



**TO:** Colorado Water Conservation Board Members

**FROM:** Kirk Russell, P.E., Chief, Finance Section

**DATE:** November 16-17, 2016 Board Meeting

**AGENDA ITEM:** 9b. 2017 Projects Bill  
Non-Reimbursable Project Investments "En Bloc" Approval

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### Introduction

The Finance Committee reviewed the following Construction Fund - Non-Reimbursable Investment (NRI) applications on September 19, 2016 in Edmonds, Colorado. The Committee recommended that the Board approve the following projects 'En-Bloc'. Financial Policy #13 sets the desired annual growth of the Construction Fund. If approved, these NRIs will be written into the 2017 Projects Bill. Board Memos and Data Sheets for each project are included. No formal presentation will be made unless requested.

(1)	Flood & Drought Response Fund - Refresh	Statewide	\$	500,000
(2)	Colorado Floodplain Map Modernization - Refresh	Statewide	\$	500,000
(3)	Satellite Monitoring System Maintenance	Statewide	\$	380,000
(4)	Litigation Fund - Refresh	Statewide	\$	1,300,000
(5)	CDSS Operation and Maintenance	Statewide	\$	200,000
(6)	Feasibility Study Small Grant Fund Increase	Statewide	\$	300,000
(7)	Colorado Mesonet Project	Statewide	\$	154,000
(8)	Water Forecasting Partnerships Project	Statewide	\$	800,000
(9)	Fish & Wildlife Resources Fund (122.2) - Refresh	Statewide	\$	1,500,000
(10)	Alternative Agricultural Transfer Methods (ATMs) Grant Program	Statewide	\$	<u>1,000,000</u>
			<b>Total</b>	<b>\$ 6,634,000</b>

### Recommendation

The Staff recommends the Board approve the Non-Reimbursable Investments listed as Agenda Item 9b. (1) through (10) and include them in the 2017 Project Bill.

Attachments: Summary of all Projects Bill NRI's





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John Hickenlooper, Governor

Robert Randall, DNR Executive Director

James Eklund, CWCB Director

**TO:** Colorado Water Conservation Board Members

**FROM:** Kevin Houck, P.E., Chief, Watershed Protection & Flood Mitigation Section  
Taryn Finnessey, Climate Risk Mngmt. Specialist, Water Supply Planning  
Section

**DATE:** November 16-17, 2016 Board Meeting

**AGENDA ITEM:** 9b. 2017 Projects Bill  
Non-Reimbursable Project Investments "En-Bloc" Approval  
(1) Flood and Drought Response Fund - Refresh

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### Introduction

A \$150,000 Flood Response Program was authorized in the 2001 Construction Fund Bill (SB 01-157) and enacted by the Colorado General Assembly. This amount was increased in the 2007 Construction Fund Bill (SB 07-122) to \$300,000 to reflect the additional cost of performing existing program functions and the addition of valuable services under the program. In FY 2013 the scope of the fund was expanded to include drought response activities, which continue to be included. The original expansion of the scope did not include any increase in funds; however in fiscal year 2014 the fund was increased to \$500,000 to reflect activities associated with Drought Response and to address the increasing threat of wildfires and post-wildfire activities. The Flood and Drought Response Fund (Fund) exists to give the CWCB an ability to quickly respond to events and have program funds in the areas of: 1) flood & drought documentation, 2) flood & drought forecasting and outlooks, 3) post-event floodplain mapping, 4) aerial photography, and 5) flood & drought mitigation. Funds from this account may also be used for projects and studies in support of the efforts of the Colorado Resiliency Working Group (CRWG), especially the Watersheds and Natural Resources Sector, a subgroup headed by CWCB staff as well as climate change activities that involve the CRWG. The CRWG is committed to improving state processes to incorporate resiliency into Colorado public health, safety, and welfare.

The current request is to refresh the account up to \$500,000 for FY 2017/18 for flood and drought response purposes, including post-wildfire activities. Use of this fund to address both flood and drought increases the efficiency and effectiveness of the CWCB to adequately respond to natural hazards affecting Colorado while also recognizing the current fiscal constraints by utilizing existing resources. Staff clearly recognizes that there will be years in the future when both flood conditions and drought conditions exist during the same year, as was the case in 2013. In those situations, the Fund could be stressed by needs from the two extreme conditions, and Staff will prioritize expenditures.

### Staff Recommendation

Staff recommends the Board request the General Assembly to authorize the state treasurer the transfer of up to \$500,000 from the Construction Fund to the Flood and Drought Response Fund to refresh the unencumbered balance up to \$500,000 for technical activities related to flood and drought response.





A \$150,000 Flood Response Program was authorized in the 2001 Construction Fund Bill (SB 01-157) and enacted by the Colorado General Assembly. This amount was increased in the 2007 Construction Fund Bill (SB 07-122) to \$300,000 to reflect the additional cost of performing existing program functions and the addition of valuable services under the program. In FY 2013 the scope of the fund was expanded to include drought response activities, which continue to be included. The original expansion of the scope did not include any increase in funds; however in fiscal year 2014 the fund was increased to \$500,000 to reflect activities associated with Drought Response and to address the increasing threat of wildfires and post-wildfire activities.

P R O J E C T D E T A I L S	
<i>Project Cost:</i>	\$500,000 annually
<i>NRI Funding Request:</i>	\$500,000
<i>Funding Source:</i>	Construction Fund
<i>Project Type:</i>	Program Funds
<i>Type of Grantee:</i>	State Government

L O C A T I O N	
<i>Benefits:</i>	Statewide
<i>Water Source:</i>	N/A
<i>Drainage Basin:</i>	All Basins

The Flood and Drought Response Fund (Fund) exists to give the CWCB an ability to quickly respond to events and have program funds in the areas of: 1) flood & drought documentation, 2) flood & drought forecasting and outlooks, 3) post-event floodplain mapping, 4) aerial photography, and 5) flood & drought mitigation. Funds from this account may be used for projects and studies in support of the efforts of the Colorado Resiliency Working Group (CRWG), especially the Watersheds and Natural Resources Sector, a subgroup headed by CWCB staff as well as climate change activities that involve the CRWG. The CRWG is committed to improving state processes to incorporate resiliency into Colorado public health, safety, and welfare.

The current request is to refresh the account up to \$500,000 for FY 2017/18 for flood and drought response purposes, including post-wildfire activities. Use of this fund to address both flood and drought increases the efficiency and effectiveness of the CWCB to adequately respond to natural hazards affecting Colorado while also recognizing the current fiscal constraints by utilizing existing resources. Staff clearly recognizes that there will be years in the future when both flood conditions and drought conditions exist during the same year, as was the case in 2013. In those situations, the Fund could be stressed by needs from the two extreme conditions, and Staff will prioritize expenditures.



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**TO:** Colorado Water Conservation Board Members

**FROM:** Thuy Patton, Floodplain Mapping Coordinator,  
Watershed Protection & Flood Mitigation Section

**DATE:** November 16-17, 2016 Board Meeting

**AGENDA ITEM:** 9b. 2017 Projects Bill  
Non-Reimbursable Project Investments "En-Bloc" Approval  
(2) Colorado Floodplain Map Modernization Program

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### Introduction

In early 2003, Congress approved a substantial funding package to provide updated floodplain mapping nationwide. Similar funding levels have been allocated by Congress in subsequent years. The CWCB approved and the General Assembly authorized a non-reimbursable investment of \$500,000 in the 2003 Construction Fund Bill with annual funding amounts in all subsequent Bills. Staff is now requesting a total of \$500,000 for program funding.

Colorado has received almost \$12 million in federal grant dollars for floodplain mapping related activities since 2003 as part of the floodplain Map Modernization program initiated by FEMA. The FEMA funds are being matched by CWCB and local cost-share dollars to implement the map update work that includes engineering and GIS to create new digital countywide maps. The funds authorized in the 2003 and all subsequent Construction Fund Bills have provided the required non-federal matching dollars. The State funds are further leveraged by local cost share dollars and in-kind services from many communities thus far.

### Staff Recommendation

Staff recommends the Board request the General Assembly to appropriate the sum of \$500,000 or so much as may be necessary in order to restore the unencumbered balance up to \$500,000 to the Department of Natural Resources for use by the Colorado Water Conservation Board to continue to assist with the preparation of revised and improved floodplain studies and maps for communities throughout Colorado and to participate in federally sponsored floodplain map modernization activities.





Colorado has received approximately \$12 million in federal grant dollars for floodplain mapping activities as part of the floodplain Map Modernization/Risk Map Program (Program) initiated by FEMA in 2003. The FEMA funds are being matched by CWCB and local cost-share dollars to implement the map update work to create updated digital floodplain maps and flood risk tools. The initial Program funds authorized in the 2003 and all subsequent Construction Fund Bills have provided the required non-federal matching dollars (80/20 cost share program). The State funds are further leveraged by local cost share dollars and in-kind services from many communities thus far. The total funding amounts have been instrumental in keeping Colorado as a lead state within FEMA Region 8 and will continue to benefit Colorado communities in the future. It is expected that significant FEMA funding will continue as long as the Program exists. Program deliverables will become part of the Flood DSS system to increase data capture and enhance Colorado's decision support tools.

P R O J E C T D E T A I L S	
<i>Project Cost:</i>	\$1,900,000
<i>NRI Funding Request:</i>	\$500,000
<i>Funding Source:</i>	Construction Fund
<i>Project Type:</i>	Matching Funds for Grants
<i>Type of Grantee:</i>	State Government

L O C A T I O N	
<i>Benefits:</i>	Statewide
<i>Water Source:</i>	Various
<i>Drainage Basin:</i>	All Basins

The Program will eventually impact the entire state, and the objective is to develop updated watershed-based and/or countywide floodplain maps using current base map information within a digital environment. The use of GIS technology will be employed for all new countywide studies for ease of distribution, updating and viewing. The table below summarizes funding provided by the CWCB and FEMA/Local governments for CWCB managed projects (in progress or completed).

<u>COUNTY/WATERSHED</u>	<u>CWCB Funds</u>	<u>FEMA/Local Funds</u>	<u>COUNTY/WATERSHED</u>	<u>CWCB Funds</u>	<u>FEMA/Local Funds</u>
Archuleta	\$71,000	\$228,760	Mesa	\$33,960	\$435,780
Boulder	\$17,807	\$524,709	Montrose	\$60,376	\$241,503
Clear Creek	\$2,950	\$158,605	Montezuma	\$53,000	\$452,735
Chaffee	\$44,000	\$399,290	Morgan	\$25,000	\$270,700
Delta	\$21,630	\$277,763	Park	\$18,800	\$165,200
El Paso	\$75,635	\$1,472,030	Pitkin	\$20,772	\$466,388
Elbert	\$141,548	\$301,982	Prowers	\$76,605	\$691,024
Fremont	\$23,294	\$146,240	Pueblo	\$71,768	\$1,115,902
Garfield	\$29,912	\$325,000	Rio Grande	\$58,300	\$152,810
Gunnison	\$79,250	\$272,422	Summit	\$21,098	\$189,876
La Plata	\$74,200	\$391,910	Teller	\$23,100	\$207,900
Logan	\$30,550	\$271,050	Weld	\$112,419	\$658,530
St. Vrain	\$88,580	\$354,320	Purgatoire	\$140,137	\$347,963
Clear Creek Wtsd	\$114,060	\$456,240	Cache La Poudre Phase 1 & 2	\$718,834	\$150,000
Upper White Wtsd	\$0	\$353,756	El Paso Approximate Mapping	\$0	\$129,860
Middle South Platte Approximate Mapping	\$0	\$80,000	Cache La Poudre Phase 3		\$285,596
Upper Gunnison 2 Phase	\$38,935	\$126,815	IFSAR (Moffat, Lincoln, Yuma, Phillips, Middle South Platte)	\$100,000	\$250,000



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**TO:** Colorado Water Conservation Board Members

**FROM:** Jeff Baessler, Deputy Section Chief, Stream and Lake Protection Section

**DATE:** November 16-17, 2016 Board Meeting

**AGENDA ITEM:** 9b. 2017 Projects Bill  
Non-Reimbursable Project Investments "En-Bloc" Approval  
(3) Satellite Monitoring/Maintenance Program

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### Introduction

The Division of Water Resources (DWR) has requested an appropriation of \$380,000 for the continued operational viability of the state Satellite-linked Monitoring System (SMS) and Stream Gage Refurbishment Program. Each year, funding for this program has been reviewed and approved by both the Finance Committee and the Board. It has been recognized that it is critical for both the State's water planning and water administrative agencies to support and maintain state-of-art stream gaging programs and continue to provide accurate water resources data to support multi-agency and water user needs. The DWR Satellite-linked Monitoring program is outlined in §37-60-121 and §37-80-102 C.R.S.

### Discussion

The \$380,000 request for FY 2017-2018 will support the continued, long-term operational viability of 520 satellite-linked water resources monitoring sites. These funds will be allocated as follows:

\$275,000 for replacement of out-dated Data Collection Platforms (DCP) and associated satellite telemetry equipment and upgrading of satellite transmission components. The rate of replacement of DCPs is based on a life expectancy from normal wear, tear and software life cycle issues of 10 years. Replacement of out of date DCPs may also be required to accommodate technology upgrades and changes which are mandated by NOAA, the Federal Agency managing the GOES satellite resource.

\$55,000 for refurbishing existing stream gages as needed to maintain operational reliability of stream flow data collection infrastructure and equipment. This is a recurring annual request to cover refurbishment and repair costs which arise due to deterioration of the physical stream gage infrastructure. In addition, these funds will be used as necessary to purchase measurement equipment that can minimize or eliminate the need for future capital improvements such as personnel cableways.

The requested funding amount of \$50,000 is to provide annual maintenance support for the Lysimeter in the Arkansas River Basin.

### Staff Recommendation

Staff recommends the Board request the General Assembly to appropriate \$380,000 from the Construction Fund to the Department of Natural Resources for use by the Division of Water Resources to replace out-dated Data Collection Platforms and associated satellite telemetry equipment in the existing satellite monitoring system, and to refurbish existing stream gages.







## Satellite Monitoring/Maintenance Program

Colorado Water Conservation Board

November 2016 Board Meeting

This project entails the continued, long-term operational viability of the State Satellite Linked Monitoring System and Stream Gage Refurbishment Program, which is administered by the Division of Water Resources (DWR). This program currently encompasses 520 satellite stream gaging stations which require continued replacement of outdated data collection platforms, upgrades to transmission components, and refurbishment of the associated infrastructure. In addition, many existing gaging stations need to be modified to provide critical stream flow data for both flood and low flow monitoring. Changes in technology, which will ultimately increase reliability and real time data transmission rates, will require the DWR to continue to upgrade the system in the future. The costs associated with the continued refurbishment and operational viability of the system is currently approximately \$380,000 per year.

P R O J E C T D E T A I L S	
<i>Project Cost:</i>	\$380,000
<i>NRI Funding Request:</i>	\$380,000
<i>Funding Source:</i>	Construction Fund
<i>Project Type:</i>	DWR Streamgaging
<i>Type of Grantee:</i>	State Agency

L O C A T I O N	
<i>Benefits:</i>	Statewide
<i>Water Source:</i>	Various
<i>Drainage Basin:</i>	All Basins



North Fork Gunnison River - New Radar Sensor Installation (Note these installations are more cost efficient as they require significantly less infrastructure than a typical stilling well and shelter)

Purgatoire River @ Fishers Crossing  
DWR/CWCB Compact Gage



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**TO:** Colorado Water Conservation Board Members

**FROM:** Carlee Brown, Chief, Interstate, Federal, and Water Information Section

**DATE:** November 16-17, 2016 Board Meeting

**AGENDA ITEM:** 9b. 2017 Projects Bill  
Non-Reimbursable Project Investments "En-Bloc" Approval  
(4) Litigation Fund Budget - Refresh

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### Introduction

Section 37-60-121(2.5) provides that the Colorado Water Conservation Board is authorized "to expend, pursuant to continuous appropriation and subject to the requirements of paragraph (b) of this subsection (2.5), a total sum not to exceed the balance of the litigation fund, which is created, for the purpose of engaging in litigation...to defend and protect Colorado's allocations of water in interstate streams and rivers..." Paragraph (b) of section 121(2.5) provides: "pursuant to the spending authority set forth in paragraph (a) of this subsection (2.5), moneys may be expended from the litigation fund at the discretion of the board if (l) with respect to litigation, the Colorado Attorney General requests that the Board authorize the expenditure of moneys in a specified amount not to exceed the balance of the fund for the costs of litigation associated with one or more specifically identified lawsuits meeting the criteria set forth in paragraph (a) of this subsection (2.5)."

The current request is to refresh the account up to \$2,000,000 for FY 2017/18. Increased activity on the interstate streams, especially the Rio Grande, the Republican, and the Colorado Rivers, has brought down the balance of the litigation fund since last year. With many ongoing processes and controversies ahead, the IFWI section and Office of the Attorney General requested in May 2016 that \$1,052,580 in expenses in FY 2016/17 are needed. Due to additional draw-downs from the account, a request for \$1,300,000 is needed to refresh the fund up to the \$2 million. This will allow staff and the Attorneys General to prepare and participate in these ongoing important matters.

### Staff Recommendation

Staff recommends the Board request the General Assembly to authorize the transfer of \$1,300,000 from the Construction Fund to the Litigation Fund to allow the Attorneys General Office to continue to prepare and participate in ongoing legal matters on behalf of the Colorado Water Conservation Board.







Section 37-60-121(2.5) provides that the Colorado Water Conservation Board is authorized "to expend, pursuant to continuous appropriation and subject to the requirements of paragraph (b) of this subsection (2.5), a total sum not to exceed the balance of the litigation fund, which is created, for the purpose of engaging in litigation...to defend and protect Colorado's allocations of water in interstate streams and rivers..." Paragraph (b) of section 121(2.5) provides: "pursuant to the spending authority set forth in paragraph (a) of this subsection (2.5), moneys may be expended from the litigation fund at the discretion of the board if (l) with respect to litigation, the Colorado Attorney General requests that the Board authorize the expenditure of moneys in a specified amount not to exceed the balance of the fund for the costs of litigation associated with one or more specifically identified lawsuits meeting the criteria set forth in paragraph (a) of this subsection (2.5)."

The current request is to refresh the account up to \$2 million for FY 2017/18. Increased activity on the interstate streams, especially the Rio Grande, the Republican, and the Colorado Rivers, has brought down the balance of the litigation fund since last year. With many ongoing processes and controversies ahead, the IFWI section and Office of the Attorney General request that the fund be refreshed by \$1,300,000 up to the cap of \$2 million to allow staff and the Attorneys General to prepare and participate in these ongoing important matters.

P R O J E C T D E T A I L S	
<i>Project Cost:</i>	Approx. \$700,000 annually
<i>NRI Funding Request:</i>	\$1,300,000
<i>Funding Source:</i>	Construction Fund
<i>Project Type:</i>	Program Funds
<i>Type of Grantee:</i>	State Government

L O C A T I O N	
<i>Benefits:</i>	Statewide
<i>Water Source:</i>	N/A
<i>Drainage Basin:</i>	All Basins



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**TO:** Colorado Water Conservation Board Members

**FROM:** Andy Moore, Water Resources Engineer, Interstate, Federal,  
and Water Information Section

**DATE:** November 16-17, 2016 Board Meeting

**AGENDA ITEM:** 9b. 2017 Projects Bill  
Non-Reimbursable Project Investments "En-Bloc" Approval  
(5) Colorado's Decision Support Systems (CDSS) Operation & Maintenance

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### Introduction

This funding request is for ongoing operation and maintenance of Colorado's Decision Support Systems (CDSS), a joint effort of CWCB and DWR to provide data and modeling tools to assist in water resource planning and management in Colorado. Over the last 20 years, CDSS databases, analytical tools, and water resource models have been developed and implemented for most of the State, with development of the Arkansas River DSS beginning soon. These CDSS components need periodic maintenance and operational revisions to protect the State's investment and keep the tools viable as water resource planning becomes more challenging in the future. CDSS data and tools were a key component of several Basin Implementation Plans, and this role will only grow with future revisions of Colorado's Water Plan.

### Staff Recommendation

Staff recommends the Board request the General Assembly appropriate \$200,000 from the Construction Fund to the Department of Natural Resources for use by the CWCB to continue the Colorado's Decision Support System Operation and Maintenance activities.





**Colorado Decision Support System (CDSS)**  
**Operation & Maintenance**  
Colorado Water Conservation Board  
November 2016 Board Meeting

This funding request is for ongoing operation and maintenance of Colorado's Decision Support Systems (CDSS), a joint effort of CWCB and DWR to provide data and modeling tools to assist in water resource planning and management in Colorado. Over the last 20 years, CDSS databases, analytical tools, and water resource models have been developed and implemented for most of the State, with development of the Arkansas River DSS beginning soon. These CDSS components need periodic maintenance and operational revisions to protect the State's investment and keep the tools viable as water resource planning becomes more challenging in the future. CDSS data and tools were a key component of several Basin Implementation Plans, and this role will only grow with future revisions of Colorado's Water Plan.

P R O J E C T D E T A I L S	
<i>Project Cost:</i>	\$200,000
<i>NRI Funding Request:</i>	\$200,000
<i>Funding Source:</i>	<i>Construction Fund</i>
<i>Project Type:</i>	Program Funds
<i>Type of Grantee:</i>	State Government

L O C A T I O N	
<i>Benefits:</i>	Statewide
<i>Water Source:</i>	N/A
<i>Drainage Basin:</i>	All Basins



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**TO:** Colorado Water Conservation Board Members

**FROM:** Anna Mauss, P.E. Loan Program Marketing

**DATE:** November 16-17, 2016 Board Meeting

**AGENDA ITEM:** 9b. 2017 Projects Bill  
Non-Reimbursable Project Investments "En-Bloc" Approval  
(6) Feasibility Study Small Grant Fund - Refresh

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### Introduction

In 1999 through SB 99-173, the Legislature authorized the Board to set aside \$200,000 of Construction Fund money in a special fund reserved for feasibility studies for water resources infrastructure systems projects. Section 37-60-122.7(5) of the C.R.S. established the fund. The money in the fund is continuously appropriated to the Board for immediate availability for making small grants to water users to help pay for the costs of preparing feasibility studies in conformance with the CWCB Water Project Loan Program Guidelines. The fund is intended to encourage planning by local water supply entities and to evaluate technical feasibility and the financial aspects of projects if funded through Water Project Loan Program.

In an effort to align with the goals of the Colorado Water Plan, staff is asking the board to support a statute change in Section 37-60-122.7(5) to increase the appropriation to \$300,000. The intent of the increase is to encourage and support reconnaissance and feasibility planning of water projects, especially storage projects, by local water providers. This change will need to be included in the FY17 Projects Bills.

### Staff recommendation

Staff recommends the Board request the General Assembly to authorize the transfer of \$300,000 from the Construction Fund to the Feasibility Study Small Grant Fund for use by the CWCB to continue to support feasibility level planning and engineering of water projects by local water providers.





## Feasibility Study Small Grant Fund Increase

Colorado Water Conservation Board

November 2016 Board Meeting

In 1999 through SB 99-173, the Legislature authorized the Board to set aside \$200,000 of Construction Fund money in a special fund reserved for feasibility studies for water resources infrastructure systems projects. The money in the fund is continuously appropriated to the Board for immediate availability for making small grants to water users to help pay for the costs of preparing feasibility studies in conformance with the CWCB Water Project Loan Program Guidelines. The fund is intended to encourage planning by local water supply entities and to evaluate technical feasibility and the financial aspects of projects if funded through Water Project Loan Program.

P R O J E C T D E T A I L S	
<i>Project Cost:</i>	\$300,000
<i>NRI Funding Request:</i>	\$300,000
<i>Funding Source:</i>	Construction Fund
<i>Project Type:</i>	Grant Fund Refresh
<i>Type of Grantee:</i>	CWCB

L O C A T I O N	
<i>Benefits:</i>	Statewide
<i>Water Source:</i>	Various
<i>Drainage Basin:</i>	All Basins

In an effort to align with the goals of the Colorado Water Plan, staff is asking the board to support a statute change in Section 37-60-122.7(5) to increase the appropriation to \$300,000. The intent of the increase is to encourage and support reconnaissance and feasibility planning by local water providers. This change will need to be included in the FY17 Projects Bills.





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**TO:** Colorado Water Conservation Board Members

**FROM:** Taryn Finnessey, Climate Change Risk Management Specialist

**DATE:** November 16-17, 2016 Board Meeting

**AGENDA ITEM:** 9b. 2017 Projects Bill  
Non-Reimbursable Project Investments "En-Bloc" Approval  
(7) Colorado Mesonet Project

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### Introduction

Weather and climate monitoring in Colorado currently exists as a patchwork of networks operated by multiple federal, state, local and private entities, rather than a single mesonet or spatially coherent network of weather stations reporting in near real-time via major data portals. Since each network was built for a specific purpose, there is no spatial coherency to where stations are located. Each network is valuable for specific applications. Collectively, the data are critical for long term climate monitoring, agriculture, fire weather, flood warning, water supply forecasting and drought monitoring.

July 2015, CoAgMet received the first funding from the state to begin moving towards a multipurpose state "Mesonet" focusing on agricultural and water resources as well as long-term climate monitoring and short term real-time weather tracking to aid weather prediction, emergency management and other diverse uses. With this funding, we have been able to identify products and tools greatly needed to enhance data, areas needed for expansion and stations needed for upgrading to newer technology in order to provide beneficial real-time weather data.

In order to continue expanding and improving the Colorado Mesonet data and products, and track long term climate conditions that could impact our water resources, continuation of the state funding is needed. With this funding we will be able to develop climate summaries for the best long-term stations for climate monitoring, develop a new Colorado Mesonet data access and display web portal and develop daily growing season water balance graphics for drought tracking and water conservation. We will expand on soil moisture monitoring at stations to help with drought tracking. We will also start upgrading the CO-RCRN stations to measure and report variables for reference ET calculations and complete data comparisons using the CO-RCRN stations, CoAgMet stations and NWS Coop stations.

### Staff Recommendation

Staff recommends the Board request the General Assembly to appropriate \$154,000 from the Construction Fund to the Department of Natural Resources for use by the CWCB for the continuation of the Colorado Mesonet Project.





The Colorado Climate Center runs the Colorado Agricultural Meteorological (CoAgMet) network consisting of 75 stations statewide tracking agricultural weather, climate and drought. The Center also manages the Colorado Regional Climate Reference Network (CO-RCRN) which consists of 17 high-quality precipitation and temperature monitoring stations located in pristine environments. These sites, started by NOAA, were intended to monitor the climate over long periods of time in areas free of urbanization and with datasets free of station moves, changes in observation time and other factors that create inhomogeneity in climate datasets. Current base funding for these networks does not allow for them to be run at high quality levels and still develop products to enhance the data. CO-RCRN needs multiple station visits per year to add and remove fluids from rain gauges. The CoAgMet network, in order to be run as a reliable mesonet for real-time weather monitoring, drought monitoring, and calculations of consumptive use needs close attention paid to quality control and making sure all sensors are functioning properly. If they aren't, a technician should be deployed as soon as possible to resolve issues (particularly during the growing season). Due to budget and staff constraints, products cannot be developed while providing the close attention needed for quality data.

July 2015, CoAgMet received the first funding from the state to begin moving towards a multipurpose state "Mesonet" focusing on agricultural and water resources as well as long-term climate monitoring and short term real-time weather tracking to aid weather prediction, emergency management and other diverse uses. With this funding, we have been able to identify products and tools greatly needed to enhance data, areas needed for expansion and stations needed for upgrading to newer technology in order to provide beneficial real-time weather data.

In order to continue expanding and improving the Colorado Mesonet data and products, and track long term climate conditions that could impact our water resources, continuation of the state funding is needed. With this funding we will be able to develop climate summaries for the best long-term stations for climate monitoring, develop a new Colorado Mesonet data access and display web portal and develop daily growing season water balance graphics for drought tracking and water conservation. We will expand on soil moisture monitoring at stations to help with drought tracking. We will also start upgrading the CO-RCRN stations to measure and report variables for reference ET calculations and complete data comparisons using the CO-RCRN stations, CoAgMet stations and NWS Coop stations.

Grant funds will allow effective enhancements to the CoAgMet network, improved delivery of data and new products for water use planning and climate change monitoring. They will improve real-time monitoring capabilities to improve severe weather warnings and emergency management applications.

*Importantly, this grant funding will be used to qualify for federal matching funds through the National Mesonet to support critical operations and maintenance needs.*

P R O J E C T D E T A I L S	
Project Cost:	\$154,000
NRI Funding Request:	\$154,000
Funding Source:	Construction Fund
Project Type:	Data Collection/Maint.
Type of Grantee:	State Government

L O C A T I O N	
Benefits:	Statewide
Water Source:	Various
Drainage Basin:	All Basins



**COLORADO**

**Colorado Water  
Conservation Board**

Department of Natural Resources

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John Hickenlooper, Governor

Robert Randall, DNR Executive Director

James Eklund, CWCB Director

**TO:** Colorado Water Conservation Board Members

**FROM:** Kevin Houck, Section Chief, Watershed Protection and Flood Mitigation Section  
Joe Busto, Scientist Researcher, Watershed Protection and Flood Mitigation Section

**DATE:** November 16-17, 2016 Board Meeting

**AGENDA ITEM:** 9b. 2017 Projects Bill  
Non-Reimbursable Project Investments "En-Bloc" Approval  
(8) Water Forecasting Partnerships Project

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### Introduction

The Rio Grande Forecasting Project winter 2014-15 was a historic project in the United States. The CWCB and local water users partnered with NASA Aerial Snow Observatory, NOAA-National Severe Storms Lab, the National Center for Atmospheric Research, and Riverside Technologies, inc. to support the project by comparing existing water forecast methods to emerging technologies for snowpack assessment and water modeling. We also had RTI develop the NWS West Gulf RFC hydrologic modeling to put it in the hands of the DWR. Initial results were that the WRF-Hydro model was robust, the mobile radar put precipitation where it belonged for modeling, and we had a snow on flight and await a snow free flight from NASA. NASA will provide value added as they do for the California DWR.

In the Rio Grande, water forecasting is an issue and the DWR found that four of the last ten years have had large volumetric forecast errors with impacts in the millions of dollars to the water users. NCAR has a new \$1M contract with NWS-Office of Hydrologic Development to run WRF-Hydro for the nation. It is known that WRF-Hydro is superior modeling but more quality data, field projects, and optimization are needed to outperform existing methods. We will partner with forecasters on R&D to benefit compacts, apportionment, and beneficial use in Colorado.

Traditional snow data at a few discrete points will not serve us well now or in the future. Nor will reliance on historical data sets to estimate the water volume numbers today. We need to partner and force the future by developing more accurate data and modeling for a better way of doing business. This project request builds on success in the Rio Grande with plans to work with the agencies to implement projects in other watersheds. Dick Wolfe has stated there is a general need for better forecasting statewide and Nathan Coombs of the Conejos Water District said, "Working with these experts and the new science has absolutely put more water at the head gates of our users."

### Staff Recommendation

Staff recommends the Board request the General Assembly to appropriate \$800,000 from the Construction Fund to the Department of Natural Resources for use by the CWCB for the continuation of the Water Forecasting Partnerships Project.





## Water Forecasting Partnerships Project

Colorado Water Conservation Board

November 2016 Board Meeting

The Rio Grande Forecasting Project was a historic end-to-end field demonstration project that illustrated 21<sup>st</sup> century science will lead to better water management in Colorado and is ongoing. The new federal national water model with new data and calibration will give more accurate water supply forecast numbers leading to better administration and apportionment among all the competing interests. In yellow is staffs plan to spend the existing \$300K. In blue is staff's plan to spend \$600K for water forecasting work in FY 2017-18. There is a total of about \$1.4M in project ideas listed.

### PROJECT DETAILS

*Project Cost:* \$800,000 (matching will be sought)

*NRI Funding Request:* \$800,000

*Funding Source:* Construction Fund

*Project Type:* Data and Modeling Upgrades

*Type of Grantee:* Funding for Partnerships

### L O C A T I O N

*Benefits:* Statewide

*Water Source:* Various

*Drainage Basin:* All Basins

FY 2016-17 – Existing Funding			
Location	Item	Cost	Notes
Rio Grande	NASA ASO April 1 flight Rio Grande	110,000	Third year of snowpack flights in Rio Grande
Rio Grande	NOAA Mobile radar Dec-March	70,000	NOAA radar in Rio Grande matches up with GOES-R satellite mission
Rio Grande	NCAR modeling & site installs	50,000	National water model forecasts and field work
Grand Mesa	NRCS SNOTEL	17,500	Partner on SNOTEL for water forecasts and landslide
Rio Grande	Snow data & Model with USGS	30,000	USGS matching funding for snow data above Creede
statewide	soil moisture radiation sensors	20,000	NRCS installs makes national water model better
statewide	Field Work /Travel	5,000	West Gulf RFC, AMS Conference, Inspect radars
302,500			

Proposed WY 2017-2018			
Location	item	Cost	Notes
statewide	Put DWR gauges in WRF-Hydro	70,000	NCAR does work WRF-Hydro only has USGS gauges in it
statewide	soil & solar radiation sensors	35,000	NRCS installs makes WRF-Hydro better
Arkansas	Radar QPE +WRF Hydro forecasts	120,000	NOAA radar data & NCAR does experimental forecasts
Rio Grande	National water model experimental forecasts	35,000	NCAR continues to provide experimental forecasts
western slope	database for CSAS	40,000	online CSAS data for analysis and modeling
statewide	Field Work /Travel	5,000	CBRFC, AMS Conference, See mobile radar
Gunnison Basin	NASA ASO mapping	200,000	Expands existing project to just Taylor \$100K in local funding needed
statewide	purchase PX10,000 mobile radar	300,000	\$300,000 Homeland security matched with CWCB
805,000			

Proposed WY 2018-2019			
Location	Item	Cost	Notes
South Platte	Radar QPE +WRF Hydro forecasts	120,000	NOAA develops radar data & NCAR does experimental forecasts
Arkansas	Two SNOTEL sites	35,000	Arkansas partners on two of six requested SNOTEL sites
Rio Grande	new SNOTEL	17,500	Rio partners on requested SNOTEL site
Statewide	Field work/travel	5,000	RFC meetings, AMS Conference, AGU conference
\$177,500			

Unmet Needs			
Location	Item	Cost	Notes
SNOTEL in Rio Grande	SNOTEL in Rio Grande	17,500	NRCS installs and maintains
Rio Grande	USGS data support	30,000	Can only fund one year of USGS effort right now
CSAS	continue CoDos work	40,000	CoDos in Severance Tax too many years now
South Platte	USGS UAV snowpack mapping	93,000	USGS not funded through Severance Tax
Travel to meetings	Field work/travel	5,000	RFC meetings, AMS Conference, AGU conference

\$185,500

**Total \$1,470,500**



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James Eklund, CWCB Director

**TO:** Colorado Water Conservation Board Members

**FROM:** Chris Sturm, Stream Restoration Coordinator

**DATE:** November 16-17, 2016 Board Meeting

**AGENDA ITEM:** 9b. 2017 Projects Bill  
Non-Reimbursable Project Investments "En-Bloc" Approval  
(9) Fish & Wildlife Resources Fund (122.2) - Refresh

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### Introduction

The Fish and Wildlife Resources Fund (aka Fish & Wildlife Mitigation Fund) was established by the Legislature in 1987 with a base of \$5 million to help mitigate the impacts of existing water facilities. Pursuant to C.R.S. Section 37-60-122.2 and Financial Policy 15 and 20 (attached). The purpose of the Policy is for the consideration and approval of Fish and Wildlife Resources Fund grant applications pursuant to sub-sections 2-4 of section 37-60-122.2, C.R.S.

The Board accepts applications throughout the year for grants from this Fund for design plans, engineering, and construction projects to: (1) address impacts from construction of water diversion, delivery, and storage facilities that require a permit, license, or other approval from the US. (2) respond to the needs of declining native species and to the species protected under federal law.

The fund was refreshed in 2002 in the amount of \$5,000,000.

### Staff Recommendation

Staff recommends the Board request the General Assembly to authorize the transfer of \$1,500,000 from the Construction Fund to the Fish & Wildlife Resources Fund.







The Fish and Wildlife Resources Fund (aka Fish & Wildlife Mitigation Account) was established by the Legislature in 1987 with a base of \$5 million to help mitigate the impacts of existing water facilities. The statute was amended in 2002 to recognize the role instream flows play in mitigating impacts, and authorized the CWCB as well as sponsors of existing facilities to use these funds. The following projects have received approval for use of these funds over the years:

P R O J E C T D E T A I L S	
<i>Project Cost:</i>	\$1.5 million
<i>NRI Funding Request:</i>	\$1.5 million
<i>Funding Source:</i>	<i>Construction Fund</i>
<i>Project Type:</i>	Mitigation Grants
<i>Type of Grantee:</i>	Varies

L O C A T I O N	
<i>Benefits:</i>	Statewide
<i>Water Source:</i>	Various
<i>Drainage Basin:</i>	All Basins

\$1.25 million for the Grand Valley Water Management Program  
\$2 million for the Native Aquatic Species Facility  
\$1.28 million for purposes related to the Woford Mountain Reservoir Project  
\$400,000 for the purposes related to the Stagecoach Project  
\$1 million for the Native Species Conservation Trust Fund  
\$162,000 for Lower Blanco Property Owners Association Rio Blanco River Restoration Phase III & IV  
\$70,000 for Colorado Springs Utilities, Clear Springs Ranch Fish Passage  
\$560,000 for Painted Sky R C & D Council, Inc.'s efforts to reconstruct the Hartland Diversion Dam  
\$75,000 for the Coalition for the Upper South Platte's Upper South Platte Diversion Reconstruction Project  
\$50,000 for Colorado State University's Stream Mitigation Banking Protocols work  
\$100,000 for South Suburban Park and Recreation District's South Platte River Enhancement Phase II Project



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**TO:** Colorado Water Conservation Board Members

**FROM:** Craig Godbout, Water Resource Specialist, Water Supply Planning Section

**DATE:** November 16-17, 2016 Board Meeting

**AGENDA ITEM:** 9b. 2017 Projects Bill  
Non-Reimbursable Project Investments "En-Bloc" Approval  
(10) Alternative Agricultural Transfer Methods (ATM's) Grant Program

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### Introduction

The 2007 Legislature approved the Colorado Water Conservation (CWCB) to develop a competitive grant program to advance various agricultural transfer methods as alternatives to permanent dry-up in the Arkansas and South Platte Basins (authorized under SB 07-122). In 2009, an additional appropriation was made to continue the advancement of alternative agricultural water transfers.

This grant program focuses on identifying and assisting in the development of agricultural transfer methods (ATM)/programs that reduce consumptive use by reducing the amount of irrigation water applied to the crops, change in the type of crops planted, reducing the number of irrigated acres from historic levels while lessening the impact to rural communities. Several types of agricultural transfers have been proposed as potential alternatives to the traditional agricultural transfers that often result in permanent dry-up of all or a large portion of irrigation systems as a means to obtain additional water supplies for emerging needs.

Through FY 2015-2016, the Board approved twenty-six grant applications that totaled approximately \$4,600,000. The most recent amount awarded in August 2016 was \$200,000 for a Water Bank Pilot Project on Colorado's west slope with the Grand Valley Water Users Association as fiscal agent.

Since these projects were awarded their funding, much progress has been made by CWCB and the project sponsors in furthering alternatives to permanent water transfers in Colorado. Through these ATM grant projects, CWCB and others have identified numerous hurdles that must be overcome for these alternative water transfer methods to be successful in Colorado. Specifically, the major hurdles facing the implementation of ATM programs in Colorado include: (1) high transaction costs, (2) ability to transfer a portion of a water right (3) certainty of long-term supplies and (4) water rights administration.

The fund was refreshed in 2012 in the amount of \$1,000,000 and again in 2014 in the amount of \$750,000.

### Staff Recommendation

Staff recommends the Board request the General Assembly to appropriate \$1,000,000 from the Construction Fund to the Department of Natural Resources for use by the CWCB for grants to continue the efforts related to Alternative Agricultural Water Transfer Methods.





## Alternative Agricultural Water Transfer Methods (ATMs) Grant Program

Colorado Water Conservation Board  
November 2016 Board Meeting

The following projects have received approval for use of these funds over the years:

P R O J E C T D E T A I L S	
<i>Project Cost:</i>	\$1,000,000
<i>NRI Funding Request:</i>	\$1,000,000
<i>Funding Source:</i>	Construction Fund
<i>Project Type:</i>	Transfer Grants
<i>Type of Grantee:</i>	
L O C A T I O N	
<i>Benefits:</i>	Statewide
<i>Water Source:</i>	Various
<i>Drainage Basin:</i>	All Basins

CWCB - Alternative Agricultural Water Transfer Methods Grant Program: April 2016

Lower Arkansas Valley WCD, Rotational Land Fallowing & Water Leasing Prog., \$320,000  
Colorado Corn Growers Assoc., Measures for Preservation of Colorado Irrigated Agriculture, \$349,650  
Farmers Reservoir & Irrigation Company Alternative Agricultural Water Transfer \$202,500  
Parker Water & Sanitation District, Lower South Platte Irr. Research & Demo. Project, \$477,500  
Colorado River Water Conservation District, Compact Water Bank, \$180,000  
East Cherry Creek Valley WCD, Maintaining Ag. Productivity on Formerly Irrigated Lands, \$111,030  
Colorado Corn Growers Association, FLEX Market Model Project, \$158,365  
Lower Arkansas Valley Water Conservancy District, Farm Financial Planning Tool, \$31,633  
Colorado Water Innovation Cluster, Lake Canal Demonstration Project, \$135,105  
Colorado State University, Land Fallowing in the Arkansas, \$78,489  
The Nature Conservancy, ATMs to meet nonconsumptive & consumptive needs in the Yampa, \$132,000  
Parker Water & Sanitation District, Lower South Platte Irrigation Demonstration Project, \$320,166  
Lower South Platte Water Conservancy District, Water Cooperative, \$300,477  
Upper Arkansas WCD, Building Accounting & Administrative Tools for Lease Fallowing, \$121,500  
Colorado State University, Sub Surface Drip Irrigation Alfalfa, \$8,841  
Conejos WCD, ATMs to Increase Supplies for Conejos Basin Ag, Municipal & Enviro Purposes, \$124,124  
Colorado State University, Implementation of Deficit Irrigation Regimes; Demo & Outreach, \$124,734  
Colorado State University, Poudre Basin Water Sharing Working Group Efforts, \$86,940  
Ducks Unlimited, FLEX Water Market - Education & Implementation Phase, \$120,250  
Colorado River Water Conservation District, Water Bank Feasibility Study - Phase 2, \$180,000  
Lower South Platte WCD, Northeast Colorado Water Cooperative Implementation, \$173,900  
Colorado River WCD, No Chico Brush Agricultural Water Research Project, \$173,080  
Colorado River Water Conservation District, Colorado Water Bank Working Group, \$180,000  
Colorado State University, Agricultural Field Studies and Estimates of Saved Consumptive Use, \$180,000  
Lower Arkansas Valley WCD, Rotational Land Fallowing Leasing Catlin Canal Pilot Project, \$173,782  
Larimer County, Open Space Pilot Project, \$178,425  
Grand Valley Water Users Association, Water Bank Pilot Project, \$200,000