is no alternative identified for tailings disposal.

Environmental Evaluation
Environmental impacts associated with this project were reviewed and the majority of all impacts are beneficial based on the information provided. Major benefits to soil, groundwater, surface water, and vegetation will be realized through the reclamation project. Additional socioeconomic benefits to area residents and economy will also be realized. The applicant did not note that there will be minor adverse

impacts on government services, environmental resources of land, water, air and energy, and traffic flows. These impacts will be short-term and can be mitigated through administrative and engineering controls. The benefits to natural resources, human health, and the local economy far outweigh the temporary adverse effects.

For More Information
The project abstract, prepared by the applicant, can be found at:
http://www.dnrc.mt.gov/cardd/ResourceDevelopment/Abstracts/2014/2014RDGProjectAbstracts.pdf

Funding Recommendation
DNRC recommends $499,828 upon DNRC approval of the project scope of work, administration, budget, and funding package. This funding should be contingent on the applicant providing data on how much waste will be removed from the site and hauled to Golden Sunlight and what the plan is for waste left on site. The applicant should also demonstrate that the project can be completed with the proposed funding package. The applicant will also be required to legally procure the reclamation services proposed.

Project No. 14

Applicant Name	Cascade County	
Project Name	Identifying the Fate of Acid Mine Drainage and Sources of Poor Water Quality in the Madison Aquifer	
Amount Requested	$ 441,109	
Other Funding Source	$ 133,486	MBMG
Total Project Cost	$ 574,595	
Amount Recommended	$ 327,322	

Project Summary
Cascade County and the MBMG will complete a hydrogeologic study in the Sand Coulee and Stockett area to evaluate the presence of AMD and its potential to impact the Madison aquifer near Great Falls.

Technical Assessment
The Great Falls Coal Fields included extensive underground coal mines in the area of Sand Coulee and Stockett. The mines were in operation from the late 1870s to mid-1950s and supplied coal for operation of the Great Northern Railway and Anaconda Copper Company. Once the coal mining ended groundwater began infiltrating into the abandon mine workings and chemically reacting with sulfur minerals and oxygen to produce AMD. The contaminated water flows out of the mine portals and springs and then disappears into the alluvium, impacting local streams and aquifers in the area.

The applicant plans to conduct a hydrogeologic investigation to better understand the fate and transport of AMD from historic coal mines. Recent and prior studies indicate that AMD has caused degradation to the local surface waters and the alluvial aquifer. It has also caused probable impacts to the deeper aquifers, including the Madison and Swift formations. A prior study identified and developed a method to trace AMD through the use of sulfur and oxygen isotopes. The study identified potential AMD impacts in the Madison aquifer, which may be exacerbated by improper water well completions. The proposed project builds on this isotope research by using similar methods to identify the location flow pathways of poor water quality. Existing knowledge of the area, subsurface geology, and groundwater impacts have not been detailed enough to identify preferential flows and geochemical processes.

Three goals with objectives and tasks are presented and explained in an organized and understandable manner, although the goals appear to address different (but related) priorities. Goal 1 is to identify the subsurface flow path of AMD discharge from the mines in the Stockett area. Goal 2 is to characterize geochemical mechanism creating poor water quality at several specific wells south and southeast of Great Falls. Goal 3 is to disseminate information to interested parties in oral and written form.

The applicant presents six tasks to meet the project goals:

1. Define hydrostratigraphy through a geophysical survey using gravity or shallow seismic techniques to define the extent of the ancestral channel of the Missouri River;
2. Install monitoring wells using information gained from Task 1 in the buried channel and also in other areas where the Madison formation is poorly defined;
3. Install monitoring wells in areas where geologic and potentiometric maps indicate the possibility of AMD;
4. Drill/core in areas of recorded poor water quality near Great Falls, with cores collected from the Swift and Madison aquifer boundary;
5. Create a geochemical model of AMD/ARD in the study area; and
6. Interpret results from Task 1-5 and disseminate information in several publically available formats such as public presentations and technical reports to both the general public and appropriate regulatory agencies.

The applicant presented five project alternatives, with tracing AMD as the preferred alternative. This alternative was chosen based on the need to define the extent of the AMD and better understand its geochemical characteristics along the flow path. The alternatives analysis is somewhat flawed, as some alternatives address the bad water quality in the specific subdivision impacted, while others are more related to investigation or education. The preferred alternative will assist with evaluating the need for, and effectiveness of a major AMD treatment program in the Stockett area, which would be of great benefit to agencies developing restoration plans in this area. The reviewer agrees that characterization of existing conditions is appropriate in order to design a successful plan to mitigate impacts to both the impacted water users as well as the up-gradient mining district.

The proposed approach to the project is technically sound and uses established hydrogeologic methods as well as innovative research techniques to differentiate between AMD and naturally occurring ARD. As with most hydrogeologic investigations, there is some level of uncertainty about whether these techniques will be successful, but when these efforts are combined with other proposed investigation tasks, the project should accomplish the stated goals. The level of effort between the three goals is not well-defined in the proposal. From the standpoint of assisting with a remediation or AMD treatment approach for the entire Stockett/Sand Coulee mining area, work on Goal 1 should be the highest priority. Goal 2 appears to focus on the investigation of a specific housing development near Great Falls. Goal 3, dissemination of the study information to appropriate state agencies, residents, and other parties is also a critical part of this project, and should be conducted in a thorough manner. Specifically, the applicant should maintain close communication with DEQ to ensure that the study results will assist in the development of a full scale reclamation plan for the Stockett/Sand Coulee mining area.

The project is scheduled to begin January 2016 with background research on existing wells and geochemical analyses, the geophysical survey, and the award of the drilling contract to be completed in 2016. The completion date for the project field work is December 2018, with the final report completed by March 2019. The 36-month long timeframe of this project is a concern, as the ability to implement mitigation strategies will rely on this characterization work. The project is not scheduled to begin until six months after funds would be awarded. It would be feasible to complete the project in significantly less time and efforts should be made to shorten the schedule.

The proposed project is an important initial phase in delineation of groundwater contamination characteristics in this area. The project should assist with differentiating between two contaminant sources—namely AMD and in situ acid rock drainage—and defining its extent and geochemical migration pathways. The results from this proposal will provide crucial knowledge to assist future reclamation or mitigation efforts. A reviewer from DEQ supports the need for groundwater characterization before a full-scale reclamation proposal can be developed to address mining impacts; however, the reviewer also stresses the need to focus primarily on the sources of AMD instead of downstream impacts.

Public Benefits Assessment
The proposed project area has documented AMD impacts to surface water and groundwater from historical coal mining activities. By characterizing the hydrogeology of AMD contaminant transport and delineating its geochemical signature along groundwater flow paths, this project will greatly enhance the current understanding of impacts to the subsurface geologic and groundwater resources, thereby assisting in the development of potential mitigation strategies. Benefits of the project include improved definition of areas of poor water quality, which allows for better management and development of the groundwater resources by homeowners, ranchers, and developers. Project information could be used to develop mitigation strategies to address the current contaminant issues and prevent ongoing contamination of the resources. If no action is taken, neither of the aforementioned benefits would be available. Letters of support were received from the DNRC-WRD and DEQ-AML, documenting agency support for the project.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Task 1 Geophysical Survey	$35,100	$0	**$35,100**
Task 2 Monitoring Wells Flow Paths	$109,770	$0	**$109,770**
Task 3 Monitoring Wells Geochemistry	$156,000	$0	**$156,000**
Task 4 Drill/Core Areas Poor Quality	$73,458	$0	**$73,458**
Task 5 Geochemical Model	$40,329	$0	**$40,329**
Task 6 Reporting	$23,002	$0	**$23,002**
Administration	$3,450	$133,486	**$136,936**
Total	**$441,109**	**$133,486**	**$574,595**

The project budget includes funding for technical personnel, travel, well drilling, miscellaneous equipment/supplies, laboratory analysis, and project administration. Administrative and contracted activity tasks were presented with itemized costs and the cost estimate appears to be reasonable to complete the proposed tasks. However, personnel costs are not broken down by task. The budget requests funding to pay for partial salaries of multiple personnel working on the project (approximately .25 FTE for each of three hydrogeologists, nine months for student interns, and 1.5 months for a geochemist over the 36 month project duration), but did not explain how they would allocate their time to the proposed tasks. Matching funds consisting of university overhead are included at 30% of the requested funds.

Although some alternatives, such as extending municipal water to the impacted subdivision, would solve the problem of poor water quality at the subdivision, significant benefit would be missed in characterizing flow paths and AMD impacts near the source of the mining district. The preferred alternative cost to identify the magnitude and extent of AMD in the area is appropriate when all potential benefits are considered. There is no alternative funding plan for this project.

Environmental Evaluation
Environmental impacts associated with this project were reviewed and were interpreted as beneficial based on the information provided. Major beneficial elements are related to protection of groundwater and surface water resources and related protection of human health by identifying the causes and location of poor water quality in the project area. Other project benefits are to protect the ability to use groundwater for residential development, thereby reducing demand on public water supply systems. Lastly, results of this study can be used by agencies to help direct future reclamation efforts in the Sand Coulee/Stockett mining districts.

For More Information
The project abstract, prepared by the applicant, can be found at:
http://www.dnrc.mt.gov/cardd/ResourceDevelopment/Abstracts/2014/2014RDGProjectAbstracts.pdf

Funding Recommendation
DNRC recommends grant funding of $327,322 upon DNRC approval of the project scope of work, administration, budgeting, and funding package. In light of the importance of Goal 1—the development of a full scale reclamation proposal for the historic Stockett/Sand Coulee mining district, the project scope of work should ensure that appropriate resources are committed to AMD source identification areas with focus on Tasks 1, 2, 3 and 6.

Project No. 15

Applicant Name	Montana Bureau of Mines and Geology	
Project Name	Enhancing the Monitoring Infrastructure to Track Long-Term Changes and Improve Management of the Fox Hills–Hell Creek Aquifer in Eastern Montana	
Amount Requested	$ 499,109	
Other Funding Source	$ 152,228	MBMG
Total Project Cost	$ 651,337	
Amount Recommended	$ 499,109	

Project Summary

This applicant will install five monitoring wells in the Fox Hills–Hell Creek aquifer in the Williston Basin in eastern Montana. The wells will be used to collect water level data and baseline hydrocarbon water quality parameters.

Technical Assessment
The applicant proposes to install up to five monitoring wells and complete one round of baseline water quality sampling. The wells would then be incorporated into the GWAP as part of a long-term and routine groundwater monitoring program. The data collected from the wells will be useful for detecting impacts from hydrocarbon exploration and production as oil development occurs in eastern Montana. Information will also be used to supplement the data inputs into the ongoing groundwater modeling task by MBMG and Idaho National Laboratories. Although the groundwater modeling project is not currently funded at the federal level, data necessary for model input will be available once the project resumes. All groundwater data will be entered into the publically accessible GWIC database and made available for public dissemination and future studies.

The goal of this project is to provide information about: 1) groundwater level and quality trends, and 2) controls on groundwater availability in the Fox Hills-Hell Creek aquifer. The data will be made available to water users and managers in order to promote sustainable development and planning for the resource. The objective of the study is to install up to five dedicated monitor wells in the aquifer within or adjacent to areas of oil and gas development, and where there are concerns about depletion of artesian pressures. Monitoring wells will allow for groundwater level measurements and water quality samples to be collected to provide information necessary to assess the condition of the aquifer.

The following tasks have been identified as necessary to meet the goals and objectives of the proposed project:

1. Identify suitable well sites, arrange access, design and bid drilling;
2. Oversee drilling, well construction and well development, perform drawdown tests and survey sites;
3. Measure water levels and install well monitoring instruments, and sample wells; and
4. Integrate data with existing aquifer data, prepare reports and maps.

Three alternatives were evaluated and include: 1) no action, 2) expanding monitoring using existing wells, and 3) preferred alternative. As part of the grant, well locations will be surveyed, initial water samples and

water level measurements will be collected, and water quality data loggers will be installed. The new wells will be incorporated into the MBMG GWAP for long-term systematic monitoring and reporting.

All data will be interpreted and available to the public. The data will be integrated into the existing MBMG database; compiled and published into interpretive maps of potentiometric surface and water level change; and compiled and published into water quality and groundwater age distribution maps.

The applicant describes a sound monitoring infrastructure project with a groundwater quality monitoring plan, which will provide beneficial results. The necessary permits will be acquired and permission to access private property will be obtained. The 24-month project schedule appears adequate with a proposed starting date of July 1, 2015 and ending date of June 30, 2017.

Public Benefits Assessment
The proposed project will facilitate the collection of long-term groundwater level and water quality data from monitoring wells completed in the aquifer that will lead to a better understanding of aquifer response to extraction (from pumping and flowing wells), oil and gas development, land-use change, and drought. After completion of the RDGP grant, the project will become part of the state-wide monitoring network to ensure that data will be systematically collected in accordance with consistent standards and quality control, and that data will be readily accessible through the GWIC website. The data will be useful in providing a basis for future water quality data comparison. The study does not directly or indirectly conserve natural resources, but provides a means to review such water quality data in specific locations where sampling wells would be located.

The applicant adequately documents increased awareness of potential impacts from oil and gas development. The threat to public health and safety is somewhat localized and limited, with limited risks to private land owners and potential impairment to both public and private drinking water supplies.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Task 1 Identify well sites	$18,146	$0	**$18,146**
Task 2 Drill wells, pump tests	$426,095	$0	**$426,095**
Task 3 Install equipment	$32,793	$0	**$32,793**
Task 4 Data Analysis and Reports	$22,075	$0	**$22,075**
Administration	$0	$152,228	**$152,228**
Total	**$499,109**	**$152,228**	**$651,337**

The applicant requests $499,109 from the RDGP. Personnel costs include salaries and benefits for eight months for key MBMG personnel. During the proposed project schedule, anticipated drilling delays due to weather, access coordination, completion depth, and well construction requirements are considered. Contracted services include drilling and installation of the monitoring wells. Costs were also budgeted for mobilization and well development for a total of $390,000. The new wells will be sampled for major ions, trace metals, stable isotopes, organic constituents, and environmental tracers. Analytical cost is $12,400. Travel will be required for drilling oversight and to measure and sample the wells. An estimated 20 trips between Billings and the sites in eastern Montana will be required, with an expected average of 600 miles per trip and budgeted at $14,640. Each of the new wells will be equipped with a water-level data logger and a specific conductance data logger. Total cost is estimated to be $5,500. Shipping costs are estimated at $750, and consumable sampling supplies are estimated at $2,000.

Indirect costs associated with administration of the grant by Montana Tech is calculated as 30.5% of total direct cost associated with the activity costs and are listed as match funds at $152,228. The applicant has not provided a backup plan if full funding is not received.

Environmental Evaluation
The project consists of monitoring well installation and baseline water quality and water level data collection and will have minimal if any environmental impacts.

For More Information
The project abstract, prepared by the applicant, can be found at:
http://www.dnrc.mt.gov/cardd/ResourceDevelopment/Abstracts/2014/2014RDGProjectAbstracts.pdf

Funding Recommendation
DNRC recommends grant funding of $499,109 upon DNRC approval of the project scope of work, including proposed monitoring well locations, administration, budget, and funding package.

Project No. 16

Applicant Name	Montana Bureau of Mines and Geology	
Project Name	Enhancement of Montana's Manufacturing Growth through Production of Commodities from Remediation of Natural Resource Development Impacts	
Amount Requested	$ 498,171	
Other Funding Source	$ 115,343	Applicant
Total Project Cost	$ 613,514	
Amount Recommended	$ 498,171	

Project Summary
MBMG will investigate the feasibility of resource recovery from the Berkeley Pit waters.

Technical Assessment
This investigation will include characterization and modeling of the current Berkeley Pit water neutralization, bench-scale optimization of selective extraction conditions for metals from the pit water, and pilot-scale testing of metals recovery from the pit water using enhanced ion exchange and electro-winning technologies.

Water quality within the Berkeley Pit has changed since water from the Horseshoe Bend drainage was diverted from the pit in 2003, as required by the Record of Decision for the Butte Mine Flooding Operable Unit. Additional characterization and modeling are required to determine if the proposed high-density sludge–lime precipitation process remains the most practical and appropriate technology for future water treatment of the pit water. The proposed treatment process will concentrate metals within treatment residuals (sludge). Inclusion of enhanced metal and other minerals recovery technologies in the future treatment process could reduce the toxicity and disposal cost of the treatment residuals and, at the same time, produce valuable metal and mineral commodities.

The goals and objectives of the project are:
1. Characterize and model the neutralization curve of the current pit water;
2. Complete bench-scale optimization of selective extraction conditions for metals in the pit water;
3. Design and construct a 50-gallon per day pilot plant to recover selected metals and other minerals from the pit water;
4. Integrate a staged counter current ion exchange contract reactor and a three-dimensional electro-winning system into the pilot plant; and
5. Operate the pilot plant facility for a period of three months to develop the data necessary to design a full-scale production process.

Other recovery technologies, including solvent extraction and reverse osmosis, were considered for evaluation, but ultimately discarded based on various factors including the large treatment areas and high energy requirements.

The following tasks have been identified as necessary to meet the goals and objectives of the proposed project:

1. Characterize the pit water neutralization curve and model chemistry;
2. Evaluate ion exchange absorption of the metal in pit water as a function of pH;
3. Optimize contact reactor configuration;
4. Specify process for metal separation and electro-winning;
5. Identify the individual route to marketable commodity for each successfully separated metal;
6. Assemble the pilot plant;
7. Operate the pilot facility and produce commodity samples; and
8. Produce the final report.

The proposed approach and tasks identified appear adequate and technically feasible. Some of the proposed work, particularly task 1, is similar to work completed by the responsible party during the third Five-Year Review dated June 2011. However, the proposed work would add to the information derived from the requirements of the five-year plan and potentially lead to a more cost-effective solution to the pit water quality issues. In addition, work on task 1 would allow a more timely investigation of future Butte Pit water treatment alternatives. The MBMG has access to Berkeley Pit to collect water samples and install and operate the pilot plant under the monitoring requirements of the Consent Decree. No permits were identified as being required to complete the project as described.

As part of a secondary review of the application, concerns were expressed regarding the lack of detail provided for several of the work tasks. In particular the reviewer did not believe adequate detail was provided to describe the steps needed to move from research results to commercial success. The reviewer suggested a cost-benefit analysis be prepared to identify the threshold volume of water processed versus the quantity of mineral extracted in order to achieve a break even status. This review also identified concerns about the level of involvement by Montana Resources in the proposed project and potential “ownership” issues if the proposed technologies result insignificant economic benefits in the long-term.

The project schedule runs from July 2015 through June 2017. The first year will be used to characterize the pit water and develop and finalize the pilot plant design. The second year will be used to assemble the pilot plant, operate it for three months, and prepare the final report.

Based on recent pit water level projections, state and federal review of the pit WTP will begin in July 2019. Completion of this project in 2017 will provide valuable information for this review and enough time to allow the inclusion of selective metal recovery technology in the design, if deemed appropriate.

Public Benefits Assessment

The project will develop information on treatment technology and processes required to treat pit water and recover valuable commodities (metals) from the Berkeley Pit waters. If the technologies being evaluated and tested are successful in providing adequate water treatment, water from the pit will be available for other uses or discharge to Silver Bow Creek. Reuse or discharge of the treated water will not only conserve a valuable natural resource, but will also protect the health, safety, and welfare of those Montanans living and recreating along Silver Bow Creek and the Clark Fork River. If the metal recovery technology is determined to be technically and economically feasible, construction and operation of the new pit WTP will create new jobs, and the economy of Montana will benefit from a new source of valuable commodities such as copper, zinc, other metals, and gypsum.

At this point in time it is difficult to estimate with any accuracy the number of jobs that may be created or the value of the metals that can be recovered. However, if the project is not undertaken, the required pit WTP required by the Butte Mine Flooding Operable Unit Record of Decision may not be as efficient or effective as possible and will probably not include metals recovery as part of its design.

State Senators Jim Keane and John Sesso as well as a private citizen provided a letter in support of the proposed project.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Task 1 Pit Water Neutralization	$54,493	$16,620	**$71,113**
Task 2 Evaluate Ion Exchange	$40,443	$12,335	**$52,778**
Task 3 Reactor Optimization	$33,082	$10,090	**$43,172**
Task 4 Process Specification	$41,540	$12,670	**$54,210**
Task 5 Commodity Specification	$42,520	$12,969	**$55,489**
Task 6 Pilot Plant Assembly	$152,003	$9,761	**$161,764**
Task 7 Pilot Plant Operation	$94,438	$28,804	**$123,242**
Task 8 Final Report Preparation	$39,652	$12,094	**$51,746**
Total	**$ 498,171**	**$115,343**	**$613,514**

The budget provided in the application did not allocate the budget to specific tasks. The allocation listed above is based on discussions with MBMG during the application review. In light of the nature of the proposed research based project, MBMG characterized some of the estimated costs as best guess estimates. However, the estimated costs to complete the identified tasks appear reasonable and adequate to fund the work proposed. Other than the no action alternative, all other alternatives considered would result in additional research costs with less probability of identifying an effective metals recovery technology.

The match funding identified consists of the indirect costs incurred by the MBMG and calculated at the federal rate of 30.5% associated with the employment of personnel proposed. These matching funds are secure assuming continued funding of the MBMG. No non-state matching funds are included in the budget.

Environmental Evaluation
The environmental impacts of the proposed project are minimal and not significant. Pilot testing will result in short-term impacts within the Berkeley Pit. Analysis of laboratory samples will generate a small quantity of potentially hazardous materials that will require special handling; however, the applicant has extensive experience with the transport and disposal of such material.

For More Information
The project abstract, prepared by the applicant, can be found at:
http://www.dnrc.mt.gov/cardd/ResourceDevelopment/Abstracts/2014/2014RDGProjectAbstracts.pdf

Funding Recommendation
DNRC recommends grant funding of $498,171 upon DNRC approval of the project scope of work, administration, budget, and funding package.

Project No. 17

Applicant Name	Roosevelt County	
Project Name	Kenco Refinery Highest-Priority Cleanup	
Amount Requested	$ 500,000	
Other Funding Source	$ 30,790	Great Northern Development Co Brownfields Funds
Total Project Cost	$ 530,790	
Amount Recommended	$ 150,000	

Project Summary
The applicant proposes cleanup for redevelopment of a former refinery on fee land on the Fort Peck Indian Reservation in Roosevelt County.

Technical Assessment

The former Kenco Refinery property covers approximately 110 acres. Based upon current information, 65 acres are contaminated with petroleum products. Ten tanks used to refine petroleum are present on the property and contain historical refining liquids. Soils and groundwater are known to be contaminated with petroleum products from operations and historical spills. The refinery began operation in 1962 and operated until 1985; the refinery property has remained vacant for the past 30 years. The property was recently purchased by a private individual who plans to develop it as an energy campus. Cleanup would include removal and disposal of petroleum contaminated waste and equipment, removal and disposal of contaminated soil, and design of a free-product recovery system.

The extent of contamination is well documented in an EPA Brownfields funded phase II environmental site assessment from April 2013. Natural resources affected by the contamination include local groundwater, air, and soils. With the exception of the jet fuel plume that extends beyond the southern boundary of the property onto BNSFR property, the investigation data suggest the contamination is limited to the property boundary. Groundwater is believed to move to the southwest. Subsurface petroleum contaminant transport is very slow because of the flat groundwater gradient and tight, thick clays.

The project goals as stated in the grant application are:

- Eliminate direct exposure risks to refinery products;
- Prevent further additional releases and contamination; and
- Facilitate future recovery of spilled jet fuel for recycling or reuse.

The applicant presented three alternatives to meet these project goals: no action, highest priority cleanup, and more comprehensive cleanup based on the phase II environmental site assessment. The applicant's preferred alternative for this phase of the project is to do highest priority cleanup and consists of the following elements:

- Task 1 - Prepare implementation plan and bid specifications;
- Task 2 - Remove and dispose of the contents of the remaining tanks on the property.
- Task 3 – Excavate and dispose of contaminated surface soil from four areas on the property; and
- Task 4 - Investigate free product mobility and design a free-product recovery system.

The grant application states that the cleanup plan will have to be approved by the Fort Peck Office of Environmental Protection. The property is on fee land on the reservation and the Office of Environmental Protection has stated that it is not under their jurisdiction. Based on the Tribe's statement, it is understood that DEQ could exercise its authority on fee land on the reservation. The Kenco Refinery is ranked a high priority State Superfund (CECRA) facility, but DEQ is not actively working on it.

Several major issues are associated with the proposal. Foremost, the project sponsors are proposing to clean up the facility using public grant funds when a search to identify potentially liable persons has not been performed. Tesoro and BNSFR operated at the facility and would likely be identified as potentially liable persons, as would the current landowner. When potentially liable persons for the facility are identified, it could be remediated using private funding instead of public funding.

Task 2 - removal of the tank contents—is an urgent matter, and may be appropriate to fund as an interim measure. Three of the ten tanks contain Resource Conservation and Recovery Act characteristic hazardous wastes. Removal of the tank contents would prevent further contamination and prevent public (trespasser) exposure to the tank contents. Identifying potentially liable persons and necessary enforcement actions could take years, and these tanks should be addressed before that timeframe. It is possible that if Roosevelt County conducts this task, the county could incur Superfund liability for the facility. It is unclear at this time whether DEQ can provide oversight of tank contents removal.

Task 3 - excavation of surface soil—is not recommended for funding. Since the refinery is a CECRA facility, in order to protect public health, safety, welfare and the environment, any work at the facility should be performed with DEQ oversight. DEQ Remediation Division oversight under the State VCRA

would be the appropriate program to ensure the cleanup protects construction workers, the public, and future workers at the proposed energy campus. It would also protect Roosevelt County from incurring Superfund liability at the facility. Roosevelt County would need to start the voluntary cleanup process by preparing a VCP-EA. After preparation of the EA, the county would prepare a cleanup plan. DEQ may or may not approve Task 3, the removal and disposal of the top 2.5 ft of soil at the facility, as part of the cleanup plan. The previous Brownfields investigations will provide a good starting place for the preparation of a VCP-EA and cleanup plan.

Finally, the free product recovery system design, proposed under Task 4, will have to be constructed on BNSFR property. Permission to work on BNSFR property is typically difficult to obtain and can take a minimum of several months of time to secure. Permission from BNSFR to perform the investigation and construction work on its property should be obtained before money is spent on investigation or design of the free-product recovery system. Funding has not been secured to construct the system and does not appear to be an immediate concern of the applicant. If task 4, design of the free-product recovery system, is completed, but the construction funding and permission to access the area are not secured, these grant dollars would not be wisely spent.

Public Benefits Assessment

The project has potential for public benefits. The project may be the first step in eventual development of the property for use as an energy campus and would partially rehabilitate a petroleum-contaminated property and stimulate the local economy, including creating jobs at the energy campus. However, the work should be conducted with DEQ oversight to ensure protection of public health, safety, and welfare and the environment and to protect Roosevelt County from Superfund liability. If the proposed plan is implemented without oversight, the potential for vapor intrusion into buildings will be a major concern since the majority of the contamination will not be removed. Risk assessments have not been performed for the facility; however, it is unlikely that the proposed cleanup described in this grant application would address the potential risk posed by subsurface disturbance by construction or utility workers.

The overall impact of no action would be minimal. Further contamination may occur if the current tanks fail, the energy campus would not be constructed, and visitors to the facility may be exposed to petroleum-contaminated surface soil and vapors. If the facility was remediated to a level acceptable for redevelopment, the benefits of this project would be directly realized by people employed at the energy campus. Indirectly, this project would benefit Montanans by increased tax revenue.

The project has received several letters of support from the funding agency, the county, Senator Jon Tester, and former Governor Brian Schweitzer.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Task 1 Cleanup Plan and Bid Specifications	$17,275	$0	**$17,275**
Task 2 Removal and Disposal of Tank Contents	$159,740	$0	**$159,740**
Task 3 Excavation and Disposal of Surface Soils	$260,998	$0	**$260,998**
Task 4 Extraction Testing and Design for Liquid Petroleum Removal	$12,293	$30,790	**$43,083**
Task 5 Cleanup Report	$14,970	$0	**$14,970**
Task 6 Project Management	$24,803	$0	**$24,803**
Administration	$9,921	$0	**$9,921**
Total	**$500,000**	**$30,790**	**$530,790**

Budget details appear to be appropriate for cost estimating purposes. Match funds were specifically allocated for task 4, design of the product recovery system. Concerns regarding technical components of the tasks make it impossible to determine if the grant funds requested would be adequate to complete the proposed work. DNRC recommends funding of $150,000. The applicant could use the funding to start preparation of a VCP-EA and plan. If the county determines that they would like to embark on the urgent task of tank contents removal, funds should be adequate to remove and dispose of the tank contents.

Roosevelt County could then apply to the RDGP planning grant program in spring 2015 for funds to prepare the VCP-EA. DNRC offers up to $50,000 for planning projects. This approach would allow the applicant to proceed with an interim action on an urgent task, and move towards remediation and then redevelopment of the facility while protecting public health, safety, welfare, and the environment.

Environmental Evaluation
If this project is implemented without appropriate oversight, there could be long- and short-term environmental and human health impacts. Part of the proposed project would prevent further contamination and another would limit surface contaminant exposure to visitors at the property which are generally only trespassers. The preferred alternative does not address the majority of the current soil or groundwater contamination. Since funding is only requested to investigate and design a free-product system and not requested for building a free-product recovery system, there is no environmental impact from that task. The DEQ needs to be consulted about this project because the application incorrectly stated that Fort Peck Office of Environmental Planning will be the regulatory agency, which has indicated it does not have jurisdiction at this facility.

For More Information
The project abstract, prepared by the applicant, can be found at:
http://www.dnrc.mt.gov/cardd/ResourceDevelopment/Abstracts/2014/2014RDGProjectAbstracts.pdf

Funding Recommendation
DNRC recommends grant funding of $150,000 to remove tanks at the facility and prepare a VCP-EA and cleanup plan, and contingent on DNRC approval of the project scope of work, administration, budget, and funding package. Before undertaking removal of the tank contents, Roosevelt County should determine whether they are willing to take on risk of being identified as a potentially liable person for the facility.

Part 2. Other Projects Submitted for Funding Consideration

Project No. 18

Applicant Name	Central Montana Regional Water Authority	
Project Name	Water Resources Monitoring for the Musselshell-Judith Rural Water System	
Amount Requested	$ 441,848	
Other Funding Source	$ 61,000	Applicant
Total Project Cost	$ 502,848	
Amount Recommended	$ 0	

Project Summary
The CMRWA will monitor groundwater and test the Madison aquifer in the Judith Basin of central Montana.

Technical Assessment
The applicant proposes to develop a regional water system to serve Judith Gap, Harlowton, Ryegate, Lavina, Broadview, Roundup, Hobson, and Melstone using wells in the Madison aquifer. Madison aquifer hydrogeology in the Judith Basin is less clearly understood than in other parts of the state. The CMRWA has demonstrated the potential of the Madison aquifer as a relatively high-volume potable water source in the Judith Basin with a test well near Garneill. The CMRWA is proposing eventual development of a wellfield called the Ubet wellfield at the Garneill location.

Existing users of water from the Madison and Kootenai aquifers have expressed concerns about the potential impacts of further Madison aquifer development in the Judith Basin. Some of these concerns have surfaced as part of the applicant's water rights permitting efforts. These concerns have also been raised by other state water management efforts, including the Lower Missouri Basin Advisory Council work on the State Water Plan and MBMG studies on the sustainability of water supplies from the Madison aquifer. This project has implications for development of the regional water system.

Therefore, the CMRWA proposes to monitor groundwater and test the Madison aquifer, to install and monitor a well in the Kootenai aquifer, and inventory and monitor springs. The proposed monitoring activities will provide CMRWA and other stakeholders with baseline data on the physical and chemical characteristics of the Madison aquifer in the Judith Basin.

The applicant proposes to complete nine activities, all of which are intended to directly or indirectly aid in acquiring baseline hydrogeologic data for the Madison aquifer in the Judith Basin. The project goals are to: 1) use water resource monitoring to assist water users of Judith Basin; 2) share useful water resources data with the community; 3) improve the understanding of Judith Basin water resources; and 4) provide information to assess impacts of climatic trends.

The project objectives are to:
1. Determine magnitudes and trends of water resources parameters;
2. Develop and maintain an accessible data archive;
3. Periodically analyze, report, and hold meetings to share data and inform the public;
4. Incorporate regional climate information into local forecasts;
5. Establish aquifer parameters and boundaries for the Madison and Kootenai aquifers;
6. Identify source aquifers to area springs;
7. Characterize the discharge of Big Spring;
8. Coordinate monitoring plan activities with the MBMG; and
9. Develop public/private partnerships to facilitate monitoring plan activities.

The applicant presents nine tasks to meet the project goals:

9. Complete a spring inventory;
10. Conduct a long-term Madison aquifer pumping test;
11. Construct a Kootenai aquifer monitoring well;
12. Install five groundwater level sensors in existing Madison aquifer wells in the Judith Basin;
13. Publish water level and water quality data on the CMRWA website;
14. Establish a flow metering system at Big Spring;
15. Install a meteorological station;
16. Operate the above monitoring sites for a three year period; and
17. Prepare a monitoring report based on the data collected over the three year monitoring period.

The objective of this baseline data collection would be to guide the CMRWA in developing and managing the operation of their proposed Ubet wellfield and to aid Judith Basin water managers and other stakeholders in making decisions about management of the Madison aquifer. Groundwater level monitoring would continue after the completion of this project (to be managed by CMRWA), as will flow monitoring at Big Spring. The Kootenai well would also be maintained by CMRWA for further monitoring following the project. The applicant indicates that after the end of the proposed project, monitoring data would continue to be made publically available through the CMRWA website.

The technical design of the proposed project is sound and the preferred alternative will meet the project goals. The project would be started in July 2015 and completed in December 2018, which appears to be an adequate timeframe. Data collected would be made publically available through the CMRWA's website and possibly through the MBMG GWIC. A final report would be completed and a public meeting would be held.

As a potential alternative, the applicant considered installation of a shallower Kootenai well at a different location, but concluded that locating it away from the Ubet wellfield would not provide conclusive data on aquifer connectivity at the wellfield.

A secondary review was provided by the DNRC Water Management Bureau Hydrosciences Section supervisor. The secondary reviewer offered potentially more cost-effective alternatives to activities 2 and 3. These alternatives consisted of conducting geologic structure evaluations near several discharge locations (in lieu of activity 2) and installation of shallower wells near some discharge locations (in lieu of activity 3). These alternatives would be effective and beneficial to the broader understanding of the Madison aquifer in the Judith Basin, but would be less useful for development of the Ubet wellfield. Another reviewer was concerned that the work plan was written in terms of an engineering project, not a hydrologic investigation, and that the costs seem high because of the engineering component for tasks that would not normally require engineering.

Public Benefits Assessment

The proposed project will establish groundwater monitoring infrastructure and a baseline data set that would result in improved understanding of the Madison aquifer and potentially its relationship to other aquifers and springs in the Judith Basin. This dataset would provide a useful reference point prior to development of the Ubet wellfield and other Madison groundwater developments in the Judith Basin. Continuation of monitoring after project completion (as is proposed) would further magnify the value of the project by providing a large, long-term data set. These publically available data could be utilized to inform decision making by water managers, citizens, and industry with surface and groundwater interests in the Judith Basin, and could provide a substantial foundation for future studies. A more detailed understanding of the Madison aquifer system in the Judith Basin could lead to more efficient use of groundwater and associated surface water (spring) resources.

The aforementioned benefits would be concrete and directly attributable to the proposed project. The applicant also attributes many benefits of developing CMRWA’s proposed Mussleshell-Judith Rural Water System to this monitoring project. Although the proposed monitoring project would provide valuable monitoring infrastructure, which would aid CMRWA with water rights permitting and wellfield design for the water system, the proposed project would not itself provide the numerous stated benefits of the water

system. However, it would ensure that monitoring infrastructure was in place prior to and during operation of the water system, if it is completed.

The applicant has received a letter of support from the regional manager of the DNRC Lewistown Water Resources Regional Office, stating the DNRC's support for the proposal due to their interest in having better science on which to base water-management decisions in the Judith Basin. DNRC's sentiment was reiterated by the secondary reviewer. The applicant also received a letter of support from the Fisheries Division Administrator for FWP, who stated FWP's interest in an improved understanding of the Madison aquifer in the study area. The applicant has discussed the project with the MBMG and indicated they have received MBMG's verbal support.

Financial Assessment

Budget Item	RDGP Grant	Match	Total
Task 1 Spring Inventory	$47,388	$0	**$47,388**
Task 2 Pumping Test	$168,885	$0	**$168,885**
Task 3 Kootenai Well	$121,786	$0	**$121,786**
Task 4 Groundwater Monitoring	$29,590	$0	**$29,590**
Task 5 Website	$0	$5,000	**$5,000**
Task 6 Big Spring Flow Metering	$38,000	$0	**$38,000**
Task 7 Meteorologic Station	$22,399	$0	**$22,399**
Task 8 Monitoring O&M (3 years)	$0	$36,000	**$36,000**
Task 9 Report and Public Meeting	$13,800	$0	**$13,800**
Administration	$0	$20,000	**$20,000**
Total	**$441,848**	**$61,000**	**$502,848**

The applicant has requested $441,848 from the RDGP. Costs for most activities are broken down into engineering costs and construction costs and are explained in detail in the application. Cost estimates are based on vendor quotations and engineering experience and appear generally reasonable. The applicant plans to purchase instead of renting equipment for the pumping test. The cost effectiveness of this plan should be further evaluated. Subcontractor, equipment, analytical and maintenance costs are included under construction costs. Activities 2, 3, and 4 include a contingency cost of 15%, which is reasonable considering the uncertainty associated with these activities.

Administration and other matching funds will be provided by CMRWA, which has received a $300,000 direct appropriation from the previous legislature. The applicant estimates grant administration costs to be $15,000 to $20,000 and plans to pay for grant administration with CMRWA matching funds. Administration costs were not included as a line item in the application but have been added to the above table. The applicant has not provided a backup plan if full funding is not received.

Environmental Evaluation

The project consists of monitoring well installation and baseline water quality and water level data collection, which will have minimal if any environmental impacts. Installation of monitoring equipment at Big Spring will require a Stream Protection Act (124) Permit, which the applicant will apply for in 2015.

For More Information

The project abstract, prepared by the applicant, can be found at:
http://www.dnrc.mt.gov/cardd/ResourceDevelopment/Abstracts/2014/2014RDGProjectAbstracts.pdf

Funding Recommendation

DNRC does not recommend grant funding for this project. The project will be funded from other sources.

Project No.19

Applicant Name	Mile High Conservation District	
Project Name	Conifer Encroachment Reduction in Southwest Montana	
Amount Requested	$ 421,221	
Other Funding Sources	$ 3,205	Applicant
	$ 12,402	Local organizations
	$ 380,000	USFS
	$ 750	MSU (equipment)
Total Project Cost	$ 817,578	
Amount Recommended	$ 0	

Project Summary
The project is to remove conifers encroaching on riparian areas and to train wildland firefighters to removed conifers using prescribed burning.

Technical Assessment
This project includes two separate but related activities focused on removing conifers from the study areas across three watersheds with a monitoring component to assess success. The first activity focuses on physically removing conifers and restoring the vegetation to historic/reference conditions on 1,000 acres across the project area. The second activity comprises wildland fire training and application of the training to conifer removal using prescribed burning to create a better trained firefighting corps. The alternatives considered included a no action alternative, three single component alternatives (mechanical treatment, burn treatment, or floodplain and riparian restoration), and the preferred alternative to combine all three components and apply them judiciously according to the site environment.

The project goals target areas where conifer encroachment has occurred, and include:
1. To return vegetation and wildlife habitat to more historic conditions using prescribed burning, mechanical tree removal, and passive riparian restoration;
2. To define the baseline conditions (pre-treatment) and document treatment effectiveness; and
3. To develop a cost-effective program to expand wildland fire management at the state level.

Based on the applicant's analysis, grassland habitats and aspen forest and woodland were more prevalent in the study areas prior to fire suppression. Current conditions suggest that conifer forest and sagebrush habitats have replaced grasslands and aspen groves. It is reasonable to allocate different treatments depending upon the site conditions, but there does not appear to have been much pre-project planning or prioritization of areas for treatment or treatment type.

Monitoring is included in the project proposal but no specifics are provided as to what the vegetative community goals would be other than an overall reduction in conifer dominance. The grant suggests a monitoring program and plan would be developed in concert with a professor from MSU during the first year of the project. It is difficult to assess whether or not the project is likely to be successful without having the terms of success defined at the onset of the project. A similar study that used mechanical removal to regenerate aspen groves in California found that measurable effects were not visible for up to four years post-treatment, which makes the two-year timeline proposed for this project, including post-treatment monitoring, seem too short to assess the project (Jones et al. 2005). The grant proposal states that the Mile High CD will attempt to find additional funding for longer-term monitoring. If funding is not secured for additional monitoring, the ability to assess project success will be very limited.

The project would provide training to approximately 20 volunteer firefighters. Although no new jobs would be created, the project states that additional training would benefit trainees in that they could apply for jobs in forestry or fire management. Wildland fires have become more severe and the fire season has been extended across the West. There would be a local benefit to enhancing the training of the rural firefighters in and around the project area.

Concerns identified by the secondary technical reviewer, a range science professor at MSU, included that the project may be too large in scale and too short in duration. Treating 1,000 acres out of a total of almost 70,000 would spread the potential benefits too thinly to be measurable. Targeting the smallest of the three watersheds might allow for a more comprehensive evaluation of the methods employed and how they compare to one another. The secondary reviewer also stated that monitoring would need to extend for a minimum of five years to be able to determine if the project goals were attained and sustainable. He suggested examining soil infiltration and erosion rates as alternative measures of treatment success.

The Mile High CD would administer the project with assistance from the coordinator for the Jefferson River Watershed Committee. Agency and contracted scientists would provide the technical oversight. Permits are required for work in stream channels and for the prescribed burns. These will be secured by September 2016. Permission to access private land and monitoring locations is also needed. The project is expected to take 24 months, which appears to be sufficient for the training and physical treatments, but is likely to be too short a duration for meaningful monitoring.

Public Benefits Assessment
Conifer encroachment is a recognized threat to watershed and to grassland habitats in Montana and across the West resulting from past fire suppression policy.

Understanding the effects of removing conifers using the proposed methods in the study areas would be beneficial to the public in several ways. If left uncontrolled, continued increases in conifer habitat cover will lead to loss of valuable wildlife habitat and potentially more severe and more extensive wildfires within the study area. Assessing the efficiency of the removal methods presented in the proposal would allow management agencies to fine-tune their approaches of when to use mechanical removal versus prescribed burning.

The Mile High CD proposes to treat 1,000 acres across the Brown's Gulch Headwaters, Brown's Gulch-Sheep Gulch, and Big Pipestone watersheds. This represents an extensive project area and incorporates lands under the management of the USFS, some state lands, and private lands. Matching funds from the Forest Service would extend the acreage treated on forest service lands. The three watersheds being considered in this proposal cover approximately 69,280 acres. If the project treats 1,000 acres across all three watersheds this would constitute 1% of the watershed area. The example program provided from the Oregon Department of Forestry used an approach to target at least 25 percent.

The applicant and technical advisors adequately document the importance of reducing conifer extent in watersheds historically dominated by grasslands. However, the benefit to public health and safety from this level of treatment is minimal, because of the limited geographic scope. Individuals whose lands were adjacent to or included in the treatment areas would directly benefit from the project, but it is unlikely that benefits would extend beyond the areas treated. The studies as presented would not substantially reduce the level of conifer encroachment across these three watersheds.

Although the study approach appears scientifically sound, there is a degree of uncertainty that a single control event or removal would have long-term effects on the vegetative community. The project benefits analysis suggests that the treatment should last for 15 to 20 years. However, there is no intent to monitor the project beyond the current project timeline of two years unless additional funding is secured. Other stated benefits seem to stretch the influence of this 1,000-acre project to the state as a region although there are no stated plans for long-term effectiveness assessment that would allow the project sponsor to apply the methods used in this project to other areas.

Financial Assessment

Budget Item	RDGP grant	Match	Total
Task 1.1 Outreach	$7,000	$8,866	**$15,866**
Task 1.2 Develop MOUs	$7,100	$0	**$7,100**
Task 1.3 Fire Crew Training	$15,526	$2,047	**$17,573**
Task 2.1 Identify Feasible Project Sites	$1,750	$0	**$1,750**
Task 2.2 Project Site Reconnaissance	$1,500	$0	**$1,500**
Task 2.3 Develop Forest Treatment Plans	$1,500	$250,000	**$251,500**
Task 2.4 Develop Riparian Restoration Plan	$6,090	$0	**$6,090**
Task 3.1 Permitting/Access/Plan Review	$4,500	$0	**$4,500**
Task 3.2 Implement Forest Treatments	$229,485	$130,000	**$359,485**
Task 4 Implement Riparian Restoration	$30,941	$0	**$30,941**
Task 5 Develop Monitoring Plans	$14,356	$0	**$14,356**
Task 6 Monitoring, Analysis, and Reporting	$68,605	$750	**$69,355**
Task 7.1 Public Meetings	$1,400	$4,694	**$6,094**
Task 7.2 Reporting and Outreach	$18,660	$0	**$18,660**
Administration	$12,808	$0	**$12,808**
Total	**$421,221**	**$396,357**	**$817,578**

The applicant requests $421,221 to fund salaries, wages, fringe benefits, field supplies, travel, communication, and contracted services to complete conifer removal, wildland fire training, project monitoring, and project administration. Some of the grant amount is planned to be contracted with DNRC and MSU staff. DNRC staff would not be eligible for reimbursement through the grant. A wetland contractor would be hired to design and implement riparian restoration and monitoring and contracted foresters would implement treatments. The USFS plans to contribute $380,000 for similar projects on adjacent lands. The applicant will contribute an in-kind match of $3,205 for meetings on the project. The amount allocated to forest treatments is approximately four times the average costs per acre for similar projects.

The applicant has not provided a backup plan if full funding is not received. The applicant did not provide a breakdown or prioritization of objectives, such as limiting the treatment area to one watershed, if reduced funding was obtained. An alternative to use other contractors for the forest treatments or solicit competitive bids was not proposed. Approximately 51% of proposed project costs comes from state funds (RDGP, MSU), 48% from federal funds (USFS), and less than 1 % is funded by the applicant.

Six letters of public support were included in the grant proposal. Letters were received from the USFS, DNRC, BLM, Mule Deer Foundation, and MSU's Department of Animal and Range Science.

Environmental Evaluation

The project proposes treating areas in conjunction with treatments on federal lands. It is likely that such treatments on the USFS lands would require a NEPA analysis before the Beaverhead-Deerlodge National Forests could initiate the projects or commit the matching funds. The grant proposal did not state whether NEPA analysis would be required, how it would be funded, or if it had been completed.

For More Information

The project abstract, prepared by the applicant, can be found at:
http://www.dnrc.mt.gov/cardd/ResourceDevelopment/Abstracts/2014/2014RDGProjectAbstracts.pdf

Funding Recommendation

DNRC does not recommend grant funding for this project as proposed. The project design is too vague to assess whether or not it would be capable of meeting the stated goals, the area proposed to be treated is so small that the project would have no measurable effect, and the cost estimates for the proposed work are extremely high compared to similar projects.

CHAPTER III
Status Report of 2005–2013 Projects

This chapter briefly summarizes the status (as of October 30, 2014) of active projects and projects completed since preparation of the January 2013 Legislative Report. Projects are grouped according to the year in which they received legislative approval; within each grouping, projects are presented in the order of their relative funding priority.

Projects Approved by the 2013 Legislature

1. Missoula County / Kennedy Creek – Lost Cabin and Nugget Mine Reclamation
Missoula County and its partners have completed contractor selection for the Kennedy Creek Mine reclamation project. The Lost Cabin and Nugget Mines will be reclaimed. The reclamation construction, including construction of a repository, will be completed in 2015. The project is expected to be completed by the end of 2015.

2. Montana DEQ - AML Bureau / South Fork Lower Willow Creek – Black Pine Mine Reclamation
The DEQ will advertise publicly for bids on construction of the BPM repository in October 2014. Construction is anticipated to start in 2015. Funds from this grant will be used to remove contaminated materials on USFS and private lands downstream from mine property and reclaim these areas. The project grant agreement is being drafted in fall 2014. The project is expected to be completed by early 2016.

3. Philipsburg, Town of – Tailings Contaminated Sludge Disposal from Decommissioned Wastewater Lagoons
Tailings have contaminated sludge in the Philipsburg wastewater lagoons. DEQ has agreed to use the lagoon sludge at the BPM reclamation site. This project is not yet under contract with DNRC. The community is exploring cost-effective alternatives to addressing the closure of the lagoons. After evaluating these alternatives, Philipsburg will develop a schedule for sludge removal based on the ability to use one cell at a time in the system. Philipsburg expects that sludge removal will begin in spring 2015 and the project will be complete by the end of 2016.

4. Montana DEQ - LUST - Brownfields / Harlowton Petroleum Product Delineation and Mitigation
Petroleum contamination has impacted groundwater beneath a large part of Harlowton and threatens the town's public water supply well. This project to investigate and mitigate petroleum contamination has included product recovery and monitoring of groundwater. DEQ plans to continue product recovery and conduct a chemox remediation system pilot test. The project is expected to be completed by the end of 2015.

5. Confederated Salish and Kootenai Tribes – Elmo Cash Store and Joseph Allotment Cleanup Implementation
The tribe excavated contaminated soil at the Joseph Allotment and Elmo Cash Store property in fall 2013. The contaminated soil is being land-farmed. Confirmation sampling has been conducted. The project is expected to be completed by the end of 2014.

6. Powell County – Milwaukee Roundhouse Recreational Subarea Interim Cleanup Action, Phase 2
Powell County is removing a temporary repository of lead and arsenic contaminated soils from the Milwaukee Roundhouse site. The county has prepared bid documents and hired a contractor in fall 2014. The removal work is anticipated to be completed in winter 2015.

7. Missoula County – Sawpit Creek and Ninemile Creek Reclamation
Missoula County and its partners constructed a new stream channel for Sawpit Creek in the Ninemile drainage in summer 2014. Revegetation will continue in 2015. The project is expected to be completed by the end of 2015.

8. Malta, City of / Former Malta Airport Facility – Herbicide/Pesticide Cleanup
Malta has revised the VCP-EA and prepared the remediation proposal with DEQ oversight. Malta is now addressing permitting issues regarding the disposal of the contaminated material. Project construction will likely take place in 2015.

9. Cascade County CD – Barkers-Hughesville Reclamation Area Fish Barrier
This project is to install a fish barrier on Belt Creek near the Barker-Hughesville Superfund site. Bids for the work came in substantially higher than expected. The CD and project partners are seeking additional funding sources and hope to construct the project in 2015.

10. Butte-Silver Bow Consolidated City-County Government Planning Department – Butte Mining District: Reclamation and Protection Project Phase 4
Butte-Silver Bow has started work on this project. A portion of the phase 4 funds were reallocated during contracting to complete phase 3 work which came in more expensive than expected. All phase 4 goals will still be met with the remainder funds. The rebuild of the Orphan Girl decline tunnel has been designed and parts have been ordered for construction. The installation is expected to take place late in 2014. The work will be completed in 2015.

11. Ryegate, Town of/ Former Ryegate Conoco Groundwater Remediation
Ryegate installed fluid injection wells in March 2014 and installed the remedial system in summer 2014. Ryegate planned to start operation of the remedial system later in summer. Baseline groundwater monitoring samples were collected in March 2014. The remediation system is now operating. The project is expected to be completed by the end of 2017.

12. Cascade County Commission – County Shops Continued Remediation of Wood Treatment Preservatives
Cascade County sold the county shops site in June 2014. The new owner is exploring options for how to remediate the site and has been talking with DEQ about their options. In summer 2014 the new owners requested that EPA perform a phase 1 environmental site assessment on the property. EPA contractors were working on the phase 1 assessment. EPA will likely conduct a phase 2 assessment as well. Cascade County has not yet indicated if they will stay involved with the cleanup and try to make the grant funds available to the new owners.

13. Butte-Silver Bow Local Government Planning Department – Irrigation Project for Butte Acidic Mine Waters
Butte-Silver Bow acquired the equipment needed to repair and upgrade the water treatment system including increased pumping capacity and automated data monitoring devices. Butte-Silver Bow started to operate the system in summer 2014, and will continue in 2015. Butte-Silver Bow has analyzed existing groundwater data, but no pump testing has been performed pending the outcome of regulatory issues related to releases of untreated groundwater that may impact Silver Bow Creek.

14. Custer County Conservation District – Addressing Cumulative Effects on the Yellowstone River through BMP Development and Implementation
The Yellowstone River CD Council is preparing a cumulative effects study on the Yellowstone River that will be the final step in preparing locally-driven BMP for activities on the river. The council has been holding meetings with CD administrators and others to engage them in the process. The project is expected to be completed in March 2016.

15. Ruby Valley Conservation District – Upper Missouri Headwaters River/Flood Hazard Map Development
This project to produce channel migration maps for a large area in the upper Missouri Headwaters is not yet under contract with DNRC. Ruby Valley has begun developing an RFP to hire a contractor and outreach to stakeholder groups within the headwaters region. This project will be contracted by early 2015 and the project will start in spring/summer 2015.

16. Montana DEQ Prevention and Assistance Division, Water Quality Planning Bureau, Monitoring and Assessment Section – Baseline Groundwater Sampling in Areas of Anticipated Oil and Gas Development
In 2014, DEQ planned for the start of this groundwater monitoring project by selecting wells to be sampled. Domestic well sites were chosen based on the likelihood of influence from oil and gas development. DEQ selected MBMG to perform all well testing and to collaborate in the data analysis and reporting. DEQ has decided sampling parameters and selected a laboratory to perform data analysis. DEQ and DNRC are working on the grant agreement. The project is anticipated to be completed in 2016.

17. Yellowstone Conservation District – Lower Pryor Creek Stabilization and Restoration
This restoration project is not yet under contract with DNRC. The CD has hired a contractor to consider options for addressing the remaining fish barriers (a rock shelf near the I-94 overpass and a privately owned diversion upstream of the I-90 overpass). The CD has been working with the landowner and preparing preliminary designs and cost estimates for construction. The planning is expected to be complete in fall 2014, with project construction in 2015.

18. Montana DEQ–AML Bureau – Sheridan County 2012-2013 Reclamation
This project was contracted with DEQ in January 2014. DEQ bid the project to reclaim subsidence features at several coal mines in spring 2014. Reclamation construction occurred in summer 2014. DEQ is working on a final report and the project is expected to be closed out late in 2014.

19. Montana DNRC–WRD – State Water Projects Bureau / Deadman's Basin Diversion Dam
DNRC bid the construction for this project in summer 2014. Construction bids came in much higher than available funding. DNRC plans to re-advertise in January 2015 and begin construction in summer to early fall 2015. The project is expected to be complete in late fall 2015.

Projects Approved by the 2011 Legislature

1. MT Board of Oil and Gas Conservation – 2011 Eastern District Orphaned Well Plug and Abandonment, and Site Restoration
Plugging operations started in October 2013 but could not be completed because of winter weather. Work continued in 2014. As of fall 2014, four wells have been plugged and two pit/surface restoration projects have been completed. Work will be completed in winter 2015.

2. MT Board of Oil and Gas Conservation – 2011 Northeastern District Orphaned Well Plug and Abandonment, and Site Restoration
Plugging operations started in July 2014 on six well sites. Surface restoration was completed immediately after plugging these wells. Plugging operations started on the remaining 14 sites in this project in late September 2014. Work will continue in winter and spring 2015.

3. Ruby Valley Conservation District – Alder Gulch Phase 1 Improvement
This reclamation project on Alder Gulch addresses dam safety at the Horseshoe and Kid's fishing ponds near Virginia City. The project was delayed due to permitting issues and staff changes at the Montana Heritage Commission, the land owner. A site investigation and preliminary designs have been completed. Construction will begin spring 2015 and the project will be complete by the end of 2015.

4. MT Department of Environmental Quality – Forest Rose Mine and Mill Site Reclamation
This mining reclamation project was contracted in 2012 and reclamation construction occurred in summer and fall 2012. An estimated 95,000 cy of tailings and 21,000 cy of mine waste were removed from Dunkleberg Creek and placed in a nearby repository. The project was completed in March 2014.

5. MT Department of Environmental Quality – Lilly/Orphan Boy Mine Reclamation
DEQ reverted the funds for this reclamation project to DNRC in spring 2013 due to lack of match funding to complete the project.

6. Sanders County – Managing Aquatic Invasive Plant Species to Protect Montana's Water Resources

Sanders County worked with local partners to continue treatment of Eurasian watermilfoil in Noxon and Cabinet Gorge reservoirs. Aquatic herbicide treatments were applied in August and post-treatment monitoring will continue into the fall of 2014. This project is expected to be completed by December 2014.

7. Montana Department of Fish, Wildlife and Parks – Big Spring Creek Polychlorinated Biphenyls Remediation

This cleanup project addressed PCB-contaminated paint chips in sediments in Big Spring Creek near Lewistown. The PCB cleanup project was contracted in May 2011. The contractor started work on the project in July 2011. When completed about three miles of the creek were remediated. The project was completed in February 2014.

8. Montana Department of Natural Resources and Conservation – St. Mary and Milk River Basins Water Management Initiatives 2010

This planning and study effort to secure the water supply for irrigation and municipal use in the St. Mary and Milk River basins was completed in 2014.

9. MT Department of Environmental Quality – Sand Coulee Public Water Supply System Restoration

This project addresses impacts to the Sand Coulee public water supply system from historic coal mining. DEQ drilled an eight-inch diameter public water supply well into the Madison aquifer with a completion depth of 785 ft. DEQ assisted Sand Coulee with obtaining a water right for the well in 2014. DEQ started construction to replace the town's water distribution system and the water storage tank in August 2014. As of fall 2014, 3,000 ft of water main have been installed.

10. Pondera County – Oil and Gas Well Plug and Abandon

This project provides cost sharing assistance to small oil and gas producers for plugging and abandoning non-productive wells. The county has advertised the opportunity to local producers. In fall 2012 three producers with a total of 14 wells were approved for plugging and abandoning, but Pondera County has been unable to get producers to participate in the plugging and abandoning opportunity.

11. Teton County – Oil and Gas Well Plug and Abandon

This project provides cost-sharing assistance to small oil and gas producers for plugging and abandoning non-productive wells. The county has advertised the opportunity to local producers. In fall 2012, two producers and seven wells were approved for plugging and abandoning, but Teton County has been unable to get producers to participate in the plugging and abandoning opportunity.

12. Fort Peck Assiniboine and Sioux Tribes – Reclamation of the Philip Red Eagle 2-25 Salt Water Disposal Well on the Fort Peck Indian Reservation, Northeastern Montana

This project is to reclaim the Philip Red Eagle 2-25 salt water disposal injection well site and plug and abandon the injection well. Purchase orders have been secured for the work. Site access is secured and the land owner and BIA have given approval. Plugging has been completed but cost estimates to dispose of the oil waste exceed available funds. The tribe is seeking additional funding.

13. MT Board of Oil and Gas Conservation – Southern District Lease Battery Site Restoration, Part 2

This project completes the reclamation of an orphaned improperly-abandoned tank battery facility in Musselshell County. The project was originally funded in 2007. BOGC started additional excavation at the site in July 2012. Contaminated soil is being land-farmed. The project is expected to be complete in summer 2015.

14. Shelby, City of – Shelby Refinery

This phase of the cleanup project is complete. Shelby submitted the final construction completion report in 2014, and the grant has been closed out.

15. Missoula County – Ninemile Creek Mining District, Phase 2
This project includes Twin Creek reclamation activities and Ninemile Creek (Housum Placer) reclamation planning. Construction of a new stream channel started on Twin Creek in fall 2012. Additional data is being collected for design on Ninemile Creek. The project was completed in 2014.

16. MT Department of Environmental Quality – Zortman and Landusky Mines Source Control Prioritization Evaluation
This hydrogeology and geochemistry study to define problem areas and control sources of contamination at the Zortman and Landusky mines in Phillips County was completed in January 2014.

17. Missoula, City of – Missoula Sawmill Site Wood Waste Reclamation
This Brownfields project is to remove methane-generating wood waste from the former Missoula Sawmill site and process it into compost for use in city parks. The wood waste was removed in December 2011 and is now being processed into compost at a local private composting business. The project has been delayed by equipment breakdowns and is anticipated to be complete in March 2015.

18. Butte-Silver Bow City-County Government – Butte Mining District Reclamation and Protection, Phase 3
This project is to preserve and restore the physical infrastructure of the historic mine yards in the Butte Mining District. Construction work actual costs were higher than expected so that only some of the expected work was completed with available funds. The project sponsor was able to revisit costs estimates for phase 4 of the project awarded by the 2013 Legislature to complete the work on phase 3 as well as all of the work included in phase 4. The phase 3 work on buildings in the Steward, Mt Con and Anselmo mineyards is almost complete and the project is expected to be closed out late in 2014.

19. Fergus County – Pentachlorophenol Cleanup
This PCP cleanup at the Fergus County shops was completed in April 2012.

20. Meagher County CD – Thomas Creek Placer Surface Flow Enhancement and Stream Stabilization
This placer mine reclamation project was contracted in fall 2012. Reclamation construction occurred in 2013. The project sponsor continues with re-vegetation and project monitoring through 2015.

21. MT Department of Environmental Quality – Beal Mountain Mine Pit Run On Controls and Pond Removal
The overall goal at Beal Mountain Mine is to return the site its multiple use designation. This grant to remove several ponds and complete a run-on control ditch was constructed in September 2012 and the project was completed in February 2014.

22. Crow Tribe / Little Bighorn River Restoration
This project did not at first receive its match funding from FEMA, thus making the project infeasible. In fall 2012 the tribe negotiated partial funding for the project. The revised plan retains the plan components that would result in natural resource benefits. The final design is being reviewed by FEMA. If accepted, FEMA will move to Phase 2 of the project. If not, FEMA will pull out of the project. Pending approval, construction is expected to take place in 2014.

Projects Approved by the 2009 Legislature

1. MT Board of Oil and Gas Conservation – 2009 Northern District Orphaned Well Plug and Abandonment, and Site Restoration
As of fall 2014, 13 wells have been plugged and properly abandoned. There may be unused grant funds when the project is complete and BOGC would request to use these funds to plug additional wells. The project is expected to be complete in 2015.

2. MT Board of Oil and Gas Conservation – 2009 Southern District Orphaned Well Plug and Abandonment, and Site Restoration
The project started in August 2012. As of fall 2014, seven wells have been plugged and restored. The project is expected to be complete in spring 2015.

3. Shelby, City of – Shelby Refinery
This phase of the Brownfields cleanup project was completed in June 2011. Cleanup continues under an RDGP grant awarded by the 2011 Legislature.

4. Missoula County – St. Louis Creek Mine Reclamation
This mine reclamation project was completed in August 2012.

5. MT Department of Environmental Quality / Spring Meadow Lake Reclamation
This reclamation project was completed in May 2010.

6. Cascade County Commission – County Wood Shops Remediation of Wood Treatment Preservatives
This phase of cleanup of the county shops area is complete. The project sponsor was awarded additional funds in 2013 to complete the cleanup.

7. MT Department of Environmental Quality – McLaren Tailings Reclamation Project
This project in Park County to reclaim about 20 acres and 267,200 cy of mining impacted soil and tailings outside of Cooke City was completed in fall 2014. In 2013, the remaining tailings were excavated from the historic channel of Soda Butte Creek, mixed with lime, and placed in the repository. The HDPE liner was installed on the repository. The groundwater pumping and water treatment systems were decommissioned. About 2,000 ft of Soda Butte and Miller creek channels were constructed in areas formerly covered by tailings and both creeks were returned to their historical locations. In 2014, the site was covered with soil, seeded and mulched. Surface water control structures were built.

8. Lewistown, City of – Reclamation of Berg Lumber Mill Site
The cleanup work at the former BLMS in Lewistown was completed in January 2013.

9. Ryegate, Town of – Former Ryegate Conoco
This phase of the project to remediate petroleum products released from the former Conoco in Ryegate was completed in January 2012. Ryegate is conducting additional remediation with an RDGP awarded in 2013.

10. Park County – Fleshman Creek Urban Restoration
This riparian restoration project on Fleshman Creek in Livingston was completed in July 2014.

11. Butte-Silver Bow City-County Government – Butte Mining District Reclamation and Protection
This Butte mining district repair project was completed in March 2012.

12. Missoula County – Ninemile Creek Mining District Reclamation
This placer mine reclamation project in the Ninemile drainage was completed in September 2012.

13. MT Department of Environmental Quality – Beal Mountain Mine, Waste Rock Dump Soil Cover
Leftover funds from construction of this project in 2012 were reallocated additional improvements to the waste rock dump drainage system. Work was halted in fall 2013 because of the federal government shut down. The work on manholes, spring boxes, drainage ditches and other components was completed in 2014. DEQ is working with the USFS in fall 2014 on final reporting.

14. Lewis and Clark Conservation District – York Gulch Old Amber Mine Reclamation
This mine reclamation project was completed in May 2010.

15. Ruby Valley Conservation District – Big Hole Cooperative Ditch Improvement Project
This headgate repair project on the BHR was completed in fall 2010.

16. MT Department of Natural Resources and Conservation – Monitoring Coalbed Methane Development Effects of Surface Water Quality of the Tongue and Powder River Basins
This water resources study in the Tongue and Powder River basins was completed in May 2013.

17. Flathead Basin Commission – Flathead Regional LiDAR Mapping Project
This LiDAR mapping project in the Flathead basin was completed in fall 2010.

18. Jefferson County – Groundwater Quality Assessment with an Emphasis on Radionuclides
This groundwater study of radionuclides in Jefferson County was completed in May 2013.

19. Meagher County Conservation District – Hydrologic Framework and Water Budget of the Upper Smith River Watershed
This study of the Smith River watershed to investigate surface water and groundwater interaction was completed in June 2013.

20. Custer County Conservation District – Yellowstone River Riparian Restoration
This Yellowstone River riparian restoration project addressing salt cedar and Russian olive infestations was completed in August 2013.

21. Cascade County Commission – Sustainable Water Supplies from the Madison Aquifer, Central Montana
This groundwater study of the Madison aquifer to identify recharge and discharge areas, determine water quality changes, and develop a groundwater budget was completed in April 2014.

22. Butte Silverbow City-County Government – Irrigation Demonstration Project for Butte Acidic Mine Waters, On-site Treatment and Resource Recovery
This demonstration water treatment project to determine is Butte's damaged groundwater could be used for irrigation was completed in March 2012.

Projects Approved by the 2007 Legislature

1. MT Board of Oil and Gas Conservation – 2007 Northern District Orphaned Well Plug and Abandonment, and Site Restoration
This abandoned well plugging project was completed in May 2011.

2. MT Board of Oil and Gas Conservation – 2007 Southern District Orphaned Well Plug and Abandonment, and Site Restoration
This abandoned well plugging project was completed in 2010.

3. MT Department of Environmental Quality – Snowshoe Mine Reclamation Project
This reclamation project on Snowshoe Creek, a tributary to the Kootenai River was completed in December 2010.

4. MT Department of Environmental Quality – Bald Butte Mine and Millsite Reclamation Project
The Bald Butte reclamation, including construction of a repository, was completed in May 2013.

5. MT Department of Natural Resources and Conservation – St. Mary Facilities Rehabilitation
The geotechnical and groundwater modeling included in this project were completed in May 2013.

6. Powell County – Milwaukee Roundhouse Voluntary Cleanup
This phase of the project to address soil and groundwater contamination at the former Milwaukee Roundhouse facility in Deer Lodge was completed in January 2013.

7. Central Montana Water Authority – Utica Well 2
The drilling of this regional municipal water production well in the Madison Limestone was completed in June 2013.

8. MT Board of Oil and Gas Conservation – Southern District Tank Battery Cleanup
The cleanup of an abandoned tank battery site northeast of Roundup is continuing under another grant awarded by the 2011 Legislature.

9. Meagher County Conservation District – Hydrologic Investigation of the Smith River Watershed
This investigation of groundwater and surface water interaction within the Upper Smith River was completed in May 2012.

10. MT Department of Environmental Quality – Belt Acid Mine Drainage Mitigation
This project was cancelled due to safety concerns within the mine. DEQ was unable to find a way to address the project goals safely or cost-effectively. DEQ released the RDGP funds in 2012.

11. MT Department of Environmental Quality – Swift Gulch Placer Tailings and Wetland Establishment
This reclamation project was completed in 2010.

12. Broadwater Conservation District – Whites Gulch Reclamation Fish Barrier Project
After funding issues due to the increase in building and construction costs were resolved, this fish barrier project was completed successfully in 2010.

13. MT Department of Environmental Quality – Landusky Mine–Characterization of Surface Water/Groundwater Interactions in Swift Gulch and the Adjacent Landusky Pit Complex
This project at the former Landusky Mine and Swift Gulch was completed in 2009.

14. Big Horn Conservation District – Montana Regional Coalbed Methane
This groundwater study to address CBM concerns was completed in fall 2010.

15. Gallatin Local Water Quality District – Assessment and Distribution of Pharmaceuticals
This project was a study of pharmaceuticals in wastewater, surface, and groundwater. The project was completed in July 2010.

16. Flathead Basin Commission – British Columbia / Montana Action Plan
This project in the North Fork Flathead River basin was completed in June 2012.

17. Montana Tech of the University of Montana – Butte Native Plant Propagation Nursery
This project to provide plants for re-establishing native species diversity in Butte open spaces was completed in 2009.

Projects approved by the 2005 Legislature

1. MT Board of Oil and Gas Conservation – 2005 Eastern District Well Plug and Abandonment and Site Restoration
Twenty seven oil and gas wells were plugged in Dawson, McCone, Phillips, Richland, and Valley counties. This project is complete.

2. MT Board of Oil and Gas Conservation – 2005 Northern District Well Plug and Abandonment and Site Restoration
Twenty oil and gas wells were plugged in Toole and Glacier counties. This project is complete.

3. MT Department of Environmental Quality – Bluebird Mine Reclamation Project
Work on the Bluebird Mine Reclamation Project has been completed.

4. MT Department of Environmental Quality – Frohner Mine Reclamation Project
DEQ was unable to find a suitable repository site and reverted RDG funds to DNRC in 2010.

5. MT Department of Environmental Quality – Buckeye Mine Reclamation Project
Work on the Buckeye Mine Reclamation Project in Madison County is complete.

6. Lewistown, City of – Reclamation of Brewery Flats on Big Spring Creek
Metal-contaminated soils were removed and the area restored. The site, now a suburban park adjacent to Big Spring Creek, is widely used by local residents. This project is complete.

7. MT Department of Natural Resources and Conservation – St. Mary Studies and Design
This project with several work components related to the St. Mary Project design is complete.

8. Butte-Silver Bow Local Government – Belmont Shaft Failure and Subsidence Mitigation
This project has reclaimed many mine shaft failures in Butte. Butte Silver Bow uses remaining funds to inventory shafts, mitigate subsidence, and reclaim shafts. This project is expected to be complete in 2014.

9. Pondera County – Oil and Gas Well Plug and Abandonment Project
This project cost-shared the plugging of abandoned oil and gas wells with small operators in Pondera County. This project is complete.

10. Custer County Conservation District – Yellowstone River Resource Conservation Project
This river study project was completed in 2010.

11. Teton County – Oil and Gas Well Plug and Abandonment
This project cost-shared the plugging of abandoned oil and gas wells with small operators in Teton County. This project is complete.

12. Toole County – Plugging and Abandonment Aid to Small, Operators
This project cost shares the cost of plugging and abandoning oil and gas wells with small operators. This project was completed in May 2010.

13. MT Department of Environmental Quality – Zortman Mine Reclamation / Completion of Preferred Alternative Z-6
The revised reclamation plan called for re-direction of stormwater from the Alder Gulch waste dump, lining the dump, and topsoiling. This project is complete.

14. Butte-Silver Bow Local Government – Excelsior Reclamation
This project reclaimed about four acres of land impacted by mineral development in the urban corridor of Butte. This project is complete.

15. Powell County – Garrison Wetland Reclamation and Redevelopment
Powell County completed this project in 2013. Some cleanup occurred but only some of the project goals were able to be met.

16. MT Department of Environmental Quality – Former Harlem Equity Co-Op Bulk Plant Cleanup
This project was to remove petroleum-contaminated soil and continue groundwater monitoring. The project was completed in fall 2010.

CHAPTER IV
Reclamation and Development Grants Program—Project Planning Grants

Program Information

The 2013 Legislature authorized $1,000,000 for RDGP project planning grants. These grants are intended to assist local governments with the planning and design of technically feasible natural resource projects eligible for funding consideration under the RDGP. Planning grant funds must be used primarily for contracted consulting or engineering services.

Grant applications were accepted in May 2013, August 2013, December 2013, and August 2014. As of fall 2014, the planning grant funding was used to assist more than 32 projects across Montana (Table 2). Review and ranking methodology was patterned and conducted very similar to the RDGP projects grant program. The maximum amount for a planning grant is $50,000. Of the 32 planning grants, six planning projects resulted in an application for a RDGP project grant by the May 15, 2014 deadline. Some of the projects are still in planning stages and do not expect to submit applications for RDGP project grants until the 2016 cycle. Two of the project applications submitted in 2012, were funded with planning grants from the 2009 planning grant cycle. Seven planning projects were awarded to allow local governments apply for EPA Brownfields assessment funds. Three of these projects were successful and leveraged $1.2 million of Brownfields funds into the state to identify contaminated sites. Two projects are still under consideration by EPA. Projects submitted by applicants that received a planning grant tended to rank higher relative to those that did not seek a planning grant.

Based on the comments received from the applicants, DNRC concluded that the project planning grants have been very successful. DNRC will continue to refine the basic structure of the planning grant program regarding funding amounts, application categories, and frequency of cycles based on this input and local needs. Funding of the planning grant projects has proven invaluable for applicants in preparing and submitting a high quality and competitive grant application under the major RDGP. DNRC intends to seek planning grant re-authorization from the 2015 Legislature.

Table 2. Project Planning Grants Awarded During the 2015 Biennium

Project Sponsor	Project Name	Awarded
Big Sky Economic Development	ARC Grant Writing	$6,000
CMRWA	Musselshell-Judith Rural Water Project	$50,000
Chippewa Cree Tribe	Dry Fork Farm Brownfields Assessment	$50,000
Dawson County	ARC Grant Writing	$6,000
Deer Lodge, City of	Remedial Investigation Technical Support	$15,000
Deer Lodge Valley CD	French Gulch Placer Mine Design and Restoration	$50,000
Deer Lodge Valley CD	Moose and French Creek Placer Mining Restoration Design	$32,288
E. Helena Schools	Cleanup Alternatives and cost analysis	$9,480
Glasgow, City of	Cleanup Planning - Former Magruder Motor Co.	$42,039
Granite CD	Flint Creek Metals Assessment and Remediation Prioritization Plan	$50,000
Great Falls	ARC Grant Writing	$6,000
Harlem, City of	Harlem Petroleum Impacts Assessment	$50,000
Harlowton, City of	Investigation Free Product Recovery System and Free Product Plume	$50,000
Havre, City of	ARC Grant Writing	$6,000
Lewis and Clark County	Fairgrounds MDT Property Redevelopment Plan	$32,500
Lewis and Clark County	Helena Solvent Site Vapor Intrusion Assessment	$50,000
Lewistown, City of	ARC Grant Writing	$6,000
Lincoln CD	Tobacco River Restoration Plan	$50,000
Lincoln County	Asbestos Database and Data Gap Assessment	$50,000
Lower Willow Creek ID	South Fork Willow Creek Fluvially Deposited Mill Tailings	$50,000
Madison County	North Willow Creek Sub-Watershed Re-Mine and Reclamation Plan	$50,000
Madison County	Montana Headwaters Abandoned Mine Reclamation	$50,000
Miles City	ARC Grant Writing	$6,000
Missoula, City of	ARC Grant Writing	$6,000
Missoula County	Martina Creek Mine Reclamation	$37,500
Montana Department of Environmental Quality	Town of Winifred Ehlert Service Center Investigation	$49,710
North Central Montana Regional Water Authority	Petroleum Contamination Investigation, Segment W3, Shelby to Cut Bank	$43,800
Powell County	Arrowstone Park Master Plan	$42,440
Shelby, City of	Sweetgrass Site Contamination Inventory	$24,915
Shelby, City of	Shelby Refinery - Voluntary Cleanup Completion	$14,850
Yellowstone Conservation District	Continuation of the Pryor Creek Stabilization and Restoration	$20,000
Total		**$1,006,522**

Note: ARC - Assessment, Revolving Loan Fund, and Cleanup

Total authorized amount for planning grants was $1,000,000. As HB 7 allows, the total $1,006,522 awarded reflects both the authorized amount and the use of reverted funds on completed reclamation and development planning projects.

CHAPTER V
Reclamation and Development Grants Program
Aquatic Invasive Species Grants

Program Information

The 2013 legislature authorized $525,000 in funding for control of aquatic invasive species. DNRC conducted two grant cycles, one in 2013 and one in 2014. DNRC plans to have a third grant cycle to distribute remaining funds in spring 2015. Projects were ranked based on the demonstration of a critical and urgent need to protect Montana's environment from severe and unacceptable damage to natural resources from aquatic invasive species. Public benefit from implementation of the projects directly related to control of aquatic invasive species. Projects were also ranked based on their demonstrated coordination with other projects, state control efforts, and comprehensive invasive species plans. Activities included: 1) on-the-ground treatment; 2) aquatic invasive species surveys; 3) environmental monitoring; 4) preparation of action plans; and 5) treatment demonstration.

DNRC funded 15 projects for aquatic invasive species survey and control, as well as providing contracted technical support for local efforts.

Table 3. Aquatic Invasive Species Grants and Contracts Awarded During the 2015 Biennium

Sponsor/Contractor	Project Name	Amount
2013 Requests		
Broadwater CD	2013 Headwaters of the Missouri Region EWM Treatment	$8,000
Lake County	Flathead Basin AIS Control and Surveys	$58,600
Missoula County Weed District	AIS Monitoring and Vegetation Survey of Missoula County Lakes and Rivers	$11,600
Salish Kootenai College	Herbicide Applications for Suppression of Flowering Rush and Lower Flathead and Clark Fork Rivers Inventory	$28,500
Sanders County 1	Managing AIP in Sanders County	$125,000
Valley Weed District	AIS on Fort Peck Reservoir	$28,330
Total		**$260,030**
2014 Requests		
Broadwater CD 2	2014 Headwaters of the Missouri River Region EWM Control	$18100
Clearwater Resource Council	2014 AIS Volunteer Monitoring of High-Risk Lakes in the Clearwater Valley	$5,000
Lake County 1	Flathead Basin AIS Strategic Plan Implementation Effort 1 (Flathead River CLP Removal)	$29,990
Lake County 2	Flathead Basin AIS Strategic Plan Implementation Effort 2 (Watercraft Inspection at Coram)	$22,030
Lake County 3	Flathead Basin AIS Strategic Plan Implementation Effort 3 (AIS Sniffer Dog Pilot)	$10,000
Liberty County Weed District	Lake Elwell CLP Monitoring/Bottom Barrier Project	$2,800
MSU Gallatin County Extension	Gallatin County AIS Monitoring	$5,000
Ravalli County Weed District	Bitterroot River CLP Management and Identification of Upstream Source	$12,065
Sanders County 2	Managing AIS in Sanders County	$30,000
Total		**$144,985**
Direct Contracts for Technical Support		
Weed Management Services	AIS Technical Support - 2013	$12,000
Weed Management Services	AIS Technical Support - 2014	$25,000
Total		**$37,000**

Total Available	$525,000
Total Grants Awarded	$405,015
Total Direct Service Contracts	$ 37,000
Remainder Amount	$ 82,985

CHAPTER VI
Reclamation and Development Grants Program
Groundwater Baseline Sampling Grants

The 2013 Legislature authorized $300,000 to assist Montana CDs with baseline groundwater sampling of wells at risk from oil field activities. This monitoring effort characterizes the quality and availability of well water and aquifers currently used for domestic or stock water. Information collected will be acceptable for use as comparative data if a participating well is resampled after the landowner notices a change in water quality and availability, and for use as data for current and future aquifer characteristic studies conducted by Montana agencies.

Agency Roles and Responsibilities

CDs are responsible for selecting wells, collecting a match fee from each well owner, and distributing results to well owners. Twelve CDs are currently participating in the sampling effort. CDs in the high priority areas (eastern Montana) receive a small grant for expenses incurred in the administration of the sampling effort (see Table 4). As of September, 2014, 67 well samples have been collected. DNRC expects to characterize 150 wells for baseline conditions by December 2015.

The DNRC provided each participating CD with a list of wells and owner information prioritized by risk factors. DNRC's risk factors were developed in cooperation with the DEQ and the MBMG. DNRC teamed with the CBM committee well sampling program to save costs for sampling wells in four CDs. All other sampling services were contracted to the MSCA through a grant to the Pondera County CD (see Table 4).

Sample and well characterization results are recorded in the MBMG Groundwater Information Center well database and will be available as a stand-alone report to the general public at the end of the project.

Table 4. Groundwater Baseline Grants and Contracts Awarded as of September 2014

Grant Sponsor or Contractor	Grant or Contract Title	Amount
Pondera County CD	MT Salinity Control Association Well Sampling Grant	$124,000
Valley County CD	Groundwater Baseline Sampling Administration Grant	$2,000
Richland County CD	Groundwater Baseline Sampling Administration Grant	$2,000
Sheridan County CD	Groundwater Baseline Sampling Administration Grant	$2,000
Daniels County CD	Groundwater Baseline Sampling Administration Grant	$2,000
McCone County CD	Groundwater Baseline Sampling Administration Grant	$2,000
Roosevelt CD	Groundwater Baseline Sampling Administration Grant	$2,000
Phillips CD	Groundwater Baseline Sampling Administration Grant	$2,000
Dawson CD	Groundwater Baseline Sampling Administration Grant	$2,000
Contracted Services		
MBMG	Data Management GWIC database	$7,020
Pace Analytical Services	Groundwater Baseline Sampling	$43,350
MSCA	Assist CDs with Groundwater Baseline Monitoring	$4,500
Total Expenditures to Date		**$192,870**

2015

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