Grant All-Detail Report
Accelerated Implementation Grant 2016

Grant Title - Warroad River Inchannel Sedimentation Analysis
Grant ID - C16-3828
Organization - Warroad WD

Grant Awarded Amount	**$73,718.00**	**Grant Execution Date**	**4/1/2016**
Required Match Amount	$18,429.50	**Grant End Date**	12/31/2018
Required Match %	25%	**Grant Day To Day Contact**	Scott Johnson

Budget Summary

	Budgeted	Spent	Balance Remaining*
Total Grant Amount	$73,718.00	$61,586.10	$12,131.90
Total Match Amount	$18,429.50	$15,315.56	$3,113.94
Total Other Funds	$0.00	$0.00	$0.00
Total	**$92,147.50**	**$76,901.66**	**$15,245.84**

**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
Data Development and Analysis Work	Planning and Assessment	Current State Grant	Warroad River Inchannel Sedimentation Analysis	$22,800.00	$22,800.10	3/3/2017	N
Final Reporting and Meeting	Education/Information	Current State Grant	Warroad River Inchannel Sedimentation Analysis	$12,736.00	$1,406.00	12/14/2017	N
HEI/SWCD Project Management	Administration/Coordination	Current State Grant	Warroad River Inchannel Sedimentation Analysis	$4,164.00	$4,080.50	12/14/2017	N
HEI/SWCD Project Management	Administration/Coordination	Local Fund	Inkind - Local Funds	$6,000.00	$3,556.20	12/29/2017	Y

Activity Name	Activity Category	Source Type	Source Description	Budgeted	Spent	Last Transaction Date	Matching Fund
Preliminary Engineering and Data Research	Project Development	Current State Grant	Warroad River Inchannel Sedimentation Analysis	$22,578.00	$22,578.00	5/4/2017	N
Preliminary Engineering and Data Research	Project Development	Local Fund	Inkind - Local Funds	$12,429.50	$11,759.36	12/14/2017	Y
Sediment Budget and PTMApp	Planning and Assessment	Current State Grant	Warroad River Inchannel Sedimentation Analysis	$11,440.00	$10,721.50	12/14/2017	N

Activity Details Summary

Activity Details	Total Action Count	Total Activity Mapped	Proposed Size / Unit	Actual Size / Unit

Proposed Activity Indicators

Activity Name	Indicator Name	Value & Units	Waterbody	Calculation Tool	Comments

Final Indicators Summary

Indicator Name	Total Value	Unit

Grant Activity

Grant Activity - Data Development and Analysis Work

Description	Task 2 Aerial photographs will be used to document historic and modern positions of the Warroad River. Changes in the position if the river banks will be paired with Airborne LiDAR data to estimate rates of river bank erosion, and to target locations for site investigations. . The results of this desktop analysis will be used to identify locations to conduct BANCs/BEHI surveys that will be used to refine estimates of near channel sediment loss to the Warroad River and eventually Lake of the Woods. HEI will be responsible for conducting the desktop analysis and field surveys. A technical memorandum will be developed by HEI showing the results. Warroad River Watershed District will review and approve the Technical Memorandum.		
Category	PLANNING AND ASSESSMENT		
Start Date	1-Apr-16	**End Date**	31-Dec-18
Has Rates and Hours?	No		
Actual Results	Task 2. Data Development and Analysis Work A historic channel assessment was completed to estimate net channel erosion within the Warroad River utilizing aerial photography analysis and an ArcMap Channel Migration Toolbox. Historic aerial photography within the study area from 1940 was obtained in digital format from the University of Minnesota's Historical Aerial Photograph Online database (MHAPO). These aerial photographs were georeferenced in ArcMap 10.3.1 using a minimum of seven user selected ground control points while maintaining a root mean square error (RMS) of less than 5, with an emphasis on identifying points near the river. Recent aerial photography within the study area from 2009 was obtained from the Minnesota Geospatial Information Office in digital format. Associated Light Detection and Ranging Data (LiDAR) flown in 2009 was also obtained from the Minnesota Geospatial Commons Office to aid in centerline digitization. River centerlines were digitized from both 1940 and 2009 aerial photography across three Assessment Units (AUID) as defined by the Minnesota Pollution Control Agency within the Warroad River Watershed to assess net sediment movement across a sixty nine year study period. Assessment Units included the Warroad River (09030009-502), Warroad River, West Branch (09030009-503) and Warroad River, East Branch (09030009-504). River migration rates between 1940 and 2009 were determined by running centerlines through a Channel Migration Toolbox. Model outputs included a shapefile containing discrete polygons for each instance of channel migration along each AUID. Each polygon characterized the total area of movement between each centerline. These polygons were used to identify areas and magnitude of erosion along he Warroad River (Figure XXX), which is turn were used to target Bank Erosion Hazard Index field surveys (BEHI) used for the Bank Assessment for Non-point Source Consequences of Sediment (BANCS).		

Grant Activity - Final Reporting and Meeting			
Description	Task 4 Houston Engineering will develop a report documenting the results of the study. Warroad River Watershed District will review and provide one set of revision suggestions for the report. One public meeting will be held to present the results of the report.		
Category	EDUCATION/INFORMATION		
Start Date	1-Apr-16	**End Date**	31-Dec-18
Has Rates and Hours?	No		
Actual Results	Finish field work and follow up channel assessment. Draft Technical note memo on River Bank Erosion Assessment.		

Grant Activity - HEI/SWCD Project Management			
Description	Task 5 Roseau SWCD acting on behalf of the Warroad River Watershed District will be responsible for E-Link reporting and budget management. Warroad River Watershed District and Houston Engineering have also reserved time for up to 3 project meetings, outside of the project kickoff meeting and final public meeting.		
Category	ADMINISTRATION/COORDINATION		
Start Date	1-Apr-16	**End Date**	31-Dec-18
Has Rates and Hours?	No		
Actual Results	Task 5. HEI Project Management HEI has practiced efficient project management throughout task development in order to ensure project completion, budget management and any additional communication between HEI and WRRD needed to ensure successful completion of the project. Develop HEC-RAS model to aid in estimating modern day river bank erosion in the Warroad River		

Grant Activity - Preliminary Engineering and Data Research			
Description	Task 1. A project kickoff meeting will be held to coordinate project activities between Warroad River Watershed District and Houston Engineering. This activity will also be used to gather data needed to conduct the desktop analysis in the Data Development and Analysis Work activity. This will include gathering reports and data collected during previous project, historic and modern aerial photographs, and any hydrology an hydraulic models that have been developed for the Warroad River Watershed.Warroad River Watershed District will assist Houston Engineering by reviewing potential locations for practices that address sediment issues and assisting with field surveys.		
Category	PROJECT DEVELOPMENT		
Start Date	1-Apr-16	**End Date**	31-Dec-18
Has Rates and Hours?	No		
Actual Results	Task 1. Preliminary Engineering and Data Research • Project kick-off meeting was conducted in May 2016 • Data needed to collect the desktop analysis is complete include gathering and review of previous projects that estimated overland sediment sources to and sediment deposition within Lake of the Woods (LOW), historic and modern aerial photographs, existing survey data, drainage system repair plans, bridge replacement plans, and any hydrology and hydraulic models that have been developed. o Previous projects include: o Historic aerial photography from the 1940s was collected from the University of Minnesota Borchert Map Library for the study area and georeferenced. In order to document channel migration over time, aerial photography from 2009 and associated LiDAR data was also collected from the Minnesota Geospatial Information Office. Aerial photograph from the 1960s is also available within the study area. o A HEC-RAS model is currently being developed for the study area Plan and coordinate for field work on stream channel assessments. Conduct final field work to document features needed for finalizing the development of the HEC-RAS model		

Grant Activity - Sediment Budget and PTMApp			
Description	Task 3 The PTM App will be run on top of data that was developed as part of the LOW TMDL/WRAPS study to further targeted sources of overland sediment loading and identify potential practice locations to address sediment issues. This information will be used to identify the magnitude of overland sediment loading. Near Channel sources of sediment will be estimated in the Data Development and Analysis Work of this project. These to source estimates will be paired with a previously developed report on sediment deposition rates for the Warroad River Harbor to develop a sediment mass balance for source of sediment in the Warroad River Watershed. The results of the sediment mass balance will be used to develop a targeted implementation plan. The measurable water quality benefits associated with this plan, along with a probable implementation cost, will be evaluated using PTM App.		
Category	PLANNING AND ASSESSMENT		
Start Date	1-Apr-16	**End Date**	31-Dec-18
Has Rates and Hours?	No		
Actual Results	Task 3. Sediment Budget and PTMApp The Prioritize, Target and Measure Application (PTMApp)-Desktop has been run on top of data that was developed as part of the Lake of the Woods TMDL/WRAPS Study for the entire Lake of the Woods watershed area. Data was pulled for the Warroad River watershed in order to identify the magnitude and locations of different sediment sources in the watershed. A net value of 930 tons/year of sediment was found to be delivered to the Warroad Harbor from over-land sources. Numerous targeted, cost-effect conservation practice implementation scenarios have also been developed for WRRD review and final implementation plan development.		

Grant Attachments

Document Name	Document Type	Description
2016 Competitive Grant	Grant Agreement	2016 Competitive Grant - Warroad WD
2016 Competitive Grant executed	Grant Agreement	2016 Competitive Grant - Warroad WD
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 12/08/2016
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 01/26/2017
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 12/12/2016
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 12/12/2016
All Details Report	Workflow Generated	Workflow Generated - All Details Report - 01/26/2017
Application	Workflow Generated	Workflow Generated - Application - 08/27/2015

Document Name	Document Type	Description
Financial Report	Grant	Warroad River Inchannel Sedimentation Analysis
Work Plan	Workflow Generated	Workflow Generated - Work Plan - 12/08/2016
Work Plan	Workflow Generated	Workflow Generated - Work Plan - 02/17/2016
Work Plan	Workflow Generated	Workflow Generated - Work Plan - 12/16/2015
grantmap_14637_2015-08-26_12-20-06-PM.jpg	Grant	Warroad River Inchannel Sedimentation Analysis