COLORADO
DEPARTMENT OF NATURAL RESOURCES

COLORADO WATER CONSERVATION BOARD

WATER SUPPLY RESERVE ACCOUNT
2008-2009 GRANT APPLICATION FORM

Red Mesa Dam & Reservoir - Incremental Damage Analysis (IDA) & Emergency Action Plan (EAP)	Southwest Basin
Name of Water Activity/Project	**River Basin Location**

$29,000	[X] Basin Account	[X] Yes
	[ ] Statewide Account	[ ] No
Amount of Funds Requested	Please Check Applicable Box	Approval Letter Signed By Roundtable Chair and Description of Results of Evaluation and Approval Process

*** For the Basin Account, the Application Deadline is 60 Days Prior to the Bimonthly CWCB meeting. The CWCB meetings are posted at www.cwcb.state.co.us and are generally the third week of the month.**

*** For the Statewide Account, the Application Deadline is 60 Days Prior to the March and September CWCB Board Meetings.**

* In completing the application you may attach additional sheets if the form does not provide adequate space. If additional sheets are attached please be sure to reference the section number of the application that you are addressing (i.e., A.1. etc.).

Instructions: This application form must be submitted in electronic format (Microsoft Word or Original PDF are preferred). The application can be emailed or a disc can be mailed to the address at the end of the application form. The Water Supply Reserve Account Criteria and Guidelines can be found at http://cwcb.state.co.us/IWMD/. **The criteria and guidelines should be reviewed and followed when completing this application.** You may attach additional sheets as necessary to fully answer any question, or to provide additional information that you feel would be helpful in evaluating this application. Include with your application a cover letter summarizing your request for a grant. If you have difficulty with any part of the application, contact Todd Doherty of the Intrastate Water Management and Development (Colorado Water Conservation Board) for assistance, at (303) 866-3441 ext.3210 or email Todd at todd.doherty@state.co.us.

Generally, the applicant is also the prospective owner and sponsor of the proposed water activity. If this is not the case, contact Todd Doherty before completing this application.

Part A. - Description of the Applicant (Project Sponsor or Owner);

1. Applicant Name(s): Red Mesa Reservoir & Ditch Company

Mailing address: 7882 County Road 100
Hesperus, CO 81326

Taxpayer ID#: 84-0494513 Email address: drysiderancher@yahoo.com

Phone Numbers: Business: 970-749-6393
Home: 970-588-2220
Fax:

2. Person to contact regarding this application if different from above:

Name: Jim Greer

Position/Title President

3. Provide a brief description of your organization below: see "Description of Applicant" in Part 2 of Criteria and Guidance for required information.

The Red Mesa Reservoir & Ditch Company is a not-for-profit corporation established in 1923 under Colorado law, for the purposes of (1) appropriating or otherwise acquiring waters from the La Plata River and other nearby sources for storage in reservoirs and for distribution and use for domestic and irrigation purposes by shareholders; (2) acquiring ownership of facilities necessary to store and convey water and the land on which those facilities are located; (3) constructing, operating, and maintaining said facilities; and (4) levying and collecting assessments for the repair, operation, maintenance and superintendence of facilities.

The Articles of Incorporation filed with the Secretary of State in 1923 provide for five directors of the company, who are empowered to make by-laws which are proper and necessary for the management, conduct and control of company business. The Articles of Incorporation and Bylaws are attached as an appendix to this application.

The company owns the Red Mesa Reservoir, the dam for which was originally constructed in 1908 and reconstructed in about 1932, following its failure during a flood in 1929, and subsequently enlarged in 1946

to its current decreed storage capacity of 1172 acre-feet; a diversion structure on the La Plata River; and the inlet ditch to the reservoir. The reservoir is situated on Hay Gulch, a side tributary to the La Plata River, and is currently the only significant water storage facility located within the La Plata River drainage. It is used to provide supplemental irrigation water to about 1140 acres of land within the Red Mesa system, with approximately fifty shareholders utilizing this water.

One share of stock in the company amounts to approximately one acre-foot of storage in the reservoir; thus, the 1137 shares of stock are spread among the fifty shareholders. The 2008 assessment was $9.00 per share, of which 75% was designated for operation and maintenance and 25% for a fund to pay for repairs.

4. If the Contracting Entity is different than the Applicant (Project Sponsor or Owner) please describe the Contracting Entity here.

Not Applicable

Part B. - Description of the Water Activity – Please Refer to Criteria and Guidance Document for Eligibly Requirements

1. Name of water activity/project:

Red Mesa Dam & Reservoir - Incremental Damage Analysis (IDA) & Emergency Action Plan (EAP)

What is the purpose of this grant application?

[ ] Environmental compliance and feasibility study

[ ] Technical Assistance regarding permitting, feasibility studies, and environmental compliance

[X] Studies or analysis of structural, nonstructural, consumptive, nonconsumptive water needs, projects

Study or Analysis of:

- [X] Structural project or activity
- [X] Nonstructural project or activity
- [ ] Consumptive project or activity
- [ ] Nonconsumptive project or activity

[ ] Structural and/ or nonstructural water project or activity

2. Describe how the water activity meets these **Threshold Criteria.**

1. The water activity meets the eligibility requirements outlined in Part 2 of the Criteria and Guidelines.

   The proposed activity consists of both structural (Incremental Damage Analysis - IDA) and non-structural (Emergency Action Plan - EAP) analyses necessary for the continued safe operation of the applicant's Red Mesa Dam and Reservoir at the current fully-decreed storage capacity. The IDA is intended to identify the minimum Inflow Design Flood (IDF) required for sizing a spillway compliant with the "Rules and Regulations for Dam Safety and Dam Construction" issued by the Colorado State Engineer's Office (SEO); the existing spillway has been identified as hydrologically inadequate for a High Hazard dam. Revision and improvement of the Emergency Action Plan is also required by the SEO, as the existing plan is out of date and inadequate in content for a High Hazard dam.

2. The water activity is consistent with Section 37-75-102 Colorado Revised Statutes. The requirements/language from the statute is provided in Part 3 of the Criteria and Guidelines.

   The proposed activity is completely consistent with CRS 37-75-102. It in no way affects or impacts existing water rights in the area, other than to help ensure that the existing storage rights within the reservoir are maintained for the use of the applicant and the water is used for its decreed purposes. No new water diversions or uses are included within the scope of this project. Compact issues are involved only to the extent that maintaining reservoir storage helps ensure Colorado's use of the water to which it is entitled under the La Plata River Compact.

3. The water activity underwent an evaluation and approval process and was approved by the Basin Roundtable (BRT) and the application includes a description of the results of the BRTs evaluation and approval of the activity. At a minimum, the description must include the level of agreement reached by the roundtable, including any minority opinion(s) if there was not general agreement for the activity. The description must also include reasons why general agreement was not reached (if it was not), including who opposed the activity and why they opposed it. Note- If this information is included in the letter from the roundtable chair simply reference that letter.

   The proposed activity was presented for the consideration of the Southwest Basin Roundtable at its bimonthly meeting held in Durango on March 11, 2009, and received the unanimous support of the roundtable. Please refer to the letter from the roundtable chair for more information.

4. The water activity meets the provisions of Section 37-75-104(2), Colorado Revised Statutes. The requirements/language from the statute is provided in Part 3 of the Criteria and Guidelines.

   The proposed activity meets the provisions of CRS 37-75-104(2). The need for continued / improved water supply / storage within the La Plata River drainage, commonly referred to locally as "the dry

side," was identified by the SW Basin Water Supply and Needs Report prepared under the auspices of the Statewide Water Supply Initiative (SWSI). The Animas - La Plata Project, as originally conceived and developed by the U. S. Department of Interior, would have resolved much of the water supply problem on the La Plata River drainage; however, the irrigation water supply component for the La Plata side was ultimately removed from the project as a condition of gaining approval. Thus, irrigation water supply and storage needs on the La Plata drainage were never addressed by that project, and irrigation water remains in short supply, frequently affected by flow delivery requirements of the La Plata River Compact with New Mexico. The project currently proposed by this application would help assure continued full usage of the decreed storage within the reservoir, thereby maintaining the existing water supply within the La Plata River drainage, without requiring the need for developing new water sources.

3. For Applications that include a request for funds from the Statewide Account, describe how the water activity meets the **Evaluation Criteria**. See Part 3 of Criteria and Guidelines.

The application does not include a request for funding from the Statewide Account.

4. Please provide an overview of the water project or activity to be funded including – type of activity, statement of what the activity is intended to accomplish, the need for the activity, the problems and opportunities to be addressed, expectations of the participants, why the activity is important, the service area or geographic location, and any relevant issues etc. Please include any relevant TABOR issues that may affect the Contracting Entity. Please refer to Part 2 of Criteria and Guidance document for additional detail on information to include.

The service area for the Company is downstream of Red Mesa Reservoir, which is located near the mouth of Hay Gulch, and generally surrounds the small, unincorporated town of Red Mesa in southwest La Plata County. Water from the reservoir is distributed to shareholders via three ditches: the Joseph Freed Ditch, the Warren Vossburg Ditch and the Greer Revival Ditch, all of which serve irrigated lands to the south and east of the La Plata River.

The proposed activity consists of two individual components that are linked together technically: (1) an Incremental Damage Analysis (IDA), which identifies the minimum required Inflow Design Flood (IDF) for spillway sizing; and (2) an Emergency Action Plan (EAP), which identifies potential flood inundation zones downstream of the dam if it were to fail and actions which would be taken to prevent / minimize loss of life and property damages. Neither component directly involves actual design of structural components, but the IDA is intended to serve as the basis for corrective spillway design.

Red Mesa Reservoir serves as the applicant's vessel for decreed irrigation storage rights in the La Plata River drainage. With a maximum dam height of some 58 feet and a reservoir storage capacity of 1172 acre-feet, the dam is considered by the Colorado State Engineer's Office (SEO) to be a High Hazard dam, and is subject to the safety rules and regulations of the Colorado Dam Safety Branch.

For nearly twenty years, the SEO has considered the existing spillway, constructed at the time of dam enlargement in 1946, to be hydrologically inadequate to pass the required Inflow Design Flood (IDF) generated by standard deterministic rainfall/runoff analysis methods. Additionally, the SEO recently upgraded the dam from a Significant Hazard to a High Hazard facility, reflecting conditions of increased land development in the downstream floodplain, and dictating the need to provide an even greater spillway capacity commensurate with the upgraded hazard class. While actual spillway improvement has not been required by the SEO up until now, that is only because the precipitation estimates used for developing an appropriate IDF were in a state of flux for nearly 20 years. With the issuance in January, 2007, of the SEO's "Rules and Regulations for Dam Safety and Dam Construction", the precipitation issue has been resolved, and the SEO can now move forward with the enforcement of spillway sizing standards for Red Mesa and other reservoirs in a similar geographic ("high altitude") setting which were previously on hold. This implies that the requirement for spillway improvement is now imminent.

The SEO allows an alternative method of IDF development for spillway sizing, particularly applicable for relatively small reservoirs situated on relatively large watersheds, known as Incremental Damage Analysis (IDA). This method recognizes the provision in Colorado law that dam owners may release "without diminution" all inflows to their reservoir, without incurring liability for downstream damages. A successful IDA can be used to justify a lesser flood than normally required, potentially as small as a 100-year flood, for sizing a spillway, if it can be shown analytically that failure of the dam and consequent release of the reservoir during an overtopping event caused by the flood in question would not result in additional (incremental) damages in the downstream floodplain, compared to the hypothetical case where the dam did not exist at all. If IDA is successful, a significant reduction in the required IDF may be realized, resulting in significant savings in spillway construction costs, with no reduction in public safety. As an accepted analysis method, IDA has a relatively low up-front cost which offers the potential for large cost savings in the constructed project.

A significant reduction in the magnitude of the IDF and consequent savings in the costs of constructing a compliant spillway are the primary goals of the proposed project. As a small, agricultural-based entity, the Red Mesa Reservoir & Ditch Co. has a limited financial base. Previous estimates of spillway construction costs, based on non-IDA rainfall / runoff modeling, to meet SEO requirements have been largely beyond the financial capability of the company and its shareholders. Inaction, however, is not a viable option, as the SEO will almost certainly require construction of a spillway that meets the requirements of the Rules. Failure to meet that requirement would probably lead ultimately to a very significant reservoir storage restriction, or, more likely, a regulatory order for complete breaching of the dam.

The second aspect of the proposed project, the EAP, is necessary because the SEO requires dam failure flood inundation maps for all High Hazard dams, an item which the existing EAP does not contain. The existing EAP, which was prepared at a time when the dam was considered to be of a lower hazard class, is also out of date. Because of similarities in the IDA and EAP inundation analyses and mapping processes, inclusion of EAP development within the proposed project will result in overall cost savings to the company, as compared to completing the components as independent tasks.

A detailed written proposal to perform the described work was submitted in October of 2008 to the Red Mesa Reservoir and Ditch Company by URS Corporation of Denver. Based on that proposal, the board members of the company voted unanimously to pursue funding for the proposed project from the

Southwest Basins Roundtable, and, contingent upon the outcome of that funding request, execute a contract with URS Corp. to perform the specified work.

As a private corporation, the Red Mesa Reservoir Company is not subject to the provisions of TABOR, nor are TABOR issues relevant to this activity.

5. Please summarize the proposed scope of work. Please refer to Part 2 of the Criteria and Guidance document for detailed requirements. On the following page there is an example format for the Scope of Work. You can use the example format or your own format, provided that comparable information is included.

The scope of work should outline by task how the water activity will be accomplished. It is important that the scope of work detail the specific steps, activities/procedures that will be followed to accomplish the water activity and the specific products/deliverables that will be accomplished. The scope of work should include but not be limited to: task description, key personnel, budget, schedule and deliverables and the final report/project documentation upon completion of the water activity.

I. Task 1

Description of Work: Hydrologic Analysis and Review of Existing Information

The purpose of this task will be to gather and review the information currently available with respect to the current Red Mesa Dam conditions and operation, then develop the inflow hydrology to the dam based on current SEO Rules and Regulations.

Methodology:

The Extreme Storm Precipitation (ESP) for the drainage basin to the dam will be developed and routed through the reservoir and spillway using the HEC-HMS modeling tool. The ESP will be estimated using the Extreme Precipitation Analysis Tool (EPAT) developed by the SEO for this purpose. If necessary, the 100-year, 24-hour precipitation event and its associated reservoir inflows will also be developed and routed through the reservoir and spillway to establish a minimum acceptable spillway size in accordance with SEO requirements.

Additionally, as part of this task, a one day site visit will be required by the project team to assess the conditions of the dam project area and identify downstream areas of interest. The visit will be used to identify critical flow paths, obstructions in the floodway, identification of any surveying needs, and identify any new major structures that need to be addressed in the model simulations and IDA. With respect to EAP development, the site visit will also be used to begin to address the emergency notification process by contacting the local emergency personnel in the area.

The URS project team for this task will include Dennis Miller, P.E.; Frank Lan, P.E., PhD., CFM; Greg Glunz, P.E.; and Mark Belau, E.I.T.

Major Deliverables:

A Hydrologic Analysis Report will be completed in accordance with current Rules and Regulations of the SEO.

Task 2

Description of Work: Dam Breach Analysis and Flood Inundation Modeling

The modeling procedure for Red Mesa Dam will involve routing a dam breach and no dam breach scenario, for a range of floods that are defined as a percentage of the Inflow Design Flood (IDF) generated from the ESP, as well as the 100-year storm flood, if necessary. Additional dam breach and flood inundation modeling for the "sunny day" failure will be performed for the EAP.

Methodology:

The dam failure flood modeling will be conducted using the HEC-HMS model developed as part of Task 1. If the downstream channel slope is appropriate, the channel routing will be completed using the unsteady flow capability of the HEC-RAS model. The flood routing results will then be compared, at critical channel cross-sections downstream of Red Mesa Ward Dam to confirm the incremental effects of the dam break flood. For the EAP, an additional "sunny day" dam failure scenario will be developed using accepted criteria, and the resulting failure discharge will be analytically routed downstream as for the IDA modeling.

The URS project team for this task will include Dennis Miller, P.E.; Frank Lan, P.E., PhD., CFM; Ed Toms, P.E.; Greg Glunz, P.E.; and Mark Belau, E.I.T.

Major Deliverables:

Tabular data of the flood routing results for the dam failure analyses will be developed for input into Task 3.

Task 3

Description of Work: Inundation Mapping

According to SEO requirements, inundation mapping will be developed for inclusion in the IDA and EAP documents.

Methodology:

Inundation maps will show the peak flow, stage, flow depth, average channel velocity, and rate of rise at impacted downstream features, including roads, buildings, residences, and business centers. Existing DEM/GIS digital 7.5-minute quadrangle mapping will be used as base mapping for the inundation limits. Where available, FEMA floodplain mapping showing the 100-year flood inundation areas will be obtained and review for verifying the downstream extent of inundation mapping.

The URS project team for this task will include Greg Glunz, P.E.; and Mark Belau, E.I.T.

Major Deliverables:

Color 11"x 17" sheets, using USGS quads as a base, will be developed which show the flood inundation limits for both the dam breach and no dam breach scenarios for the IDA, as well as for the "sunny day" dam failure scenario for the EAP. Index maps will be provided.

Task 4

Description of Work: Preparation of IDA Report and EAP Document

Methodology:

Draft IDA report and EAP documents meeting the requirements of the SEO will be developed for Red Mesa's review and comment initially, and then will be revised as needed prior to submission to the SEO for review.

The URS project team for this task will include Dennis Miller, P.E.; Ed Toms, P.E.; Greg Glunz, P.E.; and Mark Belau, E.I.T.

Major Deliverables:

A final IDA Report compliant with SEO requirements will be developed and submitted to the SEO for their review and approval. It is expected that this report will serve as the basis for hydrologic and hydraulic design of required spillway improvements. An EAP document in the format prescribed by the SEO for a High Hazard dam and including the inundation maps developed in Task 3 will be submitted to them for their review and approval.

II. Personnel

Dennis Miller, P.E. – Project Manager: Mr. Miller has more than 30 years of water resources-related and dam design, analysis and evaluation experience. As the former Division 7 Dam Safety Field Engineer for the Colorado Division of Water Resources, he has extensive knowledge and experience with the hydrologic and structural issues faced by the Red Mesa Reservoir & Ditch Company at the Red Mesa Dam. Mr. Miller has performed numerous hydrologic analyses on similar structures and is intimately familiar with the requirements for such analyses.

Ed Toms, P.E. – Principal-In-Charge: Mr. Toms has a broad technical background in the areas of basin planning, master planning, engineering analysis, design, construction management, and project management related to water resources projects. His water resources experience includes dam design, dam safety and rehabilitation, hydraulic structures, surface and ground water hydrology, hydropower, pump stations, pipelines, and SCADA control systems. He has planning, design, and construction experience related to water resources projects in the western and central United States.

Frank Lan, P.E., PhD., CFM – Senior Consultant: Dr. Lan has more than 16 years of experience in surface water and groundwater hydraulic / hydrologic analysis, computer modeling in water resources, and statistical analysis. His expertise includes multi-dimensional surface and groundwater flow and solute transport modeling, open channel hydraulics, surface water hydrology, river engineering and sedimentation, dam break analysis, storm water planning and modeling, floodplain delineation, mitigation, and management, urban drainage design, hydraulic structure design, hydrogeology, alluvial geomorphology, and erosion control. He has a strong background in mathematical and numerical modeling, mathematics, and statistics.

Greg Glunz, P.E. – Project Engineer: Mr. Glunz has domestic and international experience in hydrologic and hydraulic analysis, civil/hydraulic design, construction engineering and project management. He has worked on projects for water supply, stormwater management and mining. His project management includes large multidisciplinary teams for permitting, design and construction of dams and other water resources related projects. His hydraulic experience includes the analyses and design of numerous hydraulic structures associated with dams, irrigation and flood control projects. Mr. Glunz has been involved with the design, construction and rehabilitation of more than 50 dams, which vary from less than 20 feet to over 200 feet high.

Mark Belau, E.I.T. – Hydrology/Hydraulics: Mr. Belau participates in multidisciplinary investigations related to water resources engineering. He has over 4 years of experience in hydraulic and hydrologic design. Mr. Belau has worked on various civil engineering projects, including dams, bridges, livestock waste facilities, utilities and stormwater management projects. Many of his projects have included construction observation, as well as design.

III. Budget

See the detailed budget, attached, for a breakdown of man hours, hourly rates and expenses. Total itemized cost to perform the required work is $32,172.62.

URS has proposed to Red Mesa to complete the designated work for the total amount of $32,000. Of this amount, the applicant is requesting funding from the Basin Roundtable in the amount of $29,000, with applicant proposing to provide $3000 in matching funds as its cost share for the project.

IV. Schedule

URS has proposed to the applicant to initiate work on the project within one month after notice-to-proceed is received. Notice-to-proceed will be dependent upon the timing of a contract between Red Mesa and the CWCB. The draft IDA report and EAP document will be completed within four calendar months from receipt of notice-to-proceed. The final IDA report and EAP will be completed within one month after receipt of final comments.

Assuming that a positive response is received from the Southwest Basins Roundtable at its March, 2009, meeting, that the CWCB approves the same at its May meeting, and that a contract can be initiated between CWCB and Red Mesa by July, 2009, the following schedule can be developed:

Milestone	Date
Contract approved	July, 2009
Contract signed	September, 2009
Notice-to-proceed	September, 2009
Initiate work on project	October, 2009
Complete Task 1	November, 2009
Complete Task 2	December, 2009
Complete Task 3	January, 2010
Complete Task 4	February, 2010
Submit IDA & EAP to SEO for review	February, 2010
Receive comments from SEO	April, 2010
Incorporate SEO comments and finalize	May, 2010

6. Water Availability and Sustainability – this information is needed to assess the viability and effectiveness of the water project or activity. Please provide a description of each water supply source to be utilized for, or the water body to be affected by, the water activity. For water supply sources being utilized, describe its location, yield, extent of development, and water right status. For water bodies being affected, describe its location, extent of development, and the expected effect of the water activity on the water body, in either case, the analysis should take into consideration a reasonable range of hydrologic variation.

No new water supplies will be developed by the proposed work; the results of the proposed IDA study are intended to serve ultimately as the basis for design of a new spillway for the existing Red Mesa Dam and Reservoir, to comply with Colorado dam safety requirements. Compliance with these requirements will help ensure that the reservoir is able to continue its historical storage of water as provided by existing storage decrees.

Existing water rights held by the Red Mesa Reservoir & Ditch Company, all having an appropriation date of 1905 and adjudication date of 1912, are as follows:

- Absolute storage right of 1176 acre-feet for Red Mesa Reservoir, with water to be acquired from natural flows on Hay Gulch or diversions from the La Plata River, either or both;
- Conditional storage right of 2898 acre-feet for Red Mesa Reservoir, with water to be acquired from natural flows on Hay Gulch or diversions from the La Plata River, either or both;
- Absolute right for the diversion of up to 120 cfs from the La Plata River for the purposes of filling Red Mesa Reservoir.

All of the rights are decreed for irrigation, domestic, municipal, industrial, recreation, fish & wildlife, flood control and other beneficial purposes, none of which would be altered by the proposed project. The conditional storage right listed above was decreed for the purpose of a reservoir storage enlargement which has been considered and studied over the years, but work on the dam to accommodate such enlargement has never been initiated, due primarily to its cost being beyond the means of the Company. Reservoir enlargement is not within the scope of the proposed project.

All of the water rights held by the Company are subject to the terms and limitations of the La Plata River Compact with New Mexico.

7. Please provide a brief narrative of any related or relevant previous studies.

Harris Water Engineering of Durango completed a CWCB-sponsored feasibility study for a proposed enlargement of Red Mesa Reservoir in October, 2001, concluding that enlargement of the reservoir as described in that report was not feasible. The report discusses conditions of known spillway inadequacy and the development of an acceptable inflow design flood for design of a new spillway for the enlarged dam. The Inflow Design Flood was estimated to be about 8000 cfs, requiring a significant upgrade in capacity from the existing spillway. Cost of the enlarged spillway was estimated to be about $300,000.

Wright Water Engineers completed a CWCB-sponsored feasibility study, prepared for the La Plata Water Conservancy District, for the enlargement of the reservoir in April, 2003. This study considered the larger context of enlargement of the reservoir using monies set aside for La Plata River water development at the time that the La Plata water supplies were eliminated from the federal Animas-La Plata Project. Existing spillway size was again noted to be inadequate. For the enlargement design, the consultant determined that an Inflow Design Flood of 53,000 cfs would need to be accommodated, requiring a substantial increase from the existing spillway capacity. Cost of the spillway portion of the dam enlargement was estimated to be around $1.5M.

8. Additional Information – If you feel you would like to add any additional pertinent information please feel free to do so here.

The large variation of Inflow Design Flood size and spillway cost between the studies described in the above item illustrates the need for definition of an Inflow Design Flood (IDF) which utilizes procedures accepted by the State Engineer as an alternative to the full Probable Maximum Precipitation (PMP) analyses prescribed in the past. To this point in time, neither the SEO's new Extreme Precipitation Analysis Tool (EPAT) nor Incremental Damage Analysis has been applied to the Red Mesa watershed to determine the minimum IDF required by the SEO for the existing reservoir. The proposed work would address both of those methodologies in identifying a suitable IDF for design of a compliant spillway.

The above statements are true to the best of my knowledge:

Signature of Applicant: – Red Mesa Reservoir & Ditch Co.

Print Applicant's Name: Jim Greer

Project Title: Red Mesa Dam & Reservoir – Incremental Damage Analysis & Emergency Action Plan

Return this application to:

Mr. Todd Doherty
Intrastate Water Management and Development Section
COLORADO WATER CONSERVATION BOARD
1580 Logan Street, Suite 600
Denver, CO 80203

To submit applications by Email, send to: todd.doherty@state.co.us

Attachment 1

Project Budget

Total Costs				
	Labor	Other Direct Costs	Matching Funds (If Applicable)	Total Project Costs
Task 1 – Hydrologic Analysis	6568.00	369.54		6937.54
Task 2 – Dam Breach Analysis	7407.00	222.21		7629.21
Task 3 – Inundation Mapping	5173.00	155.19		5328.19
Task 4 – Report Preparation	11,306.00	971.68		12,277.68
Total Costs:	30,454.00	1718.62		32,172.62

Personnel Costs									
Project Personnel: Hourly Rate:	Project Manager $174.00	Principal-in-Charge $174.00	Senior Consultant $174.00	Project Engineer $137.00	Staff Engineer $95.00	CADD Tech. $84.00	Project Asst. $74.00	Word Proc. $69.00	Total Costs
Task 1	12		1	4	38		2		6568.00
Task 2	4	1	5	7	48		2		7407.00
Task 3				5	28	20	2		5173.00
Task 4	18	1		10	46	12	2	16	11,306.00
Total Hours:	34	2	6	26	160	32	8	16	
Cost:	5916.00	348.00	1044.00	3562.00	15,200.00	2688.00	592.00	1104.00	30,454.00

Other Direct Costs					
Item:	Communication (3% of labor)	Reproduction	Mileage		Total
Task 1	197.04		172.50		369.54
Task 2	222.21				222.21
Task 3	155.19				155.19
Task 4	339.18	575.00	57.50		971.68
Total Cost:	913.62	575.00	230.00		1718.62