

Wisconsin Department of Natural Resources SWIMS Project Summary

General Project Information

Project ID:	GLRI_00E00459-0
Name:	Expanded Beach "Nowcast" Modeling across WI
Type:	Great Lakes Restoration Initiative
Subtype:	Nearshore Health and NPS
Status:	COMPLETE
Start Date:	10/01/2010
End Date:	09/30/2013
Purpose:	The proposed project will significantly expand operational nowcasting of beach water quality in Wisconsin by building multivariate models for high priority and impaired beaches using EPA's Virtual Beach 2.0. In addition, we will test a complimentary system developed by USGS and a hybrid qPCR/multivariate model. We will provide hands-on training and technical assistance to beach managers to build long-term, local capacity to operate and refine the models, and will provide user-feedback to EPA and USGS to further enhance the tools and lower barriers to their use throughout the Great Lakes.
Objective:	To reduce the number of Type I and Type II monitoring errors and the overall number of beach closures in Wisconsin the proposed project will establish a three-year project position within the WDNR Bureau of Science Services to facilitate a significant expansion of operational nowcast modeling across the state. The goal is to establish 20 operational nowcast models by the summer of 2013, including 10 or more high priority beaches. Major project tasks will include building initial nowcast models for candidate beaches using modeling tools and database systems developed by EPA and USGS; developing, testing, and refining step-by-step nowcast training modules; conducting 5 hands-on training workshops; providing technical assistance to beach managers and monitoring personnel engaged in operating, evaluating, or refining nowcast models; compiling and providing user-feedback and practical suggestions to EPA and USGS; and helping to coordinate complimentary tool development and database integration efforts led by EPA, USGS, and others.
	Version 2.0 of EPA's nowcasting software Virtual Beach (scheduled for release in spring 2010) will be used to build multivariate predictive models for 27 high priority beaches across Wisconsin, plus 25 additional beaches that are included or proposed for inclusion on the state's 303(d) Impaired Waters list (see Table 1 and attached Project Map). Of the 52 candidate beaches, 41 have adequate data for building nowcast models; i.e. 120+ contemporaneous observations of the response variable, E. coli, and multiple explanatory variables (e.g., wave height, turbidity, antecedent rainfall) collected during routine sanitary surveys or via USGS and NOAA hydro-meteorological stations (Francy and Darner 2006; Mednick 2009). The remaining 11 beaches will have adequate data by 2011 under separate GLRI proposals submitted by project collaborators at the University of Wisconsin (UW)-Oshkosh and Racine Health Department (HD), titled Comprehensive Sanitary Survey Project for High Risk Wisconsin Beaches - Northern Wisconsin and Comprehensive Sanitary Survey Project for High Risk Wisconsin Beaches - Southern Wisconsin.
	During the summer of 2010 WDNR will complete work underway to assemble a master database for the 52 candidate beaches comprised of historic (ca. 2003-2010) E. coli monitoring results and contemporaneous data on beach conditions collected via routine sanitary surveys, as well hydro-meteorological data from NOAA and USGS automated observing stations and NWS Cooperative Observer Program weather stations; i.e., antecedent rainfall, air temperature, wind speed and direction, cloud cover, stream flow, lake level. This work will be conducted in collaboration with the USGS Wisconsin Water Science (WWSC), which is assembling similar databases for selected beaches under the federal GLRI project titled: Beach Health and Nearshore Water Quality and Beach Closures, and will be guided by a comprehensive inventory of publically-accessible data for nowcasting conducted by WDNR (Mednick 2010). Continuous and categorical time variables (e.g., Julian date and season) will be included in order to account for potential inter- and intra-seasonal variation in FIB concentrations not explained by other variables (Mednick et al. 2009).
Comments:	\$249,998
Outcome:	The proposed project addresses Nearshore Health and NPS Pollution Goal #4 (High quality bathing beach opportunities) in the draft Great Lakes Restoration Initiative Action Plan for FY2010-2014. Specifically, the project will help to achieve the objective of rapid testing or predictive modeling at 33% of high priority beaches by 2014, by instituting nowcast models at 10 (37%) of the 27 high priority beaches in Wisconsin, and a combined 20 (37%) of the 54 high priority and/or 303(d) impaired beaches in the state by 2013. The project directly responds to the Great Lakes Regional Collaboration Strategy's call for state, federal, local, and tribal partners to create and improve predictive models in conjunction with sanitary surveys. Disseminating information and training tools on predictive modeling is part of both the Lake Michigan and Lake Superior LaMPs. Enhancing predictive models, model scope, and application is a goal of the interagency Ocean Research Priorities Plan - Great Lakes. Field-testing and the development of user guidelines for Virtual Beach is part of EPA's Critical Path Science Plan. Lastly, the project will help to meet the goal of

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the Wisconsin Great Lakes Strategy goal of reducing closure dates at high priority beaches by 10% from base year 2006. The baseline accuracy assessment described under Project Background (Section 8) and numerous beach-specific studies (previously cited) strongly suggest that nowcast modeling will result in an overall reduction in beach closures.

Study Design:

QA Measures:

People

Name	Role	Status	Start Date	End Date	Organization	Comments
DINSMORE, DONALEA	COORDINATOR	ACTIVE	12/20/2010		Wisconsin DNR	
MEDNICK, ADAMC	PROJECT_LEAD	ACTIVE	10/01/2010	12/31/2099	Wisconsin DNR	

Project Statuses

Date	Reported By	Status	Comments
01/19/2011	DONALEA DINSMORE	Progress: 0-25% Complete	Approved QAPP submitted

Project Status Detail

Answer Set: DEFAULT

Question	Answer
1. Reporting Timeframe (Q1) (Q2) (Q3) (Q4):	
2. Amount expended this reporting period:	
3. Subcontracts or subgrants awarded this reporting period:	
4. QAPP (Project Plan) status:	
5. Local services and/or products purchased this reporting period:	
6. Number of jobs created this reporting period:	
7. Work accomplished this reporting period:	
8. Work goals for coming reporting period:	
1. Reporting Timeframe Month/Year to Month/Year (Oct-Mar or Apr-Sept):	
2. Quality Documentation status (respond NA if not required):	
3. Describe work performed during this reporting period relating to the activities from the grant workplan (Previous 6 months):	
4. GLRI Action Plan metric(s) accomplished and numerical progress during this reporting period:	
5. GLRI Action Plan metric(s) accomplished and numerical progress since project start (total complete to date):	
6. Percentage (estimate) of project work completed during this reporting period:	
7. Percentage (estimate) of project work completed since the project start (total complete to date):	

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Question**Answer**

8. Is project work on schedule? If no, please explain.
9. If a problem was encountered, describe the problem and action(s) taken to correct it.
10. What work is projected during the next reporting period? (Next 6 months):
11. Will the project take longer than the approved project period? If so, have you requested an extension in writing to the grant coordinator?
12. Amount expended this reporting period (can be approximate) If no amount expended, explain why.
13. Is project invoicing/expenditures up to date? If invoicing is more than 3 months overdue, explain why.
14. Were any significant changes (>10% of the total project amount) made to the project budget? If so, have you notified the grant coordinator in writing?

Actions

Action	Detailed Description	Start	End Date	Status
Information and Education	Expand operational nowcasting of beach water quality Lakes Michigan and Superior.	10/01/2010	12/31/2099	PROPOSED

Monitoring Stations

Station ID	Name	Comments
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Assessment Units

WBIC	Segment	Local Name	Official Name
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Lab Account Codes

Account Code	Description	Start Date	End Date
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Forms

Form Code	Form Name
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Methods

Method Code	Description
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Fieldwork Events

Start Date	Status	Field ID	Station ID	Station Name
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Documents

Title	Description	Author	Published	Comments
Beach Nowcast QAPP Appendix 2	Appendix 2 to approved QAPP - Sanitary Survey	Adam Mednick	01/19/2011	
Nowcast Modeling GLRI Proposal, Mednick		Mednick, Adam	01/28/2011	
Semi-Annual Grant Report 9/10-4/11	GLRI grant progress	Adam Mednick	05/15/2011	
Semi-Annual Report 5/11-10/11	Grant report to EPA	Adam Mednick	11/15/2011	

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Title	Description	Author	Published	Comments
WI Nowcast QAPP Appendix 1	Appendix to final QAPP - Beach Monitoring QAPP	Adam Mednick	01/19/2011	
WI Nowcast QAPP Approval Page	Signature page - WDNR PROJECT NAME: Expanded Beach "Nowcast" Modeling across WI	Adam Mednick	01/19/2011	
Wi Nowcast QAPP	Final Approved QAPP	Adam Mednick	01/19/2011	
Workshop Travel Report	Summary report of Beach Modeling Workshop in Columbus, OH 12/5-7/11	Adam Mednick	12/14/2011	

Budget

Budget Description: Budget for Expanded Beach "Nowcast" Modeling across WI **Start Date:** 10/01/2010 **End Date:** 09/30/2013

Code	Description	Quantity	Units	Unit Cost	Total Cost	Comments
FTE	FTE Hours		Hours	\$0.00	\$0.00	
LTE SAL	LTE Salary		Hours	\$13.00	\$0.00	
LTE FR	LTE Fringe				\$0.00	
LTE IND	LTE Indirect				\$0.00	
LTE TOT	LTE Total Cost				\$0.00	
SUPPLY	Supplies				\$0.00	
MILEAGE	Mileage		Miles	\$0.72	\$0.00	
MEAL	Meals		Meals	\$9.00	\$0.00	
LODGE	Lodging				\$0.00	
TRAVEL	Travel Total				\$0.00	
BUG	Bug Contracts				\$0.00	
OTHER	Other Contracts				\$0.00	
EQUIP	Equipment				\$0.00	
USGS	USGS Costs				\$0.00	
TOTAL	Total Cost (excludes SLOH)				\$0.00	

Test Code	Description	Test Group	# Planned	Unit Cost	Total Cost
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Total SLOH Lab Costs: \$0.00
Total Budget: \$0.00

Combined Budgets: \$0.00
Combined SLOH: \$0.00
Combined Total: \$0.00

Funding

Organization	Source	Type	Amount	Start Date	End Date
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