



Grant All-Detail Report

Accelerated Implementation Grant 2014

Grant Title - Lake Protection Analysis

Grant ID - C14-2383

Organization - Douglas SWCD

Grant Awarded Amount	\$36,000.00	Grant Execution Date	
Required Match Amount	\$9,000.00	Grant End Date	12/31/2016
Required Match %	25%	Grant Day To Day Contact	Jerome Haggemiller

Budget Summary

	Budgeted	Spent	Balance Remaining*
Total Grant Amount	\$36,000.00	\$25,408.00	\$10,592.00
Total Match Amount	\$9,898.92	\$5,115.99	\$4,782.93
Total Other Funds	\$0.00	\$0.00	\$0.00
Total	\$45,898.92	\$30,523.99	\$15,374.93

*Grant balance remaining is the difference between the Awarded Amount and the Spent Amount. Other values compare budgeted and spent amounts.

Budget Details

Activity Name	Activity Category	Source Type	Source Description	Budgeted	Spent	Last Transaction Date	Match
Distribute results and protocol.	Education/Information	Local Fund		\$2,880.80			Y
Grant Administration	Administration/Coordination	Local Fund		\$4,749.64	\$2,847.51	12/30/2016	Y

Activity Name	Activity Category	Source Type	Source Description	Budgeted	Spent	Last Transaction	
						Date	Match
Group review of initial analyses.	Administration /Coordination	Current State Grant	Lake Protection Analysis	\$1,152.32	\$1,152.32	12/30/2016	N
Initial Analyses	Inventory/Mapping	Current State Grant	Lake Protection Analysis	\$4,430.00	\$4,430.00	12/31/2015	N
Lake Analysis for Protection Planning	Inventory/Mapping	Current State Grant	Lake Protection Analysis	\$30,417.68	\$19,825.68	12/30/2016	N
Orientaion & Coordination	Administration /Coordination	Local Fund		\$2,268.48	\$2,268.48	12/31/2015	Y

Activity Details Summary

Activity Details	Total Action Count	Total Activity Mapped	Proposed Size / Unit	Actual Size / Unit
300M - Contaminant Source Inventory	66	0	66 COUNT	0 COUNT
300M - Contaminant Source Inventory	8	0	8 COUNT	0 COUNT
100M - Presentations	2	0	2 COUNT	0 COUNT

Proposed Activity Indicators

Activity Name	Indicator Name	Value & Units	Waterbody	Calculation Tool	Comments
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Final Indicators Summary

Indicator Name	Total Value	Unit
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Grant Activity

Grant Activity - Distribute results and protocol.

Description	Danica Derks and Mitch Brinks will develop a protocol handbook for use by Local Water Planners, PCA EOA staff, DNR Support Hydros, NGOs, LGUs, private parties, and DNR Decision Support Specialists. The Analysis results will be packaged for distribution to County Water Planners Statewide, LGU's, Lake Associations, BWSR, DNR, PCA, and other interested parties. A Lake Protection Analysis presentation will be developed by Mitch Brinks and Danica Derks for distribution statewide. Submissions will be made to the MN Water Resources Conference, BWSR Academy, MAWD Convention, and MN Lakes and Rivers Conference.		
Category	EDUCATION/INFORMATION		
Start Date	14-Sep-15	End Date	
Has Rates and Hours?	Yes		
Actual Results	Lake nutrient response model and protocol were shared with DNR Staff Paul Radomski. 2016 No funds spent 2016		

Activity Action - Distribute Protocol			
Practice	100M - Presentations	Count of Activities	2
Description	Presentations on protocol and outputs at Statewide events.		
Proposed Size / Units	2.00 COUNT	Lifespan	In Perpetuity
Actual Size/Units	COUNT	Installed Date	
Mapped Activities	No		

Grant Activity - Grant Administration	
Description	Starla Arcenau with Douglas SWCD will provide budget tracking, report development, and general communications. Danica Derks and Mitch Brinks will assist with reporting and grant tracking.
Category	ADMINISTRATION/COORDINATION
Start Date	1-May-14
End Date	
Has Rates and Hours?	Yes
Actual Results	<p>All expenses related to the project were tracked and receipts maintained. Communications were extended to additional project partners (Crow Wing SWCD, Todd County SWCDD) and maintained with existing partner groups. Time tracking was instituted across the range of project partners.</p> <p>Gnatt Status and Grant and Match Hours Expended were tracked and reported. Purchases were documented. Data Integrity issues with USDA were delt with and secondary backup systems installed to prevent future issues.</p> <p>2016 funds spent on staff time for grant administration.</p>

Grant Activity - Group review of initial analyses.

Description	<p>Douglas SWCD and Crow Wing County staff Danica Derks, Mitch Brinks, and Chris Spence will perform an office and field group review of an initial 8 lake subset of process outputs in Brainerd. DNR Area staff, PCA Regional staff, and BWSR RegionI staff will be invited to participate. Verbal comments will also be gathered from affected Lake Associations during annual summer interactions and meetings by Danica Derks and Mitch Brinks and collated into a County specific notebooks. Minor process and output refinements will be implemented based on the comments recieved. This intial subset will include 4 lakes in each County and a diversity of land uses, contributing area patterns, lake morphometry, and watershed characteristics to provide an strenuous model test.</p> <p>Subwatershed analysis is a key step in watershed protection and restoration. These reproducible analyses use off the shelf data to identify potential pollution reducing BMPs for each subwatershed of the target lakes and rank them by cost per unit of pollutant reduced. This provides a priority basis to implement pollution reduction efforts around waterbodies of concern without excessive investments in field work and data collection.</p>		
Category	ADMINISTRATION/COORDINATION		
Start Date	11-Aug-14	End Date	31-Dec-16
Has Rates and Hours?	Yes		
Actual Results	<p>A meeting between project partners was facilitated in Brainerd on December 15th, 2014. The array of initial analyses was reviewed and refined. Project partners highlighted outputs that were of the greatest utility for their watershed characteristics and areas where focus could be increased. Meetings arranged and materials prepared. Two meetings were held 2/15 in Brainerd and 3/23 in Wadena. Group members reviewed and commented on initial analyses.</p> <p>2016 staff time for Group meeting.</p>		

Grant Activity - Initial Analyses

Description	<p>Contributing area delineation and GIS analysis process testing and improvement on the subset of 8 initial lakes including local Field Verification. This reproducible analysis develops relative pollutant loads from each area based on landscape shape, hydrologic properties, and land use. These loads are then modified by modeling existing BMPs and treatment processes in the watershed.</p> <p>Results are then calibrated in necessary to match the actual load to the existing monitoring data utilizing the Canfield-Bachmann 1981 natural lakes equation. Treatment scenarios of BMP installation are then developed and evaluated for pollutant reduction and BMP development and installation costs.</p> <p>The process utilizes LiDAR elevation data and tools newly developed by Peter Mead NRCS Cartographic Technician in cooperation with the Red River Watershed Management Board and USDA. Multiple other toolsets are utilized including Spatial Analyst, Analysis, Cartography, and others. These toolsets allow the process to move through subwatershed delineation, elimination of non-contributing areas, field work to verify subwatershed hydrological characteristics and existing treatment, identifying erosion prone portions of the landscape by developing Stream Power Indices and Length Slope times K factor, development of relative load generation and delivery estimates from the existing landscape, and modeling treatment retrofits by determining suitable project locations and scope. Critical watershed characteristics and lake morphometry data are provided by DNR through the new Bathymetry layer and pre-existing Catchments layer.</p> <p>Outputs include SPI, depressional areas, concentrated flow paths, nutrient loading estimation, and lake nutrient response modeling.</p>		
Category	INVENTORY/MAPPING		
Start Date	2-Jun-14	End Date	31-Dec-15
Has Rates and Hours?	Yes		
Actual Results	The subset of 8 lakes were analyzed and an array of water quality indicator and terrain analysis products produced. Final products of initial analyses were completed.		

Activity Action - Analysis			
Practice	300M - Contaminant Source Inventory	Count of Activities	8
Description			
Proposed Size / Units	8.00 COUNT	Lifespan	20 Years
Actual Size/Units	COUNT	Installed Date	
Mapped Activities	No		

Grant Activity - Lake Analysis for Protection Planning

Description	<p>Analyze the remaining 66 lakes. Local field verification. Outputs include SPI, depressional area maps, LSK indices, atleast 2 treatment retrofits modeled for each lake, and the nutrient and secchi depth response curve for each lake system is developed. This analysis will provide a basis for water resouce managers to propose the most beneficial projects to stakeholders for consideration. This shifts the emphasis from responding to stake holder requests for assistance to the consideration of projects within a framework of potential benefits. Networking with project partners can often illuminate potential project development costs associated with proposed BMPs or identify highly unlikely BMPS thereby finetuning the cost analysis and summary benefits table. This refined summary table will allow for the day to day allocation of staff time based on the expected cost benefit instead of a as requested basis.</p> <p>The possibility exists within this framework for water quality outcome based management.</p> <p>The results of this analysis will be used as the basis for water body and grant prioritization locally and within the watershed. This analyse's outputs will be used in leiu of WRAP analysis which fails to encompass comprehensive nutrient loading, water quality response curves, potential threats, or BMP prioritization for non-impaired lakes. The outputs can serve as a component of Comprehensive Watershed Management Plans for One Watershed One Plan pilot projects. The outputs will also guide LWMP updates, amendments, and future plans in Crow Wing, Douglas, and possibly other Counties.</p> <p>DNR Regional Staff are proposing to expand these techniques Statewide within the grant period, so it is very hard to quantify the scope of impact.</p>		
Category	INVENTORY/MAPPING		
Start Date	15-Sep-14	End Date	
Has Rates and Hours?	Yes		
Actual Results	<p>Almost all 72 lakes across the two project Counties have had the initial terrain analysis steps executed and lakes are being completed as project partners request and time allows. Progress to this point has been rapid and systems are being perfected in the hopes of maintaining this pace throughout the analysis steps. Certain lakes have required more hours than projected to have a high quality final product.</p> <p>74 Lake Analysis projects were generated for Crow Wing and Douglas Counties.</p> <p>Currently 36 have been completed to the output specifications agreed to on 12-3-2105 these are mainly in Crow Wing County. Previously 16 projects were completed and need to be upgraded to match the 12-3-2105 specsifications. Another 22 projects have been generated but need several hours of additional work to finalize the outputs, of these projects 4 are in Crow Wing County and the other 18 are in Douglas County. Latimer Lake was evaluated for Todd County SWCD as part of the Long Prairie WRAPP process. A comparison set of 20 lakes in Aitkin County were analyzed to the 2-15-2015 specsifications. Because of personal changes at the SWCD no new lakes were completed in 2016. remaining lakes will be completed in 2017 by new SWCD Water Plan Technician.</p>		

Activity Action - Analysis			
Practice	300M - Contaminant Source Inventory	Count of Activities	66
Description			
Proposed Size / Units	66.00 COUNT	Lifespan	30 Years
Actual Size/Units	COUNT	Installed Date	
Mapped Activities	No		

Grant Activity - Orientaion & Coordination			
Description	<p>Crown Wing County and Douglas County staff will gather in Brainerd for a pre-project meeting. BWSR Regional staff, adjoining Counties Water Plan staff, and DNR Area staff will be invited. Partners will review and finalize the lake list, desired outputs, and proposed formats. Mitch Brinks, Chris Spence, and Steve Henry will be the meeting conveners and primary audience. Steve Henry will demonstrate field contributing area, depression area, and BMP/treatment area verification protocols as adapted from Metro CD's Sub Watershed Analysis protocol to Crow Wing County and other interested partners around an example lake in Crow Wing County. Steve Henry will present on the water quality modeling and landscape analysis techniques that are "current" to the grant. Outputs, formats, timelines, and protocols are all subject to change due to technological advancement and the projects "idea collation" process. This has been seen already with the reduction in per lake analysis hours due to automation advancements despite the addition of lake specific Nutrient Response Curves to the projects outputs. Desktop developed nutrient response curves were previously believed "unattainable" but due to intensive efforts by a multi-agency team since the grants submission they will now be generated for all the project lakes.</p>		
Category	ADMINISTRATION/COORDINATION		
Start Date	5-May-14	End Date	31-Dec-15
Has Rates and Hours?	Yes		
Actual Results	<p>Project partners were brought up to speed on analysis inputs, process methods, potential outputs, and output formats. Example outputs from other terrain analysis and water quality potential characterization projects were reviewed and commented on.</p> <p>Communications among all partners were managed to generate a commonly agreed process and set of outputs. Meetings in 2015 included 2/10, 2/15, 3/23, and 12/3.</p>		

Grant Attachments

Document Name	Document Type	Description
2014 Competitive Grant	Grant Agreement	2014 Competitive Grant - Douglas SWCD
2014 Competitive Grant executed	Grant Agreement	2014 Competitive Grant - Douglas SWCD
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 04/16/2015
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 04/26/2017
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 02/21/2017
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 01/24/2017
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 02/04/2016
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 01/28/2016
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 03/05/2015
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 02/12/2015
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 02/12/2015
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 01/29/2015
Amendment	Grant	Lake Protection Analysis
Application	Workflow Generated	Workflow Generated - Application - 10/04/2013
Email to LGU	Journal	Journal Dated - 02/09/2017
Lakeshed Contributing Area Analysis	Grant	Lake Protection Analysis
SR_loc_10616.jpg	Grant	Lake Protection Analysis
Work Plan	Workflow Generated	Workflow Generated - Work Plan - 04/16/2015
Work Plan	Workflow Generated	Workflow Generated - Work Plan - 03/27/2014
Work Plan	Workflow Generated	Workflow Generated - Work Plan - 01/23/2014
Work Plan	Workflow Generated	Workflow Generated - Work Plan - 04/24/2014
grantmap_10616_2013-10-04_01-50-11-PM.jpg	Grant	Lake Protection Analysis