

Water Efficiency Project Summary		
Name of Applicant	Town of Bayfield	
Name of Grant Project	Town of Bayfield Drought Mitigation Plan	
WEGF Grant Request Total		\$30,000
In-Kind Match		\$5,000
Cash Match		\$5,000
Total Project Costs		\$40,000

Applicant Information			
Name of Applicant	Town of Bayfield		
Mailing Address	PO Box 80, Bayfield, CO 81122		
Applicant's Organization Contact ⁽¹⁾	Chris La May		
Position/Title	Town Manager		
Email	clamay@bayfieldgov.org		
Phone	(970) 884-9544		
Grant Management Contact ⁽²⁾	Chris La May		
Position/Title	Town Manager		
Email	clamay@bayfieldgov.org		
Phone	(970) 884-9544		
Name of Consultant (if applicable)	Peter Foster, P.E. – Wright Water Engineers, Inc. (WWE)		
Mailing Address	1666 N. Main Ave., Suite C, Durango, CO 81301		
Position/Title	Vice President		
Email	pfoster@wrightwater.com		
Phone	(970) 259-7411		

(1) Person with signatory authority

(2) Person responsible for creating reimbursement invoices (Invoice for Services) and corresponding with CWCB staff.



Organizations & Individuals Assisting on the Project

A list of the organizations and/or individuals including those hired or otherwise retained by the entity that will assist in the project, and a written statement of their role and contributions

WWE will aid in developing a Drought Management Plan for the Town of Bayfield (Town). Individuals from WWE that will be involved in the project include Peter Foster, Hayes Lenhart, Ben Von Thaden, Danielle Nelson, and Rachel Day. Mr. Foster will serve as the Project Manager for completion of the Drought Management Plan. The remaining WWE team, in conjunction with Town Officials, will work together to complete all eight drought management planning steps lined out in the Colorado Water Conservation Board (CWCB) Municipal Drought Management Plan Guidance Document.

Officials from the Town that will assist in the planning process include Chris La May (Town Manager), Kathy Cathcart (Town Clerk – Utility Billing), Ron Saba (Utility Superintendent), and Public Works Director Jeremy Schulz.

Type of Eligible Entity (check one)

 Covered Entity: as defined in Section 37-60-126 Colorado Revised StatutesPublic

 Non-covered Entity

 ✓
 State or Local Governmental Entity

 Public or Private Agency: entity whose primary purpose includes the promotion of water resource conservation. Please disclose your organizational structure and charter (or equivalent)

	Type of Project (check one)		
\checkmark	Drought Management Plan		
	Drought Management Implementation		
	Water Efficiency Plan		
	Water Efficiency Implementation		
	Public Education & Outreach		



Location of Entity			
Please provide the county and applicants (if needed) location identified by SWSI (Statewide Water Supply Initiative)			
Basin: Pine River	La Plata County		

Retail Water Delivery over Past 5 Years

Please identify retail water delivery by the entity for each of the past five years (in acre feet) and additional information characterizing past water use by sector (e.g., residential, commercial, industrial, irrigation) and source (e.g., surface water, groundwater, etc.).

Year	Total Municipal Diversions (AF)	Total Municipal Deliveries with System Loss (AF)	Outdoor Municipal Use (AF)	Indoor Municipal Use (AF)
	(1)	(2)	(3)	(4)
2011	471	424	127	297
2012	460	414	124	290
2013	485	436	131	305
2014	381	343	103	240
2015	243	218	65	153
2016	302	271	81	190
2017	457	412	124	288
2018	414	373	112	261

Notes

(1) CDSS diversion records – sorted by municipal diversions for the Los Pinos Irrigating Ditch.

(2) From 2018 Town of Bayfield Water Master Plan, based on 10% system loss.

(3) Based on engineering for Augmentation Plan.

(4) Based on engineering for Augmentation Plan.



Projections of Future Annual Retail Demand

A reasonable estimate must be submitted with detailed projections of future annual retail demand for the next five years based on predicted population (provide source of data), building permits, expected new taps, and/or some other credible information

Year	(1)	(2)	(3)
	Projected Retail Water Demand	Projected population	Projected per Capita Water Demand
	(AF)	(people)	(gpd/person)
2018	414	2,756	134
2019	425	2,827	134
2020	436	2,900	134
2021	447	2,975	134
2022	458	3,051	134
2023	470	3,130	134
2024	482	3,210	134

Notes:

Bold is actual municipal diversion.

Projected population data calculations via the Colorado State Demographer's Office.

1. Projected retail water demand calculation follows 2.54% population growth rate.

Retail water demand projection: $WD = W_0e^{rt}$ where, WD = projected water demand, $W_0 =$ initial water use, e = exponential, r = growth rate, and t = time.

2. Bayfield's growth rate is estimated at 2.54% for the next five years, according to the 2018 Bayfield Water Master Plan.

Population projection (2018-2024): $P = P_0 e^{rt}$ where, P= projected population, P_0 = initial population, e = exponential, r = growth rate, and t = time.

3. Equals ((Column (1) x 325,851 gal/AF) / 365 days/year) / Column (2).



Last Update: October 20, 2017

Background Characterizing the Water System

Current and past system wide and single family residential per capita water use for the last five years, and the basis for those calculations.

Year	(1) Total Municipal Deliveries with System Loss	(2) Population	(3) Per Capita Residential Water Use
	(AF)	(people)	(gpd/person)
2014	343	2,521	121
2015	218	2,560	76
2016	271	2,617	92
2017	412	2,687	136
2018	373	2,756	121

Notes:

Bold values are actual population data via the Colorado State Demographer's Office

- 1. Equals total municipal diversions from CDSS less 10% system loss.
- 2. Population data is from the Colorado State Demographer's Office. *2018 population is predicted based on 2.54% population growth rate.
- 3. Equals ((Column (2) x 325,851 gal/AF) / 365 days/year) / Column (3).



Potential Growth – Population

Provide population for the past five years, current year and 10 year population projection served by the entity and the source of this information

Year	Population
2014	2,521
2015	2,560
2016	2,617
2017	2,687
2018	2,756
2019	2,827
2020	2,900
2021	2,975
2022	3,051
2023	3,130
2024	3,210
2025	3,293
2026	3,378
2027	3,465
2028	3,554
2029	3,646

Notes:

Bold values are actual population data via the Colorado State Demographer's Office.

- Population projection (2018-2029): $P = P_0e^{rt}$ where,
- P= projected population, P₀ = initial population, e = exponential, r = growth rate, and t = time.
 The population growth rate used is 2.54%, consistent with the 2018 Bayfield Water Master Plan.

Estimated Water Savings Goals

Estimate water savings goals to be achieved through implementation of the Plan in acre feet and as a percentage.

This grant is for a Drought Management Plan and the water savings goals will be developed during the planning process. As an initial estimate, a 10% savings in per-capita demand is a reasonable goal equaling approximately 109 gpd/person. This savings goal will be reevaluated during the planning process.



Estimated Water Savings Goals - Monitoring

Indicate how the activities will be monitored to estimate actual water savings during Project implementation (Implementation & Public Education/Outreach Projects)

Will develop during plan. At a minimum the Town will monitor water records to evaluate actual effectiveness as a benchmark for water demands and savings.

Drought Impacts (Drought Management Planning Grants Only)

Description of the impacts experienced by the covered entity, or state or local governmental entity, during the 2000-2003 & 2012-2014 drought including a breakdown by water use sector (e.g. municipal, commercial, industrial, irrigation, etc.) of those adverse impacts and steps taken to address 2002- 2003 drought impacts to date. Include short-term and long-term impacts, as well as social and economic impacts where applicable and as feasible.

Drought Impacts include:

<u>2002</u>

- Administrative calls on the Los Pinos River which lasted from May 1st, 2002 through August, then off and on through October.
- Curtailment of the Town's junior and senior direct flow water rights during portions of the irrigation season.
- Town used Vallecito Reservoir storage to supplement direct flow water rights.

<u>2018</u>

- Administrative calls on the Los Pinos River, which lasted from May 9th, 2018 through October 25^{th,} 2018.
- The 2018 Los Pinos River total streamflow was **15%** of average.
- The Town filed an SWSP in 2018 to allow for the Town to divert additional water at its water treatment plant.
- Town used Vallecito Reservoir storage to supplement direct flow water rights.
- Town imposed mandatory odd/even outdoor water restrictions.
- Made temporary improvements to water delivery system for low flow conditions in the Los Pinos River.



Adequacy, Stability, and Reliability

Explain the adequacy, stability, and reliability of the entity's water system and provide the entities location with respect to areas of current and future water needs as identified by the Statewide Water Supply Initiative (SWSI).

From review of the 2010 SWSI Report, as well as the 2015 Southwest Basin Roundtable Basin Implementation Plan (BIP), there is a projected gap in water supply for municipal and industrial (M&I) and self-supplied industrial (SSI) demands for La Plata County. Table 5-20 from the SWSI Report shows the 2050 projected municipal and industrial (M&I) and self-supplied industrial (SSI) gap for La Plata County ranges from 300 acre-feet per year (AFY) to 3,100 AFY, depending on the success rate of the identified projects and processes (IPPs), (see p.5-37, SWSI). More specifically the SWSI Report states that, "...the Pagosa Springs-Bayfield-Durango corridor is rapidly growing, [and] has areas of localized water shortages..." (see p.1-11, SWSI). The localized water shortages were realized by Bayfield in summer 2018 as the Town ended up filing for an SWSP to divert more water at their water treatment plant in order to meet demands.

The Town owns senior irrigation water rights, some of which have been changed to municipal use and other water rights are pending. During drought conditions the senior water rights are susceptible to administration and the Town's municipal water supply relies upon releases from Vallecito Reservoir. When making such releases during drought conditions the Town may not have adequate water supply in Vallecito Reservoir to meet its municipal and industrial demands. The BIP notes that, "the Southwest Basin does not assume that current irrigation water supply will be transferred to meet the municipal and industrial gap" (see p.29, BIP). Therefore, the Town will need to negotiate additional water contracts and changes in water rights to increase stability and reliability of their water supply.

The Drought Management Plan (DMP) should be developed in accordance with the BIP goals listed below to promote an adequate, stable, and reliable water supply for the Town in accordance with active drought management and planning practices.

- Support specific and unique new IPPs important to maintaining the quality of life in this region, and to address multiple purposes including municipal, industrial, environmental, recreational, agricultural, risk management, and compact compliance needs (p. 12, BIP)
- Pursue a high success rate for IPPs to meet the municipal gap (p. 14, BIP)
- Plan and preserve water supply options for all existing and new uses and values (p. 18, BIP)
- Recognize and address the challenges faced by water users in southwest Colorado due to continued development and pressures from users in the State of New Mexico; protect interest in southwest Colorado, while complying with existing Compact obligations. New Mexico's entitlement to Colorado River flows are based on deliveries from southwest Colorado (p. 18, BIP).
- Preserve Southwest Basin's ability to develop CO River compact entitlement to meet our water supply gaps (p. 18, BIP).



Outreach Goals & Efforts

Identify the groups, individuals, organizations and/or institutions that will be included within the education and outreach efforts to be proposed as the Project.

Identify the specific goals of the Project (e.g., identify target audience(s) to reach, policy changes, outcomes of educational efforts, etc.) with respect to promoting the benefits of water resource conservation and water efficiency through education and outreach activities. Make note of how the goals of the Project tie to the mission and objectives of the CWCB and its programs (Colorado Water Plan/Basin Implementation Plans), as appropriate.

Identify in detail the specific activities and tasks to be funded with the Water Efficiency Grant Program monies, including all meetings, workshops, fairs, printings, mailings and all other tasks and activities that will be used to promote the benefits of water resource conservation and water efficiency.

Specific goals will be to educate the groups, individuals, and organizations listed below on the source, allocation limit of their retail water supply, and steps that can be taken to reduce per capita water use in order to reach the water savings goals.

Groups, individuals, organizations:

- Residents of Town of Bayfield
- Local businesses and customers
- Schools and other municipal facilities that are large water users
- Colorado Water Conservation Board
- Colorado Division of Water Resources

Goals of Project

• The goals are open-ended at this point and will need to be developed in conjunction with the Town of Bayfield.

Specific Activities and Tasks

- The project team is currently developing the plan. Tasks will include objectives and principles, historical demand management, drought vulnerability assessment, drought mitigation and response strategies, drought stages, trigger points, and response targets, staged drought response program, implementation and monitoring, and public review and approval process.
- WWE is budgeting for public meetings and outreach at the beginning of the drought plan, during plan development to solicit input for selecting drought management activities, and at the end as a part of the public review process.

Signature of an individual with the authority to commit the resources of the entity seeking Water Efficiency Grant program monies.

2.Mg Town Montion



Water Efficiency Grant Fund				
Scope of Work				
Date:	March 19, 2019			
Project Name:	Town of Bayfield Drought Management Plan			
Grant Applicant:	Town of Bayfield			
The scope of work shall state the purpose and primary features of the project, end products to be delivered, clear timelines and provide a detailed narrative of all tasks to be performed for completion of plan. (Timelines must include 50 and 75% progress reports and final plan submission.) Each task within the scope of work must:				
	description of work to be performed			
 Identify funding s 	 Identify those responsible for performing the task Identify funding sources, such as; grant monies, entity funds, in-kind services, and cash contributions, necessary to complete the task. 			
Wright Water Engineers, Ir Drought Management Plar	nc., (WWE) will work with the Town of Bayfield (Town) to develop an updated n (DMP).			
1. Identify Stakeholder,	Assign Roles, and Plan Objectives and Principles			
2. Historical Drought ar	nd Previous Impact Assessment			
3. Drought Vulnerability	/ Assessment			
4. Develop Drought Mit	igation and Response Strategies			
5. Identify Drought Stag	5. Identify Drought Stages, Trigger Points, and Response Targets			
6. Develop Staged Drou	ight Response Program			
7. Develop Implementat	tion and Monitoring			
8. Public Review and A	pproval Process			
Objectives: (List the	Objectives: (List the objectives of the project)			
 A plan that will in minimize impact A plan that will pr drought impleme 	d with stakeholders and public involvement. form the town on measures and actions that can be taken or implemented to of future droughts. rovide measures for public awareness and education regarding drought and ntation measures. ctical and straight forward to understand and implement.			



Tasks

Provide a detailed description of each task using the following format:

Task 1 – Identify Stakeholder, Assign Roles, and Plan Objectives and Principles

Description of Task:

The goal of this step is to develop a framework for the development and implementation of the management plan for the Town of Bayfield. This step will be accomplished by following the sub-steps listed below.

1.1 Form Drought Management Planning Committee

1.2 Develop Objectives and Operating Principles

Method/Procedure:

- The Town will develop a list of potential stakeholders (Planning Committee) who will be involved in the development of the DMP.
- Once selected, WWE and the Town will communicate the role of the Planning Committee in the development of the DMP.
- The project team will work together to develop the DMP's objectives and operating principles with Planning Committee when appropriate.

Applicant Deliverable: (Describe the deliverable the applicant expects from this task)

A section in the DMP that lists the potential stakeholders and the decided-upon Planning Committee and associated roles, as well as a section on the objectives and operating principles.

CWCB Deliverable: (Describe the deliverable the applicant will provide CWCB documenting the completion of this task)



Tasks

Provide a detailed description of each task using the following format:

Task 2 – Historical Drought and Previous Impact Assessment

Description of Task:

The goal of this step is to provide information from previous drought events that can provide benchmarks and insight for projecting and planning for future drought conditions. This step will be accomplished by following the sub-steps listed below.

2.1 Historical Assessment of Drought, Available Water Supplies, and Demands

2.2 Historical Drought Impact, Mitigation and Response Assessment

Method/Procedure:

- The project team will evaluate and describe the Town's historical drought periods. The team will review available water supplies and customer water demands.
- The project team will review the Town's historical drought impacts and mitigation measures taken.
- The project team will also review the Town's historical drought response measures and their effectiveness.

Applicant Deliverable: (Describe the deliverable the applicant expects from this task)

A section in the DMP that details the Town's historical drought periods, analysis of previous drought impacts, mitigation measures taken, and a summary of the effectiveness of previous drought measures taken.

CWCB Deliverable: (Describe the deliverable the applicant will provide CWCB documenting the completion of this task)



Tasks

Provide a detailed description of each task using the following format:

Task 3 – Drought Vulnerability Assessment

Description of Task:

The goal of this step is to integrate the water supply reliability for future potential drought impacts. This step will be accomplished by following the sub-steps listed below.

3.1 Explore Water Supply Reliability and Drought Management Planning

3.2 Drought Impact Assessment

Method/Procedure:

- The project team will define water supply and system challenges to help ensure water supplies are available to meet existing and future water demands during average drought conditions.
- The project team will develop a list of potential drought related impacts.
- Evaluate the Town's existing physical and legal water supply yields to estimate reliability and document potential vulnerabilities.
- Evaluate existing and future water demand components including indoor and outdoor demands to assess potential impacts from shortages of water supply.

Applicant Deliverable: (Describe the deliverable the applicant expects from this task)

A section in the DMP that details water supply reliability, system challenges, and identifies potential drought impacts.

CWCB Deliverable: (Describe the deliverable the applicant will provide CWCB documenting the completion of this task)



Tasks

Provide a detailed description of each task using the following format:

Task 4 – Develop Drought Mitigation and Response Strategies

Description of Task:

The goal of this step is to develop screening and selection of drought mitigation and response strategies to select drought mitigation activities. This step will be accomplished by following the sub-steps listed below.

- 4.1 Develop Drought Mitigation Measures
- 4.2 Develop Supply-Side Response Strategies
- 4.3 Develop Demand-Side Response Strategies
- 4.4 Develop Public Drought Campaign

Method/Procedure:

- The project team will develop a list of drought mitigation measures, including a discussion on existing conservation and potential future conservation measures that can mitigate impacts of future droughts.
- The project team will develop supply-side response strategies that will indicate water supply augmentation, water rights management, improve water distribution efficiency, and emergency response.
- The project team will develop demand-side response strategies that will indicate water reduction strategies during a drought.
- The project team will develop drought related strategies and information for comment by planning committee and public.

Applicant Deliverable: (Describe the deliverable the applicant expects from this task)

A section in the DMP that details the screening and selection of the drought mitigation and response strategies to reduce drought impacts.

CWCB Deliverable: (Describe the deliverable the applicant will provide CWCB documenting the completion of this task)



Tasks

Provide a detailed description of each task using the following format:

Task 5 – Identify Drought Stages, Trigger Points, and Response Targets

Description of Task:

The goal of this step is to develop a set of drought stages, trigger points, and response targets that supply alert levels of the drought and how it affects the provider's system. This step will be accomplished by following the sub-steps listed below.

5.1 Identify Drought Stages, Trigger Points, and Response Targets

5.2 Identify Drought Predictability

Method/Procedure:

- The project team will review historical hydrology, water rights, priorities and yield under various dry year hydrological conditions, under existing and future water demands, and under associated supply enhancement and demand management strategies.
- The project team will develop a list indicating different stages of drought, drought indicators and triggers for declaration of droughts, and putting into action various measures of the DMP.

Applicant Deliverable: (Describe the deliverable the applicant expects from this task)

A section in the DMP that clarifies drought declaration and response efforts due to the different stages of drought, trigger points, and response targets.

CWCB Deliverable: (Describe the deliverable the applicant will provide CWCB documenting the completion of this task)



Tasks

Provide a detailed description of each task using the following format:

Task 6 – Develop Staged Drought Response Program

Description of Task:

The goal of this step is to develop drought measures required for the following drought responses from Task 4. This step will be accomplished by following the sub-step listed below.

6.1 Develop Staged Drought Response Program

Method/Procedure:

- The project team will help provide drought measures corresponding to each response strategy, listed from Task 4.
- This will include development of a summary table of the various drought stages, trigger points and response targets, and the appropriate response measures.

Applicant Deliverable: (Describe the deliverable the applicant expects from this task)

A section and table in the DMP that details the drought measures for each drought response and appropriate response measures.

CWCB Deliverable: (Describe the deliverable the applicant will provide CWCB documenting the completion of this task)



Tasks

Provide a detailed description of each task using the following format:

Task 7 – Implementation and Monitoring Plan

Description of Task:

The goal of this step is to implement and monitor the DMP. This step will be accomplished by following the sub-steps listed below.

- 7.1 Develop Mitigation Action Plan
- 7.2 Monitoring of Drought Indicators
- 7.3 Develop Drought Declaration
- 7.4 Implementation of the Staged Drought Response Program

7.5 Enforcement of the Staged Drought Response Program

7.6 Review Draft Plan

Method/Procedure:

- The project team will develop a list along with deadlines and milestones that will detail the actions necessary to implement each of the mitigation measures, from Task 4.
- The project team will develop guidelines, monitoring procedures, and assigning roles and responsibilities to the staff for monitoring the drought indicators and follow up implementation of the appropriate response measures.
- The project team will develop specific annual and seasonal drought data monitoring and archiving procedures, including a frequency schedule depending on drought severity, and assign such monitoring roles to individuals.
- The project team will identify the enforcement procedures for each drought stage.
- The project team will identify the financial resources necessary to fully implement the DMP.
- The project team will monitor and provide information/data for improvements to the overall DMP.

Applicant Deliverable: (Describe the deliverable the applicant expects from this task)

A section in the DMP that details the monitoring plan and documents the potential effectiveness of drought activities.

CWCB Deliverable: (Describe the deliverable the applicant will provide CWCB documenting the completion of this task)



Tasks

Provide a detailed description of each task using the following format:

Task 8 – Public Review and Approval Process

Description of Task:

The goal of this step is to formally process a review, approve, and anticipated updates to the DMP. This step will be accomplished by following the sub-steps listed below.

8.1 Public Review Process

8.2 Plan Approval

8.3 Periodic Review and Update

Method/Procedure:

- The project team will have public review meeting after the DMP Draft is developed.
- The project team will incorporate any comments or suggestions into the final DMP after the public review process. The project team will document the approval process in the final DMP.
- The project team will develop an anticipated DMP update schedule.

Applicant Deliverable: (Describe the deliverable the applicant expects from this task)

The initial draft of the DMP. Public review meeting, and publicly accessible link to the final DMP.

CWCB Deliverable: (Describe the deliverable the applicant will provide CWCB documenting the completion of this task)

Final Drought Management Plan, with public comments incorporated, including a review of activities, and future use of the Project outcomes. 50% progress report to be submitted to CWCB on 10/18/2019 and 75% progress report to be submitted on 1/17/2020. The progress reports will detail the status of meeting the goals and objectives of the final Drought Management Plan, any obstacles encountered, and final findings or accomplishments. The final Drought Management Plan will be submitted on 5/29/2020.

Budget and Schedule

Budget: This Scope of Work and Schedule shall be accompanied by a Budget that reflects the Tasks identified in the Scope of Work and Schedule and shall be submitted to CWCB in an excel format.

Schedule: This Scope of Work and Budget shall be accompanied by a Schedule that reflects the Tasks identified in the Scope of Work and Budget and shall be submitted to CWCB in an excel format.

Reporting Requirements

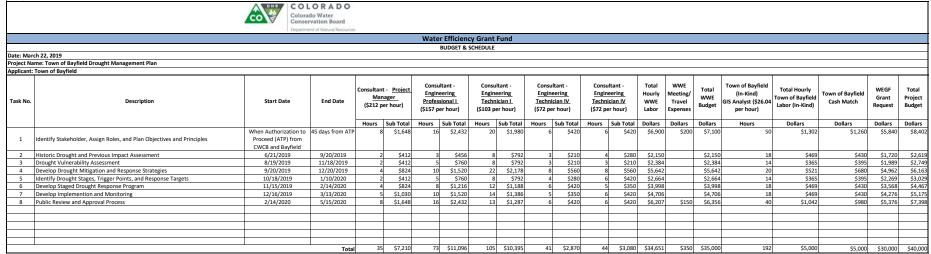
<u>Reporting</u>: The applicant shall provide the CWCB a Progress Report at 50% & 75% completion of the project. The Progress Report shall address the following:

- the success of meeting previously identified goals and objectives
- obstacles encountered
- preliminary findings or accomplishments
- potential need for revisions to the scope of work and timelines

(The CWCB may withhold reimbursement until satisfactory Progress Reports have been submitted.) **Final Deliverable:** At the completion of the project, the applicant shall provide the CWCB a final report on the applicant's letterhead including a review of the activities completed, an estimate of actual water savings realized (for covered entities), and other information that is relevant to the Board's record of the Project and future use of the Project outcomes.

The CWCB will withhold the last 10% of the grant request until the Final Report is completed to the satisfaction of CWCB staff. Once the Final Report has been accepted, and final payment has been issued, the purchase order or contract will be closed without any further payment.





(1) Start Date for funding under \$50K ~ 30 Days from Application Submittal; Start Date for funding over \$50K ~ 30 Days from Board Approval.

(2) Please insert additional columns if needed for additional staff working on project.

Project may begin as soon as the grantee enters contract/purchase Order

CWCB will withhold the last 10% of the entire grant budget until the Final Report (Deliverable) is completed and accepted (per the WEGF Criteria & Guidelines).

Project Funding Sources	Amount	Percent of Total CWCB Project Budget
Town of Bayfields In-Kind	\$5,000	-
Town of Bayfields Cash Match	\$5,000	-
Total Town of Bayfield Match	\$10,000	25%
CWCB DMPF Grant Request	\$30,000	-
Total	\$40,000	-