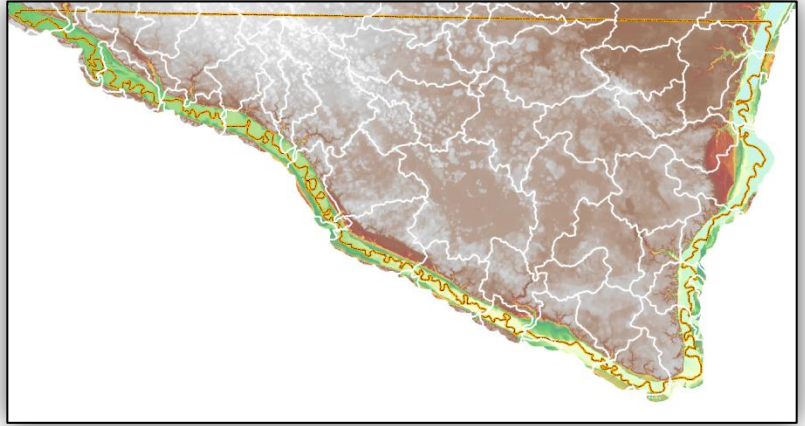


Nicollet County / SWCD Watershed Implementation Targeting

Final Progress Report for 2018 activities

Grant ID: C16-2228



The Accelerated Implementation Grant will be used to compile, analyze, and process Geographic Information System (GIS) data for use in Prioritize, Target, and Measure Application (PTMApp) desktop tools. These tools will identify areas that contribute high amounts of phosphorus, nitrogen, and sediment into the County's water resources. County and SWCD staff can then prioritize and target areas on the landscape that produce maximum water quality benefits. Landowners can then be identified from the desktop tools and contacted for project implementation, which will address the nutrient and sediment impairments consistent with the Local Water Management Plan for the County. County and SWCD staff will work to develop on-line access of the data for others to access the data in an interactive format.

Project Deliverables

- Hydrologically conditioned digital elevation model (DEM) of the County
- Training of County and SWCD staff on utilization of the data and model results
- On-line access for landowners and other partners to view project results
- Final reporting describing methodology and results

Project Coordinator

Amy Clyde, Environmental Specialist
Nicollet County Property Services

Budget Summary

Grant - \$84,152 awarded
\$84,152 spent through December 31, 2018

Local Match - \$21,038 total local (Cash & In-Kind Time) contributions required
\$21,038 spent through December 31, 2018 (In-Kind Staff Time & SWCD Cash Match)

Results for 2018

- Utilized high spatial resolution hydroconditioned DEMs to identify the most beneficial locations for BMPs at the field/parcel scale
- Used PTMApp to measure reductions in TP, TN, and sediment at several resources of concern
- Training provided on interpreting GIS Models
- Web-based map viewer was created in ESRI Story Map to highlight the PTMApp process





Grant All-Detail Report Accelerated Implementation Grant 2016

Grant Title - Nicollet County/SWCD Watershed Implementation Targeting

Grant ID - C16-2228

Organization - Nicollet County

Original Awarded Amount	\$84,152.00	Grant Execution Date	3/16/2016
Required Match Amount	\$21,038.00	Original Grant End Date	12/31/2018
Required Match %	25%	Grant Day To Day Contact	Amy Linnerooth
Current Awarded Amount	\$84,152.00	Current End Date	12/31/2018

Budget Summary

	Budgeted	Spent	Balance Remaining*
Total Grant Amount	\$84,152.00	\$84,152.00	\$0.00
Total Match Amount	\$21,038.00	\$21,038.00	\$0.00
Total Other Funds	\$0.00	\$0.00	\$0.00
Total	\$105,190.00	\$105,190.00	\$0.00

*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	Matching Fund
BMP Suitability	Inventory/Mapping	Current State Grant	Nicollet County/SWCD Watershed Implementation Targeting	\$6,520.00	\$6,520.00	1/12/2018	N
Calculate TP, TN, and Sediment Loadings, SPI values, and percentile rankings	Inventory/Mapping	Current State Grant	Nicollet County/SWCD Watershed Implementation Targeting	\$5,600.00	\$5,600.00	3/5/2018	N
Hydrologically Condition Digital Elevation Model	Inventory/Mapping	Current State Grant	Nicollet County/SWCD Watershed Implementation Targeting	\$53,580.00	\$53,580.00	3/5/2018	N

Activity Name	Activity Category	Source Type	Source Description	Budgeted	Spent	Last Transaction Date	Matching Fund
Hydrologically Condition Digital Elevation Model	Inventory/Mapping	Local Fund	Nicollet County In-Kind	\$3,299.22	\$3,299.22	1/31/2018	Y
Hydrologically Condition Digital Elevation Model	Inventory/Mapping	Local Fund	Nicollet SWCD Cash	\$10,000.00	\$10,000.00	12/31/2018	Y
Hydrologically Condition Digital Elevation Model	Inventory/Mapping	Local Fund	Nicollet SWCD In-Kind	\$2,219.78	\$2,219.78	12/31/2017	Y
Measure Benefits	Inventory/Mapping	Current State Grant	Nicollet County/SWCD Watershed Implementation Targeting	\$5,600.00	\$5,600.00	4/28/2018	N
Report and Final meeting	Inventory/Mapping	Current State Grant	Nicollet County/SWCD Watershed Implementation Targeting	\$12,852.00	\$12,852.00	9/22/2018	N
Report and Final meeting	Inventory/Mapping	Local Fund	Nicollet County In-Kind	\$5,519.00	\$5,519.00	12/31/2018	Y
Report and Final meeting	Inventory/Mapping	Local Fund	Nicollet SWCD In-Kind	\$0.00			Y

Activity Details Summary

Activity Details	Total Action Count	Total Activity Mapped	Proposed Size / Unit	Actual Size / Unit
306M - LIDAR Derived Product(s)	1		1 COUNT	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 - BMP Suitability			
Description	This initiative will be performed by Houston Engineering. Best Management Practice (BMP) suitability analysis can be tailored to those BMPs used most often in the watershed. Implementation of BMPs are dependent upon a site's suitability for a given practice based on NRCS guidelines and topographic characteristics, soils, land use, and other factors. The high spatial resolution hydro conditioned DEM makes it possible to identify potential locations to place BMPs based on topography and other design factors. The locations can then be reviewed and screened to assist in targeting the implementation of practices. The approach identifies preliminary locations to target BMP placement.		
Category	INVENTORY/MAPPING		
Start Date	16-Mar-16	End Date	31-Dec-18
Has Rates and Hours?	No		
Actual Results	Houston Engineering Inc. (HEI) conducted a kick-off meeting for the project. Nicollet County and Nicollet SWCD staff were provided with a project scope and schedule by HEI. County and SWCD staff were also given direction on what data was needed in order for HEI to complete the project. HEI utilized high spatial resolution hydroconditioned DEMs to identify locations for BMPs that will provide the most impact.		

Grant Activity - Calculate TP, TN, and Sediment Loadings, SPI values, and percentile rankings

Description	This initiative will be completed by Houston Engineering. Once corrected DEM are prepared under other initiatives, this data will be used to create stream power index (SPI) and loading values for total phosphorus (TP), total nitrogen (TN), and sediment.		
Category	INVENTORY/MAPPING		
Start Date	16-Mar-16	End Date	31-Dec-18
Has Rates and Hours?	No		
Actual Results	The input data required to run PTMApp were created including travel time raster for surface hydrology, a curve number raster for hydrology calculations, elevation data products derived from the DEM, soils information, and inputs for calculating the RUSLE. The PTMApp provided an assessment of TP, TN, and sediment leaving the landscape at the field/parcel scale and the amounts of each that reach the downstream priority resources. HEI conducted an analysis that identifies where BMPs and Conservation Practices could be placed on the landscape at field/parcel scales. The PTMApp provided the location of potential places on the landscape where a range of specific conservation practices could be implemented based on the primary manner in which they treat TN, TP, and sediment. BMPs and Conservation Practices are placed into treatment groups (e.g. storage, filtration, bio-filtration, infiltration, protection, and source reduction) that were delineated at the field scale.		

Grant Activity - Hydrologically Condition Digital Elevation Model

Description	<p>The lead on this component of the project will be Houston Engineering. Under this initiative, Houston Engineering will hydrologically condition the LiDAR Digital Elevation Model (DEM) of Nicollet County so that the DEM accurately reflects water flow across the landscape. This involves identifying culvert locations and burning flow lines across any roadways. Basins will also be analyzed to determine whether they contribute to flow or whether they are closed.</p> <p>A local cash match of \$10,000 will be provided by Nicollet SWCD for this activity. Additional \$5,519 of match will be contributed through in-kind hours from the Nicollet SWCD and Nicollet County Water Planner to test and validate the model results and assist with culvert inventory or site verification as needed.</p>		
Category	INVENTORY/MAPPING		
Start Date	16-Mar-16	End Date	31-Dec-18
Has Rates and Hours?	Yes		
Actual Results	<p>HEi corrected the raw LIDAR Digital elevation models (DEMs) to account for subsurface flow paths (e.g. culverts and bridges) to more accurately represent surficial water movement in the watershed. The conditioning process involved manual interpretation and documentation of the location of subsurface flow paths. An analysis was also performed to determine areas not contributing runoff downstream during a 10-year, 24-hour rainfall event.</p>		

Activity Action - Hydrologically Conditioned DEM			
Practice	306M - LIDAR Derived Product(s)	Count of Activities	1
Description			
Proposed Size / Units	1.00 COUNT	Lifespan	In Perpetuity
Actual Size/Units	COUNT	Installed Date	
Mapped Activities	No		

Grant Activity - Measure Benefits

Description	This initiative will be completed by Houston Engineering. The PTMApp is an ArcGIS extension that can be used to measure water quality improvements from BMP implementation, based off of an evaluation of the volume of runoff that can be treated by a BMP resulting from different precipitation events. The percent reduction of a water quality constituent is based upon a reduction ratio and the BMP effectiveness. Information generated from PTMApp can be used to identify areas with the most cost-effective and highest potential for treatment of issues (TP, TN, sediment, and runoff) impacting priority resources. It will also be used to inform measurable goals and establish targeted implementation strategies.		
Category	INVENTORY/MAPPING		
Start Date	16-Mar-16	End Date	31-Dec-18
Has Rates and Hours?	No		
Actual Results	HEI used PTMApp to measure reductions in TP, TN, and sediment at the BMP and several resources of concern including 8-Mile Creek, Swan Lake, and Roger's Creek. HEI used PTMApp to conduct an analysis of the measured water quality improvements at the three resources of concern from a suite of BMPs. The analysis included an estimate of the cost of implementing each BMP, which allows Nicollet County to evaluate the utility of each potential practice based on water quality improvements at the resource of concern and the cost of implementing the practice. HEI provided a specific list of targeted BMPs that will result in measured water quality improvements and which can further be field validated and used to engage landowners in opportunities to build projects.		

Grant Activity - Report and Final meeting

Description	<p>The lead on this initiative will be provided by Houston Engineering, who will provide training for SWCD and County staff on how to use and interpret the GIS Models. Additionally, a web-based map viewer, such as ESRI's Story Map, will be created to display all data models and terrain analysis products. These products will be made available to the public for use.</p> <p>\$5,519 will be contributed through in-kind hours from the Nicollet County Water Planner and other Nicollet County staff for Training Workshops, Implementing GIS models, and Public Outreach.</p> <p>Nicollet County will also be providing in-kind hours for all grant administration. These duties will include all general eLINK, website, and annual and final reporting documents for the project. This also includes time tracking for the grant and charging reimbursement towards the grant.</p>		
Category	INVENTORY/MAPPING		
Start Date	16-Mar-16	End Date	31-Dec-18
Has Rates and Hours?	No		
Actual Results	<p>HEI summarized the desktop analysis in a report detailing the methods used and the results. The report was delivered along with all of the data used and generated through the analysis. Meetings were held to discuss the results and to provide hands-on training for the County and SWCD on how to use the data in implementation activities. A web-based map viewer was created in ESRI Story Map that highlighted the PTMApp process. This will be available for the public to view on both Nicollet County and Nicollet SWCD websites.</p> <p>Nicollet County spent in-kind hours toward grant administration in 2018. This included processing invoices, coordination with contractor, and eLINK updates for expenditures and annual reporting.</p>		

Grant Attachments

Document Name	Document Type	Description
2016 Competitive Grant	Grant Agreement	2016 Competitive Grant - Nicollet County
2016 Competitive Grant executed	Grant Agreement	2016 Competitive Grant - Nicollet County
2016 FFR AIG	Grant	Nicollet County/SWCD Watershed Implementation Targeting
2016 Invoices	Progress	Progress Dated - 01/03/2018
2017 FFR AIG	Grant	Nicollet County/SWCD Watershed Implementation Targeting
2017 FFR Aig	Grant	Nicollet County/SWCD Watershed Implementation Targeting

Document Name	Document Type	Description
2017 Invoices	Progress	Progress Dated - 01/03/2018
2018 FFR Signed	Grant	Nicollet County/SWCD Watershed Implementation Targeting
2018 Invoices	Grant	Nicollet County/SWCD Watershed Implementation Targeting
AIG Time Tracking 2016	Grant	Nicollet County/SWCD Watershed Implementation Targeting
AIG Time Tracking 2017	Grant	Nicollet County/SWCD Watershed Implementation Targeting
AIG Time Tracking 2018	Grant	Nicollet County/SWCD Watershed Implementation Targeting
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 12/27/2018
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 10/03/2017
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 10/03/2017
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 09/15/2017
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 04/06/2017
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 03/02/2018
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 01/13/2017
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 03/06/2018
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 02/13/2017
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 01/03/2018
Application	Workflow Generated	Workflow Generated - Application - 08/26/2015
C16-2228 Reconciliation B Checklist	Journal	Journal Dated - 03/29/2018
Dec 2017 Invoice Houston Engineering	Grant	Nicollet County/SWCD Watershed Implementation Targeting
Interim Financial Report	Grant	Nicollet County/SWCD Watershed Implementation Targeting
Interim Financial Report	Grant	Nicollet County/SWCD Watershed Implementation Targeting
Nicollet County 2012 Impaired Waters	Grant	Nicollet County/SWCD Watershed Implementation Targeting
PTMApp Final Report	Grant	Nicollet County/SWCD Watershed Implementation Targeting
SWCD In-Kind Receipt	Grant	Nicollet County/SWCD Watershed Implementation Targeting
Signed Contribution Agreement	Grant	Nicollet County/SWCD Watershed Implementation Targeting
Volunteer Rate Discussion	Grant	Nicollet County/SWCD Watershed Implementation Targeting
Volunteer RateDiscussion060518	Grant	Nicollet County/SWCD Watershed Implementation Targeting
Work Plan	Workflow Generated	Workflow Generated - Work Plan - 12/16/2015
Work Plan	Workflow Generated	Workflow Generated - Work Plan - 02/11/2016
Work Plan	Workflow Generated	Workflow Generated - Work Plan - 06/05/2018

Document Name	Document Type	Description
Workplan Approval Email (3-14-16)	Grant	Nicollet County/SWCD Watershed Implementation Targeting
grantmap_14676_2015-08-26_11-52-30-AM.jpg	Grant	Nicollet County/SWCD Watershed Implementation Targeting