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Memorandum

DRAFT

To: Randy Anhorn, Nine Mile Creek Watershed District
From: Janna Kieffer and Michael McKinney
Subject: Scope of Work for Phase 3 of Atlas 14 Flood Risk and Resiliency Project
Date: December 9, 2021

The Nine Mile Creek Watershed District (NMCWD) has a long history in flood planning and floodplain management going back to the 1960s and seeks to continue to be a leader in flood management. The NMCWD's Water Management Plan identifies several policies and actions related to reducing risk to public safety and permanent structures from flooding, including working with cities to address increased flood potential from Atlas 14 rainfall frequency estimates and understanding and addressing the potential for increased flood risk due to predicted changes in climate.

Barr is currently completing work and reporting related to Phase 2 of the Atlas 14 Flood Risk and Resiliency project, with final reporting scheduled to be complete in January of 2022. Phase 2 of the Atlas 14 Flood Risk and Resiliency project expanded use of the NMCWD's XPSWMM model to evaluate flood potential for rainfall events larger than the current Atlas 14 100-year (1% annual chance) precipitation depth estimates as a surrogate for climate change analysis. Phase 2 of the project also included an updated model calibration based on more recent monitoring data, mapping of flood inundation results to identify potentially impacted structures and roadways for a number of recurrence intervals, and high-level estimates of potential flood damage costs.

With Phase 2 of the Atlas 14 Flood Risk and Resiliency project nearing completion, this proposed Phase 3 scope of work outlines next steps to further characterize flooding issues, further define the NMCWD's future role in addressing flooding issues throughout the watershed, develop a framework and/or approach for partnerships in future flood risk reduction projects, and explore opportunities to improve flood resiliency in the Nine Mile Creek system. Phase 3 will also include development of a strategy to communicate flood risk information to the community, including emergency managers, watershed residents and other property owners. The proposed scope of work, estimated costs, and project schedule for Phase 3 of the Atlas 14 Flood Risk and Resiliency project are summarized below.

Scope of Work

The following sections outline specific work tasks associated with Phase 3 of the Atlas 14 Flood Risk and Resiliency project, including major deliverables, estimates of cost, and schedule for completion.

Task 1. Flood resiliency analysis along Nine Mile Creek corridor

During completion of Phase 2, feedback solicited from the NMCWD board, staff, and Technical Advisory Committee (TAC) indicated interest in the NMCWD performing a resiliency analysis along Nine Mile Creek to identify regional opportunities to mitigate flooding by optimizing use of major storage areas and the floodplain. The major objective of this effort is to identify cost-effective flood risk mitigation projects within the creek corridor which (a) reduce flood elevations along the creek corridor and/or (b) create additional stream capacity to accommodate and support flood mitigation in upland areas tributary to the creek.

Task 1 involves identifying and evaluating opportunities within or adjacent to the creek system with the potential to increase or better utilize available flood storage. Potential modifications to the creek system to provide and/or utilize additional flood storage will likely include:

- restricting pipe/culvert sizes to reduce flow and utilize additional flood storage capacity
- constructing or increasing height of berms to store more water in existing storage areas
- creating additional storage floodplain storage through excavating and other storage projects

Task 1.1 Identification & high-level evaluation of flood mitigation opportunities within the creek system to increase flood storage (10-12)

Barr will begin by identifying 10-12 potential flood risk reduction project opportunities throughout the creek system, including the Braemar Branch and County Ditch 34. We will conduct a high-level evaluation of these potential project opportunities, with the intended outcome to identify which of these 10-12 project opportunities are promising enough to evaluate further in Task 1.2.

Task 1.1.A. Identify locations for flood mitigation opportunities. As a first step, Barr will identify 10-12 locations along the creek corridor for potential flood risk reduction project opportunities, based on factors such as availability of additional flood storage, public land ownership, and opportunities for modification of stormwater infrastructure. The analysis will target portions of the creek corridor with large floodplain areas and/or storage potential. The 10-12 locations will be selected in conjunction with NMCWD staff.

Tasks 1.1.B – F. Following this step, the following work subtasks will be conducted for each flood mitigation opportunity/location identified:

B. **Develop high-level concept.** Prepare high-level concept for potential system modifications, including considering modifications to outlet configurations and/or quantifying additional flood storage potential.
C. **Evaluate changes in flood elevations along creek for 100-year rainfall.** Use the District's XP-SWMM model to determine impacts of conceptual system modifications on 100-year (1% annual chance) flood elevations, including upstream and downstream portions of the creek.

D. **Summarize land ownership.** Identify land ownership of affected parcels
E. **Identify trade-offs.** High-level identification of potential trade-offs, including wetland impacts, water quality impacts (negative and positive), tree loss, transfer of flood risk, etc. Barr assumes this analysis will be a qualitive description of potential trade-offs.
F. **Summarize benefits.** Summarize project concept, benefits, and tradeoffs in 2-page summary, including a GIS map.

Task 1.1.G. Barr will present the findings of this task to the NMCWD Board and Technical Advisory Committee (TAC), including recommendations for more detailed analysis for up to eight (8) project opportunities/locations (Task 1.2).

Task 1.2 Detailed evaluation of selected flood mitigation areas and development of concept-level cost estimates for selected projects

This subtask involves further refinement of the conceptual designs and analyses of potential modifications in the creek system to provide or utilize additional flood storage, including developing planning-level costs. This scope of work assumes up to eight (8) potential flood mitigation areas will be selected for more detailed evaluation. Barr will coordinate with NMCWD staff to select the potential project opportunities/locations, based on input from the Board and TAC.

Tasks 1.2.A – F. The following subtasks will be completed for each flood mitigation opportunity/location:

A. **Refine concept.** Refine concept for potential system modifications, as needed, based on findings from Task 1.1. This may include developing conceptual grading plans to quantify changes in flood storage and/or design of complex outlet structures. This will also include consideration of constructability.
B. **Evaluate resiliency for 100-year rainfall.** Use the District's XP-SWMM model to re-evaluate impacts of system modifications on 100-year flood elevations along the creek, including upstream and downstream portions of the creek. This scope assumes two additional model iterations for each opportunity/location, which may include subdividing creek subwatersheds and/or revising storage inputs and outlet configurations. Upstream and downstream impacts to 100-year flood elevations will be summarized, including impacts on creek capacity (i.e., creek capacity "gained" or "freed up" through completion of regional flood mitigation projects).
C. **Evaluate resiliency for 500-year or "climate change" rainfall scenario.** Use the District's XP-SWMM model to evaluate impacts of system modifications on 500-year flood elevations along the creek, including portions of the creek immediately upstream and downstream. This climate change analysis will help assess the amount of resiliency provided in the creek system as a result of the proposed system modifications. This scope assumes one additional model iteration for the 500-year rainfall event for each opportunity/location.
D. **Evaluate potential to alleviate flooding issues in upland areas tributary to the creek.** Use the District's XP-SWMM model to evaluate the potential to alleviate flooding issues in nearby

tributary, upland areas by utilizing gained creek capacity (i.e., if this flood mitigation project is implemented, is there potential to provide meaningful flood risk reduction benefits beyond the creek system?). This scope assumes we will evaluate flood mitigation alternatives in one (1) upland flood area per each of the eight (8) concepts.

E. **Develop cost estimate.** Develop a conceptual-level cost estimate. The cost estimates developed will also be used for evaluation of project benefit-cost analysis (BCA) in Task 1.3.

Task 1.3 Benefit-cost analysis of selected flood mitigation areas

The effectiveness of the potential flood risk reduction project opportunities will be primarily evaluated based on whether the project 1) reduces flood risk for potentially impacted homes along the Nine Mile Creek system and/or, 2) provides additional capacity in portions of the creek where additional flow capacity will be important to help accommodate and support flood mitigation in upland areas tributary to the creek.

A high-level benefit-cost analysis will be completed for each selected flood mitigation area. The project cost estimates developed in Task 1.2 will be evaluated in comparison with benefits using the estimated surface flood damage costs developed during Phase 2 of the NMCWD Atlas 14 Flood Risk and Resiliency project. Note that these flood damage cost estimates represent high-level estimates and refinement will likely be needed in future steps to (a) provide more accurate surface flooding costs for structures impacted and/or (b) incorporate other modes of flood damage (sanitary sewer impacts, indirect basement flooding impacts, etc.).

The benefit-cost analysis will also include a summary of estimated project costs based on cost per acre-foot of storage provided / created by project and other summary metrics such as cost/capacity (flow), as needed. Results of the benefit-cost analysis will be summarized along with a qualitative description of other potential project costs/tradeoffs identified in Task 1.1, such as wetland impacts, water quality impacts, and tree loss.

Task 1.4 Report

The results of Tasks 1.1 - 1.3 will be summarized in a report, including a description of the methodology, a summary of each selected flood mitigation area including the proposed system modifications, associated benefits, costs, benefit-cost analysis, and trade-offs, and an overall summary of projects costs, benefit-cost analysis, and recommendations. The report will include a two-page synopsis (updated from Task 1.1) for each project summarizing the concept, estimated costs, benefits and tradeoffs, including a GIS map, which can be used to readily share the project concepts with potential project partners.

Task 2. Characterize Flooding Issues and Develop Framework for Flood Risk Reduction Projects

Through completion of Phase 2 of the Atlas 14 Flood Risk and Resiliency project, the NMCWD has gained a broad understanding of flood risk throughout the Nine Mile Creek watershed, including identifying homes and other buildings potentially impacted by flood waters and inundated roadways for a variety of storm recurrence intervals (i.e., 10-year, 100-year, and 500-year). Task 2 includes several important next steps toward addressing flooding issues throughout the Nine Mile Creek watershed in conjunction with municipalities and other potential project partners, including:

1. Social vulnerability flood risk characterization
2. Characterizing flooding and further defining the NMCWD's role in future flood mitigation planning
3. Prioritizing NMCWD-led flood risk areas for future feasibility studies (if applicable)
4. Developing guidelines for project partnerships with municipalities and other public entities
5. Developing a framework for consideration of project benefits and trade-offs

A scope of work corresponding to these "next steps" is summarized below.

Task 2.1 Social vulnerability flood risk characterization

Flood risk vulnerability includes not only an individual's or community's susceptibility to flooding, but also their sensitivity to the risk and capacity to adapt. Disadvantaged populations are often more vulnerable to flood impacts; geographic factors such as proximity to waterbodies and social factors such as income level, unemployment, access to a vehicle, and communication-limited English proficiency affect people's sensitivity to flood impacts and ability to prepare for, cope with, and recover from flooding.

As part of this task, Barr will complete the following subtasks to help identify areas within the Nine Mile Creek watershed with higher social vulnerability to flooding:

A. **Identify high vulnerability flood areas based on social indicators.** To assess social vulnerability, flood inundation areas for the 10-, 100-, and 500-year rainfall events will be overlayed with social vulnerability datasets in GIS to identify areas of higher flood vulnerability. Several social vulnerability datasets will be mapped at a census tract level using data from the 2014–2018 American Community Survey (U.S. Census Bureau), including household income, people of color, limited English proficiency, population over 65, renter housing units, percent of population below poverty level, access to a vehicle, among others. A composite social vulnerability layer will also be overlayed with the flood inundation areas.
B. **Characterize social vulnerability to flooding, by city.** Summarize information regarding social flood vulnerability within the Nine Mile Creek watershed by city, including preparation of GIS maps. The summary will include identification of flood areas in which specific disparities may

affect the community's ability to prepare for and/or recover from extreme flood events and targeted strategies to reduce these vulnerabilities (e.g., targeted education initiatives).

C. **Present/share results.** Present results of the social vulnerability characterization to the NMCWD Board and TAC for consideration and discussion. Maps and summaries of the information will be shared with each city within the watershed, as well as a copy of the presentation.

Task 2.2 Characterize District flooding and further define NMCWD's role in flood mitigation planning

The NMCWD 10-Year Water Management Plan (Plan) identifies reducing the risk to public safety and permanent structures due to flooding as a primary flood management objective. The Plan includes a policy to work with cities to address increased flood potential from NOAA Atlas 14 precipitation frequency depths and identifies several actions to help cities identify flooding problems and address regional flooding problems. Through Phases 1 and 2 of the Atlas 14 Flood Risk and Resiliency project, NMCWD has helped identify flooding issues throughout the watershed, including potential impacts to structures and roadways. Looking forward, there is a need for NMCWD to further define its role in next steps in addressing regional flooding problems. This effort will help provide clarification around if/when NMCWD will lead and/or participate in flooding studies.

As part of this task, Barr will complete the following subtasks to help NMCWD further define its role in flood mitigation planning:

A. **Mapping "regional" and "local" flood areas.** Characterize flooding areas into "regional" and "local" areas of concern using GIS mapping. As a starting point, regional flood areas will be defined as flood areas along the trunk creek system or lakes and "local" flooding issues will be defined as pluvial flood areas (flooding that occurs independent of an overflowing waterbody) or flood areas related to other waterbodies.

B. **Map refinement- local flood areas influenced by regional tailwater (optional).** Depending on feedback from the NMCWD Board, the GIS mapping of "regional" flood areas may be expanded to include local flood areas that are impacted by regional tailwater. These areas will be manually identified in GIS based on review of flood inundation areas and available storm sewer information.

C. **Present results.** Present and lead discussion at up to two meetings with the NMCWD Board. Discussion will include presentation of mapping results in Task 2.2.A, as well as other considerations for regional flooding such as multi-jurisdictional flood areas with intercommunity drainage.

D. **Revise "regional" and "local" flood area mapping.** Revise mapping of "regional" and "local" flood areas in response to Board feedback and summarize in a memo.

E. **Prepare summary memo.** Prepare a summary memo, review draft and a final draft, following Board and staff feedback.

Task 2.3 Prioritize District-led flood risk areas for future feasibility studies (optional)

Based on the outcome of Task 2.2, the NMCWD board with input from NMCWD staff and TAC members will conduct a high-level prioritization of flood areas that are considered to be "regional" to determine where the NMCWD is interested in leading future flood studies. This task will result in a high-level prioritized list of flood areas for further study to guide NMCWD budgeting and planning in the upcoming years. Note that this task does not include further characterization of the flood problems (i.e., high level evaluation of causes and what it will take to address flooding issues). Next steps beyond this scope would likely include further characterization of the regional flooding issues using a watershed-based approach by major watershed (e.g., the Holiday-Wing-Rose chain of lakes) or conducting detailed feasibility studies for individual flood areas.

Barr will complete the following subtasks to help NMCWD prioritize flood areas for future feasibility studies:

A. **Categorize flood areas.** Group or categorize 15-20 regional flood areas based on major subwatershed or other adjacencies using GIS
B. **Prioritize flood areas.** Score and rank regional flood areas based on various criteria, including number of structures potentially impacted, roadways impacted, duration of flooding, critical infrastructure, social vulnerability metrics, sequencing considerations, relation to impaired waters and potential to improve water quality, etc.
C. **Present results.** Present and lead discussion at up to two board meetings and one TAC meeting
D. **Prepare summary memo.** Summarize results in a memo to the NMCWD board

Task 2.4 Develop guidelines for project partnerships

The NMCWD 10-Year Plan recognizes the important role of partnerships in implementing projects, and broadly discusses project partnership criteria and priorities (see Section 6.6). Using these criteria and priorities as a basis, the NMCWD will develop refined guidelines for partnerships in achieving its flood management goals. The guidelines will include further clarification on when NMCWD will consider involvement/partnerships to address flooding issues, and what level of involvement may be considered for various scenarios (e.g., technical resource, technical lead, project lead, financial contributor, etc.). The guidelines may include prioritization toward certain types of projects, as well as consideration of social vulnerability indicators. Completion of the partnership guidelines will result in better consistency, transparency, and clearer expectations for local municipal partners and help avoid the potential burden of case-by-case decisions at the staff and/or board level.

Barr will complete the following subtasks to help NMCWD develop refined guidelines for partnerships toward achieving its flood management goals:

A. Prepare draft guidelines. Develop refined guidelines for partnerships, including scenarios in which NMCWD will consider involvement/partnership to address flooding issues and what type of involvement (e.g., technical resource, technical lead, project lead, financial contributor, etc.).

B. **Present results.** Present and lead discussion at up to two NMCWD board meetings and one TAC meeting.

C. **Finalize guidelines and prepare summary memo**. Finalize and summarize guidelines in a memo to the NMCWD board.

Task 2.5 Develop framework for consideration of project benefits and trade-offs

Addressing flooding issues throughout the Nine Mile Creek watershed will require careful consideration and balance of benefits and trade-offs, especially considering the fully developed nature of the watershed. Constraints including potential environmental impacts (e.g., wetlands, water quality, tree loss) and/or potential transfer of flood risk will need to be considered when evaluating potential flood risk reduction projects.

Barr will work with NMCWD staff, legal counsel, NMCWD board, and the TAC to discuss premises, underlying assumptions and guidelines for evaluating potential modifications to infrastructure and/or other capital improvements that modify flow rates or volumes to downstream waterbodies. The outcome of this task will be the development of a flexible framework and/or guidelines for evaluation of constraints/trade-offs resulting from flood risk reduction projects, including as it pertains to NMCWD rules. As part of this task, Barr will complete the following subtasks:

A. **Prepare draft framework and decision tree.** Prepare draft framework and decision tree for evaluating potential impacts from flood risk reduction projects. This task includes up to three revisions of the framework and decision tree, based on feedback from stakeholder meetings.

B. **Internal working meetings.** Prepare for and participate in up to two meetings with NMCWD staff and legal counsel regarding draft framework and decision tree.

C. **Presentation/discussion.** Present and lead discussion at one NMCWD board meeting and one TAC meeting.

D. **Finalize in summary memo.** Finalize framework and decision tree and summarize in a memo to the NMCWD board.

Task 3. Communicate Flood Risk

Task 3.1 Develop communications strategy/plan

Upon completion of Phase 2, flood elevations from the various modeled rainfall events will be available in several formats, including tables, mapping, and GIS files. The NMCWD will work closely with the TAC to decide on methods of publishing and sharing model results, including the format of results and potential corresponding messaging and educational materials to help the public understand the information. The communications strategy will include consideration of social vulnerability factors and how to target

communications to help the more vulnerable populations prepare for and/or recover from extreme flood events.

As part of this task, Barr will complete the following subtasks:

A. **Discuss communication needs and develop options.** Brainstorm with NMCWD staff and the TAC regarding options and considerations for sharing model results from Phase 2 and key public education needs related to communicating flood risk concepts. This effort will include focus on social vulnerability factors and targeted education and communication strategies for the more vulnerable populations.
B. **Presentation/discussion.** Present and lead discussion at up to three meetings with NMCWD staff, TAC and board regarding communication of flood risk results.
C. **Finalize in summary memo.** Summarize the communication strategy/plan based on feedback from TAC and board. Preparation of communication materials will be completed separately, outside of this scope of work. We anticipate the communications plan may include development of a public-facing webmap to share results and development of public-facing factsheets regarding understanding flood risk and opportunities to reduce flood risk on private property.

Budget

Table 1 summarizes the estimated cost for each task described above. Tasks 2.2B and 2.3 are identified as optional. A more detailed table summarizing work subtasks, anticipated project team members, and estimated hours is included as an attachment.

Schedule

Table 2 provides an approximate schedule for the tasks included in this work scope. The estimated schedule provided in Table 2 is based on an assumed project start date of January 19, 2022. The schedule can be further defined upon project initiation in consultation with NMCWD staff.

Table 1. Summary of Estimated Costs, by Task.

Task ID	Task Description	Estimated Cost
1. Flood Resiliency Analysis Along Nine Mile Creek Corridor		
1.1	Identification & high-level evaluation of flood mitigation opportunities within the creek system to increase flood storage (10-12)	$34,655
1.2	Detailed evaluation of selected flood mitigation areas (8) and development of concept-level cost estimates for selected projects	$36,130
1.3	Benefit-cost analysis of selected flood mitigation areas	$12,545
1.4	Report	$15,630
	Subtotal	$98,960
2. Characterize Flooding Issues and Develop Framework for Flood Risk Reduction Projects		
2.1	Social vulnerability flood risk characterization	$9,875
2.2	Characterize District flooding and further define NMCWD's role in flood mitigation planning	$19,920*
2.3	Prioritize District-led flood risk areas for future feasibility studies (optional)	$13,500*
2.4	Develop guidelines for project partnerships	$9,510
2.5	Develop framework for consideration of project benefits and trade-offs	$13,180
	Subtotal	$65,985
3. Communicate Flood Risk		
3.1	Develop communications strategy/plan	$10,220
	TOTAL	**$175,165**

* Tasks, or portion of tasks, identified as optional.

Task 2.2.B, Map refinement to identify/include local flood areas along the creek system influenced by regional tailwater ($4505), is identified as optional and may not be necessary depending on the outcome of Task 2.2.A.

Task 2.3 Prioritize District-led flood risk areas for future feasibility studies ($13,500) is identified as optional. While this task is a logical next step for the District with regard to planning flood management efforts, it could be delayed to a future scope.

Table 2. Estimated schedule for individual tasks

Task ID	Task Description	Proposed Schedule for Completion
1. Flood Resiliency Analysis Along Nine Mile Creek Corridor		
1.1	Identification & high-level evaluation of flood mitigation opportunities within the creek system to increase flood storage (10-12)	Late-April 2022
1.2	Detailed evaluation of selected flood mitigation areas (8) and development of concept-level cost estimates for selected projects	Late-July 2022
1.3	Benefit-cost analysis of selected flood mitigation areas	September 2022
1.4	Report	November 2022
2. Characterize Flooding Issues and Develop Framework for Flood Risk Reduction Projects		
2.1	Social vulnerability flood risk characterization	Late-February 2022
2.2	Characterize District flooding and further define NMCWD's role in flood mitigation planning	May 2022
2.3	Prioritize District-led flood risk areas for future feasibility studies (optional)	August 2022
2.4	Develop guidelines for project partnerships	October 2022
2.5	Develop framework for consideration of project benefits and trade-offs	November 2022
3. Communicate Flood Risk		
3.1	Develop communications strategy/plan	June 2022
Overall project completion		**November 2022**

	NMCWD Atlas 14 Flood Risk and Resiliency- Phase 3 **Project Budget Estimate, by Subtask- 12/9/2021**	**Subtotal Hours**	**Project Total**	**Percentage of Total**
Task 1.1:	Identification & high-level evaluation of flood mitigation opportunities within the creek system to increase flood storage (10-12)			
A	ID (10-12) locations opportunity area (review land ownership, available storage to structures, etc.)	30	$ 3,945.00	
B & C	Develop conceptual system modifications (for 10-12 locations) and model in XPSWMM	98	$ 12,200.00	
D & E	Identify affected parcels and project tradeoffs (wetland impacts, tree loss, transfer of flood risk, etc.) for 10-12 locations	43	$ 5,480.00	
F	Identify project benefits for 10-12 locations (quantify capacity gained in downstream reaches, downstream flood impacts, storage gained)	11	$ 1,350.00	
F	2-page project summary for each of 10-12 locations, including GIS map	64	$ 8,420.00	
G	Present results to TAC and NMCWD Board	22	$ 3,260.00	
Subtotal		268	$ 34,655.00	**20%**
Task 1.2:	Detailed evaluation of selected flood mitigation areas and development of planning-level cost estimates for selected projects			
A & B	Refine conceptual design for up to eight (8) locations (conceptual grading, complex outlet design, SWS edits, etc.), model, and summarize 100-year results	116	$ 14,360.00	
C	Model 500-year climate change event and summarize results.	18	$ 2,240.00	
D	Evaluate potential to alleviate flooding issues in upland areas tributary to the creek by utilizing gained creek capacity (assume one upland area evaluated for each of the 8 concepts)	78	$ 9,820.00	
E	Develop concept-level cost estimate for each of the 8 concepts.	76	$ 9,710.00	
Subtotal		288	$ 36,130.00	**21%**
Task 1.3:	Benefit-cost analysis (BCA) of selected flood mitigation areas			
	Perform surface flood damage cost comparison (pre- and post-flood mitigation project) for all 8 concepts	70	$ 9,100.00	
	Quantify BCA and other summary metrics (cost per acre foot, capacity heat map, cost/capacity, etc.).	27	$ 3,445.00	
Subtotal		97	$ 12,545.00	**7%**
Task 1.4:	Report			
	Create summary report for Task 1	68	$ 9,300.00	
	Revise 2-page summairies for 8 concepts (including one GIS figure)	48	$ 6,330.00	
Subtotal		116	$ 15,630.00	**9%**
Subtotal		0	$ -	**0%**
Task 2.1:	Social vulnerability flood risk characterization			
A	GIS analysis to overlay social vulnerability datasets and 10-, 100-, and 500-year flood inundation areas	20	$ 2,870.00	
B	Summarize characterization of social vulnerability to flooding, including GIS maps by city	28	$ 3,910.00	
C	Present results to TAC and NMCWD Board	21	$ 3,095.00	
Subtotal		69	$ 9,875.00	**6%**
Task 2.2:	Characterize District flooding and further define NMCWD's role in flood mitigation planning			
A	Characterize flooding into "regional" and "local" areas of concern	31	$ 3,955.00	
B	Manually ID "local" flood areas impacted by "regional" tailwater (optional)	38	$ 4,505.00	
C	Two meetings with NMCWD to review	40	$ 6,060.00	
D	Revise mapping per feedback	16	$ 2,090.00	
E	Memo summarizing results (includes incorporating one round of comments)	24	$ 3,310.00	
Subtotal		149	$ 19,920.00	**11%**

Task 2.3	Prioritize District-led flood risk areas for future feasibility studies			
A	Group or categorize (15-20) regional flood areas based on major subwatershed or other adjacencies using GIS	20	$ 2,660.00	
B	Prioritization: score and rank regional flood areas based on various criteria	24	$ 3,160.00	
C	Present and lead discussion at up to two board meetings and one TAC meeting	32	$ 4,620.00	
D	Summarize results in a memo to the NMCWD board	22	$ 3,060.00	
Subtotal		98	$ 13,500.00	**8%**
Task 2.4	Develop guidelines for project partnerships			
A	Prepare draft guidelines	14	$ 2,190.00	
B	Present and lead discussion at up to two NMCWD board meetings and one TAC meeting	30	$ 4,260.00	
C	Finalize guidelines and summarize in a memo to the NMCWD board	22	$ 3,060.00	
Subtotal		66	$ 9,510.00	**5%**
Task 2.5	Develop framework for consideration of project benefits and trade-offs			
A	Prepare draft framework and decision tree.	28	$ 3,970.00	
B	Two meetings with NMCWD staff and legal counsel regarding draft framework and decision tree	18	$ 2,520.00	
C	Present and lead discussion at one NMCWD board meeting and one TAC meeting	20	$ 2,810.00	
D	Finalize framework and decision tree and summarize in a memo to the NMCWD board	28	$ 3,880.00	
Subtotal		94	$ 13,180.00	**8%**
Task 3.1	Develop communications strategy/plan			
	Discuss communications needs and develop options	20	$ 2,900.00	
	Present and lead discussion at up to three meetings with NMCWD staff, TAC and board	30	$ 4,260.00	
	Summarize communications strategy/plan in memo to Board.	22	$ 3,060.00	
Subtotal		72	$ 10,220.00	**6%**
Project Subtotal		1317	$ 175,165.00	