

## St. Croix River Crossing Project – Implementation of Mitigation Activities

This form is to be used to document completion of certain St. Croix River Crossing Project mitigation actions for which 1) Wisconsin Department of Natural Resources (WisDNR) has responsibility to implement or 2) WisDNR must concur with actions proposed by others. This includes all activities described in the Project's Growth Management Mitigation Memorandum of Understanding (MOU) (all) or item 9b in the Riverway Mitigation MOU.

Action (list name of MOU and activity #):

Growth Management Mitigation Memorandum of Understanding, Activity A and B

Applicant (name, governmental unit, address, contact person phone number and email address):

Brett Budrow, St. Croix Community Development Department, 1101 Carmichael Rd, Hudson, WI 54016  
-715-386-4678, [brett.budrow@co.saint-croix.wi.us](mailto:brett.budrow@co.saint-croix.wi.us)

Application (attach separate pages if needed; describe proposal, how it meets applicable MOU objective, expected environmental benefits/products, cost, location, schedule, post-completion management/maintenance, etc.; provide justification if proposal varies from MOU language): LIDAR data acquisition and terrain analysis is necessary to increase staff efficiency's in order to develop phosphorus reduction strategies, watershed modeling, stormwater planning, bluff land mitigation and restoration, county zoning, code enforcement, land development, implementation of the revised Shoreland ordinance, transportation mapping, and land development. LIDAR and its mapped 2 foot contours will help not only the county's efficiency, but also the data will also be made available to Federal, State, and local agencies. SEE ATTACHED PROJECT DESCRIPTION

Consultation with other parties (for Riverway MOU Item 9b only):

WisDNR Stewardship Grant eligibility (preliminary screening by Community Assistance staff): Yes \_\_\_ No \_\_\_

MnSHPO \_\_\_\_\_ (date) Response:

WisSHPO \_\_\_\_\_ (date) Response:

Indian Tribes\* \_\_\_\_\_ (date) Response:

(\* - WisDNR can provide a list of Indian Tribes to contact)

Advisory Team Review (list date considered, Advisory Team findings/recommendations):

WisDNR Concurrence (for release of funds by St. Croix County)

Approve as proposed: \_\_\_\_\_ (date)

Approve with conditions: \_\_\_\_\_ (date) Conditions (include any reporting requirements for Applicant):

Denied: \_\_\_\_\_ (date) Suggested revisions (guidance for possible Applicant re-submittal):

Implementation Tracking Log (for funded projects)

Funds received by Applicant \_\_\_\_\_ (date):

Progress on implementation (this should be a brief, running summary coinciding with Applicant reporting requirements):



Agreement No.: BT003

FC: 95706

Amount: \$30,000

Soil and Water Modeling and Monitoring Agreement  
between  
State of Wisconsin, Department of Natural Resources  
and  
St. Croix County Community Development Department

- I. GENERAL INFORMATION:  
Grantee/Project Sponsor: St. Croix County Community Development Department  
Project Title: Light Detection and Ranging (LiDAR) Data Acquisition and Terrain Analysis  
Period Covered by This Agreement: January 1, 2014 – June 30, 2015
- II. AGREEMENT RECIPIENT: St. Croix County Community Development Department
- III. AUTHORITY: This agreement between the State of Wisconsin Department of Natural Resources (hereinafter referred to as WDNR) and St. Croix County Community Development Department is hereby entered into pursuant to Wis. Stat. s. 29.037
- IV. PURPOSE: The purpose of this agreement is to enable the WDNR to make payments in accord with the St. Croix Crossing Mitigation Package, Soil and Water Modeling and Monitoring MOU.
- V. BACKGROUND: The St. Croix Crossing project involves the construction of a new bridge across the St. Croix River in St. Croix County, Wisconsin. The Supplemental Final EIS (SFEIS) prepared for the project includes a section on bridge mitigation items. Included in this mitigation package is \$400,000 designated for the St. Croix Basin water Resources Planning Team (Basin Team). The purpose of this \$400,000 is to study how the opening of a new bridge between Minnesota and Wisconsin may impact water quality in the St. Croix River. Once mitigation funds became available the Basin Team requested project proposals to decide how to allocate the \$400,000. One of the approved proposals was to secure funding for LiDAR. This is an agreement based on the project scope on how the mitigation dollars will be spent on the project.
- VI. SCOPE: The WDNR will provide St. Croix County with \$30,000 to fund a portion of the cost of LiDAR data acquisition, analysis, and mapping to be completed over a two year period.

In return the St. Croix County shall complete the projects as described in the LiDAR Acquisition and Terrain Analysis for Identifying Critical Areas for Protecting and Improving Water Quality scope of work and submit reports to WDNR upon completion of the objectives as outlined in the proposal.

VII. PERIOD OF PERFORMANCE: This agreement shall remain in effect until June 30, 2015. The WDNR and St. Croix County may jointly and periodically evaluate this agreement and, if mutually agreed, will amend the agreement as necessary. Any modifications to this agreement shall become effective upon approval by both parties.

PAYMENT: The Department agrees to provide funding to St. Croix County up to a total \$30,000 for the project. WDNR will encumber \$15,000 on an annual basis over a two year project period in which St. Croix County will be eligible for a \$7,500 advance payment and reimbursement of the remaining funding of \$7,500 upon satisfaction of the deliverables outlined in the Basin Team Project Proposal.

VIII. PARTY REPRESENTATIVES: The representatives of the parties who shall serve as project coordinators and principal contacts for the purposes of this agreement are as follows:

County: Ellen Denzer, Director  
St. Croix Community Development  
1101 Carmichael Road  
Hudson, WI 54016

WDNR: Dan Baumann, P.E., Regional Director  
1300 West Clairemont Avenue  
Eau Claire, WI 54701

IX. SPECIAL PROVISIONS:

- A. St. Croix County agrees that information gathered as a result of the projects will be readily available, as needed, to other entities in St. Croix County operating within the context of the Soil and Water Modeling and Monitoring MOU associated within the St. Croix Crossing SFEIS.
- B. St. Croix County agrees that failure on its part to abide by the project contract and its stipulations could require a repayment of the mitigation funds.
- C. This agreement does not impose any obligation, financial or otherwise, upon the WDNR in regards to the subsequent operation and/or maintenance of any facilities developed in this project.

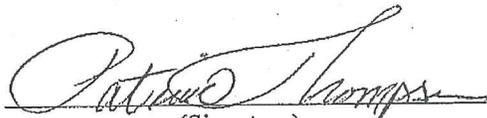
X. LIABILITY: St. Croix County recognizes and understands that it may be responsible for the consequences of its own acts, errors, or omissions and those of its employees, agents, boards, commissions, agencies, officers and representatives, including providing its own defense. To the extent authorized by law, the WDNR shall be responsible for the consequences of its own acts, errors, or omissions and those of its employees, agents, contractors, officers, and representatives and shall be responsible for any losses, claims and liabilities which are attributable to such acts, errors or omissions. It is not the intent of the parties to impose liability beyond that imposed by Wisconsin Statutes. This clause applies only to actions of each party

pursuant to this agreement, and does not apply to actions or events that occur outside the scope of this agreement.

By signature St. Croix County and the WDNR hereby accept all terms and conditions of this agreement without exception, deletion or alteration.

IN WITNESS WHEREOF, the parties hereto have caused this agreement to be executed as of the date therein written.

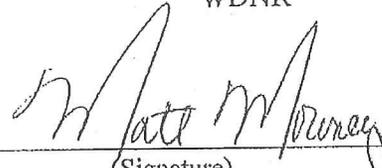
St. Croix County

  
(Signature)

Patrick Thompson, Administrator

8/27/14  
(Date)

WDNR

  
(Signature)

Cathy Stepp, Secretary

5/13/14  
(Date)

**PROJECT SCOPE:**  
**LIDAR DATA ACQUISITION AND TERRAIN ANALYSIS FOR**  
**IDENTIFYING CRITICAL AREAS FOR PROTECTING AND IMPROVING**  
**WATER QUALITY**

**A. Project Area:**

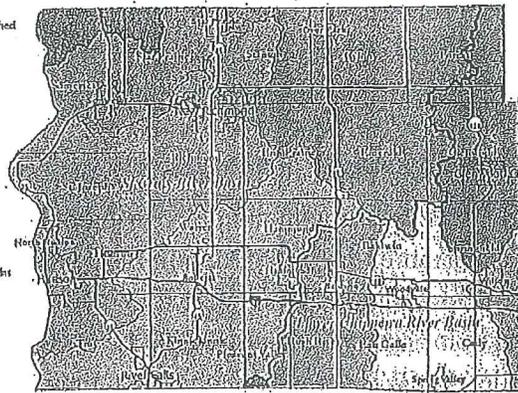
The project area consists of all of St. Croix County totaling 735 square miles in northwest Wisconsin. St. Croix County is located on the western border of Wisconsin, approximately 35 miles from the St. Paul-Minneapolis metropolitan area. St. Croix County has seen significant changes over the last 15+ years. While over half the county land is still in agriculture, the 33% increase in population since 2000 positions St. Croix County as Wisconsin's fastest growing county. The rapid growth in the western portions of the county also makes St. Croix County the 79<sup>th</sup> fastest growing county in the nation with a 2010 US Census population of 84,345.

Lakes, ponds, rivers, streams, intermittent waterways, and natural drainage ways make up the 18,934 acres of surface waters in St. Croix County. These resources are all water bodies, standing still or flowing, navigable and intermittent, and include natural drainage ways that collect and channel overland rainwater or snowmelt runoff. There are also many artificial drainage ways where the natural drainage ways have been altered by human activity. All of these features have the ability to transport sediment and pollutants and affect the water quality within their watersheds.

The surface waters of St. Croix County fall within two major drainage systems or watersheds - the St. Croix River Basin and the Lower Chippewa River Basin.

**Watershed**

- St. Croix River Basin Watershed
- Troy Brook
- Lower Apple River
- Lower Willow River
- Kinnickinnic River
- Upper Willow River
- Lower Chippewa River Basin Watershed
- Nishnabets River
- Isabelle Creek
- Rush River
- Eau Galle River
- Verdon Creek
- South Fork Hay River
- Dividing line between basins
- Municipal boundaries



Surface waters in the western two-thirds of the County, including the Apple, Kinnickinnic, and Willow Rivers, fall within the St. Croix River Basin. The eastern third of the County, including the Hay and Eau Galle Rivers, are part of the Lower Chippewa River Basin. The

exception is the Rush River in the south-central part of the County which flows directly into the Mississippi River.

The St. Croix River Basin Watershed drains approximately 523 square miles of St. Croix County or 71% of the surface area of St. Croix County to the St. Croix River and Lake St. Croix through tributaries including the Kinnickinnic River, Willow River, Apple River, and Trout Creek. With over 20-years of field investigations, studies have shown that the Apple, Willow and Kinnickinnic Rivers are major contributors of suspended sediments and nutrients. Baseline loading from St. Croix County totals approximately 133,000 pounds of phosphorous per year. While the St. Croix Basin Watershed is the primary focus the South Fork of the Hay River covers 63 square miles of St. Croix County and contributes phosphorous to Lake Tainter and Lake Memomin both of which have TMDL's.

B. Problems to be addressed:

This agreement will address multiple problems that affect water quality within St. Croix County. These problems include lack of accurate elevation data for identifying in field features where overland flow accumulates and is hydrologically connected to surface waters. These features are probable sources of contaminants associated with agricultural practices such as sediments, nutrients, and pesticides. The 2009 St. Croix County Land and Water Resource Management Plan and the WI DNR St. Croix County NR151 MOU site multiple goals and activities relating to conduct ongoing inventory to identify sensitive areas, focusing implementation activities on targeted watershed areas and identifying priority areas. This LiDAR data will be an important implementation tool for the Resource Management Plan and the NR 151 MOU to assist in identifying and administering the Agricultural Performance Standards on farms and critical features for best management practices. BMPs targeted to these features can maximize the benefits on water quality and also maximize the efficiency of funding used for water quality improvement.

Water quality improvement is an important goal for St. Croix County to achieve as the EPA has approved a total maximum daily load (TMDL) for Lake St. Croix in the St. Croix Basin and Lake Tainter and Lake Menomin in the Lower Chippewa Basing. The Lake St. Croix TMDL and implementation plan to meet water quality goals requires a 37% phosphorous reduction in St. Croix County. The Lake St. Croix TMDL plan and Implementation Plan has identified the Willow, Apple and the Kinnickinnic River and their watersheds to be very high contributors of sediment and phosphorus to Lake St. Croix. In fact, these three watersheds are listed in the Lake St. Croix TMDL as some of the highest contributors of phosphorus to Lake St. Croix. If we are going to make strides to improve the surface water quality of Lake St. Croix, much of this work and loading reductions will have to be completed in these three

watersheds. Moreover, Squaw Lake, Cedar Lake and Lake Mallalieu are all listed as TMDL (Impaired waters) and each of those lakes have Management Plans and water quality goals that help identify and address the impairment. (The Lake Mallalieu plan is in DRAFT, waiting for approval) The Willow River/Lake Mallalieu has a DRAFT TMDL plan and a DRAFT Implementation Plan with strategic goals to identify and target high loading sub-watersheds for water quality improvement. Similar reductions and goals are required for Lake Tainter and Lake Menomin, which would include the watershed of the Hay River in St. Croix County. High quality LiDAR data and digital elevation model will enable agricultural producers and resource managers to target conservation efforts to the largest contaminant producing features. This will maximize the benefits on water quality as well as the efficiency of conservation funding.

Water quality improvement and implementation of BMPs has an associated cost. A high quality LiDAR DEM and terrain analysis can rapidly and accurately identify critical feature areas and allow resource managers and farmers to quickly design and implement BMPs with less investment than traditional methods requiring greater staff time and resources. The accurate LiDAR data can also assist the Farmer Led Watershed Council Dry Run Project in St. Croix County to identify BMP's and allow farmers to develop ideas and solutions more efficiently and cost-effectively. The Farmer Led Watershed Council is a joint project involving UW-Extension, WI DNR, the McKnight Foundation, Wisconsin Farmers Union, and the Land Conservation Department. The increased efficiency of staff and resources would also extend to other water quality improvement projects such storm water management related to urban and rural development.

Construction of the St. Croix River Crossing Bridge will bring increased population and land use changes to St. Croix County impacting water quality in the county's lakes, rivers, and streams. Quality LiDAR data will allow developers and resource managers to model storm water within the watershed and design best management practices to mitigate developments impact on water quality. This data will also have ancillary benefits of assisting resource managers in protecting and mitigating impacts to bluff lands and view sheds within the St. Croix River corridor. Example benefits include but are not limited to: updating FEMA flood plain maps, shoreland regulation, calculating existing impervious surfaces, and vegetation inventory.

LiDAR data acquisition will allow St. Croix County resource managers and citizens to address problems and implement policies and solutions identified in the St. Croix County Comprehensive Plan, Natural Resource Management Plan, Squaw Lake, Cedar Lake, Lake Mallalieu and Bass Lake Management Plans, Willow River TMDL and Implementation Plans (DRAFT – waiting for approval). These plans included identifying and targeting

critical features for BMP installation, managing and implementing TMDL's for Lake St. Croix, Lake Tainter, and Lake Menomin, improving stormwater management and improving and protecting the water quality in St. Croix and Dunn County.

C. Project Goals and Objectives:

The goal of this agreement is to provide agricultural producers, developers, and resource managers a highly accurate elevation model to identify and mitigate critical areas to improve and protect water quality in St. Croix County's lakes, rivers, and streams. The project will all be an important tool for implementing St. Croix County Comprehensive Plan Natural Resource Policies 2.1 – 2.8 relating to surface waters and wetlands as well as implementing all the Lake Management Plans previously listed. These policies promote agricultural and development land use practices that emphasize erosion control, nutrient management, stormwater management, shoreland and stream bank protection.

A secondary goal of this project is to cooperate with other current lake planning and protection projects within St. Croix County and complete a public access inventory of water bodies in St. Croix County. The county has an existing lake management planning grant for a shoreline assessment and inventory along Lake St. Croix and the St. Croix River. Within the existing grant is a deliverable of public shoreline information system. With the county wide LiDAR project we will further that St. Croix public shoreline information system to include known public access to all St. Croix County waterways.

Objective 1: Contract with consultant to plan and conduct LiDAR data acquisition project for the spring of 2014.

Objective 2: Delivery of data fall/winter of 2014

2.1 Purchase and receive training on appropriate data analysis software to manage the LiDAR data.

2.2 Develop models and analysis to identify critical areas for water quality improvement.

Objective 3: Identify and quantify critical areas for installation of BMP's to improve water quality. Identifying these critical areas, made possible through LiDAR data, will maximize the benefits on water quality while simultaneously increasing the efficiency of conservation funding.

- 3.1 Create a map of priority sub-watersheds and in field waterways using LiDAR derived DEM.
- 3.2 The identification of priority sub-watersheds for BMP's will assist in implementing and achieving TMDL plans for Lake St. Croix, Lake Tainter, and Lake Menomin.
- 3.3 The identification of priority sub-watersheds for BMP's will be important in implementing the Bass, Squaw, and Cedar Lake Management plans.
- 3.4 Protect water quality, prevent the occurrence of algae blooms and reduce nutrient levels in Bass, Squaw, and Cedar Lakes as per Lake Management Plan goals.

Objective 4: Publish and make the dataset available to federal, state, local governments, and private entities.

- 4.1 Make the data available to increase the efficiency of resources invested in the protection and improvement of water quality in St. Croix County.
- 4.2 Provide data and assistance to Dry Run Farmer-led Watershed Council

Objective 5: Provide technical assistance by implementing BMP's using LiDAR derived digital elevation model and analyze the return on investment compared to traditional methods.

Objective 6: Extend the St. Croix Shoreline Information System to include public access information to all St. Croix County waterways.

#### D. Project Activities and Tasks:

- a. Retain and contract with vendor to provide LiDAR data acquisition.
  - i. The chosen vendor for this project will be the Wisconsin Regional Orthophotography Consortium chosen vendor. WROC is a multi-entity group led by seven regional planning commissions. The goal of the consortium is to build and sustain a multi-participant program to acquire digital orthoimagery and elevation data throughout Wisconsin. The WROC approach brings a number of potential benefits to its members, including cost savings, specifications and standards support, data sharing between members and partners, and procurement support.
- b. Train staff on the use of data and terrain analysis.
- c. Identify, map, and quantify critical features.
- d. Use data to design BMP's to maximize benefits on water quality. Resource management technicians will test the data to design BMP's.

- e. Design models to quantify water quality improvements.
- f. Quantify the efficiency gains to land owners, developers, and resource managers in designing BMP's.
- g. Inventory public lands and public access to county waters.
- h. Develop the county website showing currently known public access to St. Croix County waterways.

**E. Project Deliverables:**

1. Project deliverables include LiDAR point cloud data, two foot contours, and 3-m Digital Elevation Model for the entirety of St. Croix County.
2. Identifying, mapping and quantifying existing in field waterways and priority sub-watersheds for installation of BMP's.
3. For lakes and water bodies with established Ordinary High Water Marks, LiDAR data will assist in implementing shoreland zoning setbacks and 35' shoreland buffers, and a map will be produced.
4. A final report describing how highly accurate LiDAR data will be used to:
  - a. Identify priority sub-watersheds features that impair water quality.
  - b. Summarize how LiDAR data will help to implement the Lake St. Croix TMDL.
  - c. Summarize how LiDAR data helps to implement Bass, Squaw, and Cedar Lake Managements plans by reducing phosphorous and improving water quality.
  - d. Summarize the impact of LiDAR data on shoreland zoning and mitigation through the identification of existing features and the calculation of impervious surfaces.
5. St. Croix County waterways public access inventory information and website.

**F. Data to Be Collected**

The initial data collected will be a LiDAR point cloud data consisting of x,y,z coordinates.

The data will be cleaned to provide a bare earth model, 3-m DEM, and two foot contours will be provided to the county.

**G. Partnerships:**

This project will be a partnership between citizens, landowners, federal, state, and local government agencies and non-profit agencies to develop and use highly accurate elevation models as tools to identify and mitigate critical areas that can impair water quality.

The partners include the St. Croix River Basin Team, Wisconsin Department of Natural Resources, Wisconsin Regional Orthophotography Consortium, local governments, the St. Croix River Association, Tainter Menomin Lake Improvement Association, and the St. Croix County Community Development Department.

The partners proposed contribution will be:

\$30,000 St. Croix Basin Team Funding  
\$30,000 St. Croix River Crossing Mitigation Grant  
\$50,000 WI DNR Lake Protection Grant  
\$55,000 St. Croix County Wisconsin Land Information Program Retained Fees

\$165,000 TOTAL Project

H. Role of project in protection and or management of lakes:

Communities and landowners in St. Croix County will need to reduce phosphorus in wastewater treatment facility discharges and storm water runoff from urban, residential, agricultural and forestry land to meet the goals for the Lake St. Croix TMDL and the Lake Tainter and Lake Menomin TMDL. A great deal of Lake Management planning has been conducted over the past several years in St. Croix County that identifies sources of pollutants and strategies to reduce those contributions to these surface waters. This previous lake management planning will be a useful resource and includes: Squaw, Bass and Cedar Lake Management Plans, Lake Mallalieu Management Plan (DRAFT) and the Willow River/Lake Mallalieu TMDL and Implementation Plans (DRAFT). Restoration of water quality will depend upon local support as many phosphorus reductions activities will require voluntary efforts on privately owned land. This project plays a crucial role in cost effectively assisting voluntary efforts in restoring water quality. The data from the project will play a future role in other lake protection programs. Watershed and sub watershed boundaries will be delineated and surface water runoff patterns will be identified to better estimate annual watershed pollutant loading.

This project will assist St. Croix County in administering its updated shoreland zoning ordinance, scheduled for adoption in early 2014, in order to comply with the mandated NR115.

I. Project Timetable:

All activities will be completed within the proposed period, ending June 30, 2015.

Objective 1 will be completed fall of 2013.

Objective 2 will be complete by December 31, 2014.

Objective 3 and 4 will be completed by June 30, 2015.

Objective 5 and 6 will be completed by June 30, 2015.

J. Project Results and Data Sharing:

All project data and results will be shared with and made available to federal, state, local governments, and private entities through local newspaper articles, public meetings, websites, and the county Facebook page.

The Department of Natural Resources will be provided with the LiDAR Data, 3-m DEM two foot contour data for St. Croix County. The Department will also be provided with all data collected as part of the waterway public access inventory.

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Approve as proposed: \_\_\_\_\_ (date)

Approve with conditions: \_\_\_\_\_ (date) Conditions (include any reporting requirements for Applicant):

Denied: \_\_\_\_\_ (date) Suggested revisions (guidance for possible Applicant re-submittal):

Implementation Tracking Log (for funded projects)

Funds received by Applicant \_\_\_\_\_ (date):

Progress on implementation (this should be a brief, running summary coinciding with Applicant reporting requirements):

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**Mitigation Action Completed**

Action completed (*WisDNR determination*): \_\_\_\_\_ (*date*)

Final report submitted by WisDNR to MnDOT, WisDOT and FHWA: \_\_\_\_\_ (*date*)