

Wisconsin Department of Natural Resources SWIMS Project Summary

General Project Information

Project ID: CAP_3_2011
Name: Frequency and Severity of Harmful Algal Blooms (HABs) of Cyanobacteria and Cyanotoxin (Microcystin) in the Green Bay
Type: Great Lakes Restoration Initiative
Subtype: Toxics and Areas of Concern
Status: COMPLETE
Start Date: 05/01/2011
End Date: 12/31/2009
Purpose: Cyanobacteria (also referred to as blue-green algae) are known to cause a multitude of water-quality concerns. Harmful Algal Blooms (HABs) produced by cyanobacteria have the potential to produce deadly toxins. HABs can cause a reduction in light penetration and can cause depletion of oxygen in the water column as the algal masses grow and senesce, which ultimately results in degraded water quality conditions. Cyanobacteria toxins (cyanotoxins) have been implicated in human and animal illness and death in more than 50 countries worldwide, including Wisconsin and 35 other states in the United States (Chorus and Bartram 1999; Huisman et al. 2005).

Hypereutrophic conditions have been a consistent feature of the Green Bay ecosystem for decades. One of the principal criteria for the southern bay's designation as an Area of Concern (AOC) are the frequent and severe nuisance algal blooms that result from total phosphorous concentrations often exceeding 100 ug/L at the mouth of the Fox River. Chlorophyll a concentrations range between 24-131 ug/m³. Phytoplankton sampling performed in the early 1990s, near Communiversity Park in the Green Bay AOC, showed a strong dominance in blue-green algae, averaging 76% of the total biovolume (Rhew 1992).

Despite the potential of cyanobacteria to generate deadly toxins and contribute to water quality problems, limited research has been done to determine the frequency, severity, and extent to which HABs by cyanobacteria are occurring in the Green Bay Area of Concern (AOC). A recent study performed by Wisconsin Department of Natural Resource (WIDNR) and State Laboratory of Hygiene (SLOH) from 2004 - 2006 of Wisconsin ponds, lakes, and rivers found that 68 -74% of water quality sampled tested positive for the presences of cyanobacteria, with 41-69% of those of samples testing positive cyanotoxins (Hedman et al. 2008). Finally, it is important to note that research by De Stasio (2008) has indicated a shift towards dominance by blue-green algae since the invasion of zebra mussels.

Objective: This project will provide data to evaluate the current status of 2 BUIs in the Green Bay AOC that have a delisting target for cyanobacteria, Beach Closings/Recreational Restrictions and Eutrophication/Undesirable Algae and provide supplemental information for Degraded Phytoplankton / Zooplankton Populations. The work will also supplement phytoplankton monitoring that is currently being conducted by Dr. Bart De Stasio of Lawrence University. Sampling for cyanobacteria will be performed in conjunction with bacteria sampling at two Beach Health locations within the Green Bay AOC (see map attachment, Communiversity Park #25 and Longtail Point #32). Currently, sampling and monitoring for bacteria in the Green Bay AOC is being performed by GBMSD and the Brown County Health Department. Coordination of sampling efforts for cyanobacteria and cyanotoxins with bacteria sampling will allow for a simultaneous assessment of the Recreational Restrictions BUI. Seasonal patterns in cyanobacteria abundance and community composition are affected substantially by temperature, solar irradiance, and nutrient supply (Graham et al. 2008). Cyanobacteria populations tend to peak between mid-summer and early fall when water temperatures reach a seasonal maximum and nutrient concentrations are at a seasonal low (Wetzel 200; Falconer 2005). HABs in the Green Bay AOC become evident in mid-July when water column temperatures generally peak, which also coincides with depleted nitrogen concentrations. Cyanobacterial populations may also vary on a much shorter time scale (hours or days). Thus, it is important to use GBMSD's local knowledge of conditions, including patterns in circulation, mixing, and prevailing winds (Chorus and Bartram 1999; Falconer 2005). GBMSD's Ambient Water Quality Monitoring (AWQMP) program has been sampling water quality in the AOC and surrounding waters weekly from May through October since 1986.

Sampling for cyanobacteria will begin during the month of July when visual signs of cyanobacteria blooms begin and will continue through September or senescence. Sampling will typically be conducted in the AOC where exposure to cyanobacteria toxins poses the greatest threat to recreational users and human health (see map attachment). Sampling will occur approximately six times from July through September. A single grab water sample will be collected directly from the bloom in conjunction with a bacteria sample using a Van Dorn water sampler. Vertical profiles will be taken to assess limnological characteristics such as temperature, specific conductance (umho/cm at 25 C°), pH (SU), dissolved oxygen (mg/L) and percent saturation. Readings will be taken continuously throughout the entire water column until the sediment is reached. A Li-Cor light meter will be utilized to determine the light extinction coefficient. A Secchi disk will be used to determine water clarity.

Cyanobacteria samples will be preserved and transported to the State Lab of Hygiene for analysis. The samples will be analyzed for total algal composition to genus level because many variants of these cyanobacteria can produce toxins. Samples will also be analyzed for presence of the cyanobacteria *Microcystis aeruginosa*. Samples will be analyzed by

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GBMSD's laboratory for Chlorophyll a concentrations.

Comments: Collaboration with partners: Brown County Health Department, University of Wisconsin Green Bay, University of Wisconsin Sea Grant, and Wisconsin Department of Natural Resources.

Outcome: \$3992 : Sampling will occur biweekly from July through September during the summers of 2011 and 2012, if funding is available for the two year time period. Analysis of the data will occur during the winters of 2012-13. Publication of the data in the form of report will be written and delivered to the WIDNR by June of 2012 based on completion of the first year of monitoring. A subsequent report will be written and delivered to the WIDNR in June 2013. The data will also be made available and presented to the AOC Social Uses group who developed the delisting targets for review. The final write up of the data will be provided to the University of Wisconsin Seagrant for possible publication in the State of the Bay Report. Data will also be provided to the WIDNR Beach Monitoring Program for publication on the following website: <http://www.wibeaches.us/apex/f?p=181:1:2892547942290901::NO:::>

Study Design:

QA Measures:

People

Name	Role	Status	Start Date	End Date	Organization	Comments
FAYRAM, ANDREW H	COORDINATOR	ACTIVE	05/11/2011		Wisconsin DNR	
HANSON, ERIN E	COORDINATOR	ACTIVE	05/11/2011	04/16/2012	WDNR	
LAST, LAUREL L	COORDINATOR	COMPLETE	04/06/2012		Wisconsin DNR	
Valenta, Tracey	COORDINATOR	ACTIVE	05/01/2011	12/31/2099	GBMSD	

Project Statuses

Date	Reported By	Status	Comments
10/05/2011	ERIN HANSON	Progress: 0-25% Complete	<p>1) How much of your allocated budget has been spent.</p> <p>GBMSD has spent all of the money allocated to collecting the samples. \$775.38. We have not spent any of the funds allocated towards analysis Please see below paragraph.</p> <p>2) What activities and accomplishments have occurred to date.</p> <p>GBMSD has collected algal samples 4 different times throughout the summer and fall of 2011. Chlorophyll a analysis and bacteria testing has been performed on all of the samples. Unfortunately, the SLOH is under staffed and none of the samples have been processed for microcystin or algal composition analysis. It could be as late as December or later before we see any data from the SLOH</p> <p>3) Indicate any surprises or unforeseen impediments that have occurred.</p> <p>Algal blooms seemed to occur much later in the season this year. We were unable to collect any samples during the month of September due to unfavorable weather patterns. Unfortunately,</p>

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Date	Reported By	Status	Comments
04/16/2012	LAUREL LAST	Progress: 75-100% Complete	the Brown County Health Department stops bacteria testing mid-September. Thus, we were unable to continue sampling. All of the samples have been analyzed at the lab. The results still need to be entered and analyzed, and a final report written. No funds were spent because the lab charged GBMSD for the analysis. We are working on getting them re-imbursed.
06/30/2012	LAUREL LAST	Progress: 75-100% Complete	All of the samples have been analyzed at the lab. No final report has been submitted. No funds for sample collection or analysis have been spent from the grant because GBMSD has not submitted an invoice.
10/03/2012	MOLLI MACDONALD	Progress: 75-100% Complete	2012 Lab samples used PP001 lab account code so results may not all be showing up in this project. Molli MacDonald moved samples over in Oct 2012. But someone should check in Project Bacteria & Plankton to see if future GB samples from this past summer end up in there and then they should be moved to this project.
10/05/2012	LAUREL LAST	Progress: 75-100% Complete	Andy Fayram and Laurel Last gave GBMSD an extension to submit the final report for this project by the end of September 2012. The report is now mostly finished, and hopefully will be done by mid-October.
10/11/2012	LAUREL LAST	Complete	Final report has been submitted. I believe that GBMSD has also been paid/reimbursed for the project. Costs were \$2144 (labwork) plus \$775.38 (sampling) for total of \$2919.38.

Actions

Action	Detailed Description	Start	End Date	Status
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Monitoring Stations

Station ID	Name	Comments
10033639	Green Bay - GBMSD 25	
053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09	
053242	Green Bay - Nr Shr Std Sta 52a02	
053283	Green Bay - Nr Shr Stdy Sta 77a47	
153003	Green Bay - Open Water Dnr Sta 27a	
053009	Green Bay - Open Water Dnr Sta 6	
053015	Green Bay - Open Water Dnr Sta 9	
10033640	Lake Michigan Green Bay - GBMSD 32	

Assessment Units

WBIC	Segment	Local Name	Official Name
70	1	Green Bay (Inner Bay, Aoc)	Green Bay

Lab Account Codes

Account Code	Description	Start Date	End Date
GL008	GREEN BAY MSD CYANOBACTERIA MO	05/03/2011	06/30/2012
PP001	PAID PRIVATES	08/21/2000	06/30/2012

Forms

Form Code	Form Name
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Methods

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Method Code**Description****Fieldwork Events**

Start Date	Status	Field ID	Station ID	Station Name
06/27/2011	COMPLETE		053283	Green Bay - Nr Shr Stdy Sta 77a47
06/27/2011 08:41	COMPLETE		153003	Green Bay - Open Water Dnr Sta 27a
06/27/2011 08:46	COMPLETE		153003	Green Bay - Open Water Dnr Sta 27a
06/27/2011 10:40	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9
06/27/2011 10:45	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9
06/27/2011 10:54	COMPLETE		053283	Green Bay - Nr Shr Stdy Sta 77a47
06/27/2011 11:15	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09
06/27/2011 11:20	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09
06/27/2011 11:32	COMPLETE		10033640	Lake Michigan Green Bay - GBMSD 32
06/27/2011 11:37	COMPLETE		10033640	Lake Michigan Green Bay - GBMSD 32
06/27/2011 11:46	COMPLETE		053009	Green Bay - Open Water Dnr Sta 6
06/27/2011 12:21	COMPLETE		053242	Green Bay - Nr Shr Std Sta 52a02
06/27/2011 12:25	COMPLETE		053242	Green Bay - Nr Shr Std Sta 52a02
07/18/2011	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09
07/18/2011 10:54	COMPLETE		053009	Green Bay - Open Water Dnr Sta 6
07/18/2011 13:15	COMPLETE		153003	Green Bay - Open Water Dnr Sta 27a
07/18/2011 13:15	COMPLETE		153003	Green Bay - Open Water Dnr Sta 27a
07/18/2011 13:52	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9
07/18/2011 13:52	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9
07/18/2011 14:08	COMPLETE		053283	Green Bay - Nr Shr Stdy Sta 77a47
07/18/2011 14:23	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09
07/18/2011 14:31	COMPLETE		10033640	Lake Michigan Green Bay - GBMSD 32
07/18/2011 14:31	COMPLETE		10033640	Lake Michigan Green Bay - GBMSD 32
07/18/2011 14:51	COMPLETE		053242	Green Bay - Nr Shr Std Sta 52a02
07/18/2011 14:51	COMPLETE		053242	Green Bay - Nr Shr Std Sta 52a02
07/26/2011 08:45	COMPLETE		10033640	Lake Michigan Green Bay - GBMSD 32
07/26/2011 08:45	COMPLETE		10033640	Lake Michigan Green Bay - GBMSD 32
07/26/2011 09:00	COMPLETE		10033639	Green Bay - GBMSD 25
07/26/2011 09:00	COMPLETE		10033639	Green Bay - GBMSD 25
08/08/2011 10:39	COMPLETE		053242	Green Bay - Nr Shr Std Sta 52a02
08/08/2011 10:39	COMPLETE		053242	Green Bay - Nr Shr Std Sta 52a02
08/08/2011 10:57	COMPLETE		053009	Green Bay - Open Water Dnr Sta 6
08/08/2011 11:05	COMPLETE		10033640	Lake Michigan Green Bay - GBMSD 32
08/08/2011 11:05	COMPLETE		10033640	Lake Michigan Green Bay - GBMSD 32
08/08/2011 11:05	COMPLETE		10033640	Lake Michigan Green Bay - GBMSD 32
08/08/2011 12:48	COMPLETE		153003	Green Bay - Open Water Dnr Sta 27a
08/08/2011 12:48	COMPLETE		153003	Green Bay - Open Water Dnr Sta 27a
08/08/2011 12:48	COMPLETE		153003	Green Bay - Open Water Dnr Sta 27a
08/08/2011 13:28	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9
08/08/2011 13:28	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9
08/08/2011 13:46	COMPLETE		053283	Green Bay - Nr Shr Stdy Sta 77a47
08/08/2011 14:00	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09
08/08/2011 14:00	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09
08/12/2011	COMPLETE		10033639	Green Bay - GBMSD 25
08/12/2011 09:00	COMPLETE		10033640	Lake Michigan Green Bay - GBMSD 32

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Start Date	Status	Field ID	Station ID	Station Name
08/12/2011 09:00	COMPLETE		10033640	Lake Michigan Green Bay - GBMSD 32
08/12/2011 09:20	COMPLETE		10033639	Green Bay - GBMSD 25
08/17/2011 08:30	COMPLETE		10033640	Lake Michigan Green Bay - GBMSD 32
08/17/2011 08:30	COMPLETE		10033640	Lake Michigan Green Bay - GBMSD 32
08/17/2011 08:45	COMPLETE		10033639	Green Bay - GBMSD 25
08/17/2011 08:45	COMPLETE		10033639	Green Bay - GBMSD 25
08/24/2011 08:45	COMPLETE		10033640	Lake Michigan Green Bay - GBMSD 32
08/24/2011 08:45	COMPLETE		10033639	Green Bay - GBMSD 25
08/31/2011 08:45	COMPLETE		10033640	Lake Michigan Green Bay - GBMSD 32
08/31/2011 08:45	COMPLETE		10033639	Green Bay - GBMSD 25
09/22/2011 09:53	COMPLETE		053242	Green Bay - Nr Shr Std Sta 52a02
09/22/2011 09:53	COMPLETE		053242	Green Bay - Nr Shr Std Sta 52a02
09/22/2011 10:23	COMPLETE		053009	Green Bay - Open Water Dnr Sta 6
09/22/2011 10:26	COMPLETE		10033640	Lake Michigan Green Bay - GBMSD 32
09/22/2011 10:26	COMPLETE		10033640	Lake Michigan Green Bay - GBMSD 32
09/22/2011 10:45	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09
09/22/2011 10:45	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09
09/22/2011 10:59	COMPLETE		053283	Green Bay - Nr Shr Stdy Sta 77a47
09/22/2011 11:11	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9
09/22/2011 11:11	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9
09/22/2011 11:32	COMPLETE		153003	Green Bay - Open Water Dnr Sta 27a
09/22/2011 11:32	COMPLETE		153003	Green Bay - Open Water Dnr Sta 27a
06/11/2012	COMPLETE		153003	Green Bay - Open Water Dnr Sta 27a
06/11/2012 09:25	COMPLETE		153003	Green Bay - Open Water Dnr Sta 27a
06/11/2012 09:25	COMPLETE		153003	Green Bay - Open Water Dnr Sta 27a
06/11/2012 09:25	COMPLETE		153003	Green Bay - Open Water Dnr Sta 27a
06/11/2012 09:51	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9
06/11/2012 09:51	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9
06/11/2012 09:51	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9
06/11/2012 09:51	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9
06/11/2012 10:00	COMPLETE		053283	Green Bay - Nr Shr Stdy Sta 77a47
06/11/2012 10:00	COMPLETE		053283	Green Bay - Nr Shr Stdy Sta 77a47
06/11/2012 10:20	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09
06/11/2012 10:20	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09
06/11/2012 10:20	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09
06/11/2012 10:20	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09
06/11/2012 10:42	COMPLETE		10033640	Lake Michigan Green Bay - GBMSD 32
06/11/2012 10:42	COMPLETE		10033640	Lake Michigan Green Bay - GBMSD 32
06/11/2012 10:42	COMPLETE		10033640	Lake Michigan Green Bay - GBMSD 32
06/11/2012 10:42	COMPLETE		10033640	Lake Michigan Green Bay - GBMSD 32
06/11/2012 10:52	COMPLETE		053009	Green Bay - Open Water Dnr Sta 6
06/11/2012 10:52	COMPLETE		053009	Green Bay - Open Water Dnr Sta 6
06/11/2012 11:02	COMPLETE		053242	Green Bay - Nr Shr Std Sta 52a02
06/11/2012 11:02	COMPLETE		053242	Green Bay - Nr Shr Std Sta 52a02
06/11/2012 11:02	COMPLETE		053242	Green Bay - Nr Shr Std Sta 52a02
06/11/2012 11:02	COMPLETE		053242	Green Bay - Nr Shr Std Sta 52a02
06/25/2012 12:50	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9
06/25/2012 12:50	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9

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Start Date	Status	Field ID	Station ID	Station Name
06/25/2012 13:05	COMPLETE		053283	Green Bay - Nr Shr Stdy Sta 77a47
06/25/2012 13:22	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09
06/25/2012 13:22	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09
07/03/2012 17:00	COMPLETE		053283	Green Bay - Nr Shr Stdy Sta 77a47
07/03/2012 17:13	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09
07/03/2012 17:13	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09
07/03/2012 17:31	COMPLETE		053009	Green Bay - Open Water Dnr Sta 6
07/03/2012 17:43	COMPLETE		053242	Green Bay - Nr Shr Std Sta 52a02
07/03/2012 17:43	COMPLETE		053242	Green Bay - Nr Shr Std Sta 52a02
07/03/2012 17:55	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9
07/03/2012 17:55	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9
07/17/2012 13:12	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9
07/17/2012 13:12	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9
07/17/2012 13:26	COMPLETE		053283	Green Bay - Nr Shr Stdy Sta 77a47
07/17/2012 13:39	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09
07/17/2012 13:39	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09
07/17/2012 14:03	COMPLETE		053009	Green Bay - Open Water Dnr Sta 6
07/17/2012 14:14	COMPLETE		053242	Green Bay - Nr Shr Std Sta 52a02
07/17/2012 14:14	COMPLETE		053242	Green Bay - Nr Shr Std Sta 52a02
07/30/2012 10:45	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9
07/30/2012 10:45	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9
07/30/2012 11:00	COMPLETE		053283	Green Bay - Nr Shr Stdy Sta 77a47
07/30/2012 11:15	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09
07/30/2012 11:25	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09
07/30/2012 11:35	COMPLETE		053009	Green Bay - Open Water Dnr Sta 6
07/30/2012 11:50	COMPLETE		053242	Green Bay - Nr Shr Std Sta 52a02
07/30/2012 11:50	COMPLETE		053242	Green Bay - Nr Shr Std Sta 52a02
08/20/2012 11:07	COMPLETE		053283	Green Bay - Nr Shr Stdy Sta 77a47
08/20/2012 11:21	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09
08/20/2012 11:21	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9
08/20/2012 11:21	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09
08/20/2012 11:21	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9
08/20/2012 11:48	COMPLETE		053009	Green Bay - Open Water Dnr Sta 6
08/20/2012 12:00	COMPLETE		053242	Green Bay - Nr Shr Std Sta 52a02
08/20/2012 12:00	COMPLETE		053242	Green Bay - Nr Shr Std Sta 52a02
09/10/2012 09:55	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9
09/10/2012 09:55	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9
09/10/2012 10:09	COMPLETE		053283	Green Bay - Nr Shr Stdy Sta 77a47
09/10/2012 10:21	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09
09/10/2012 10:21	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09
09/10/2012 10:42	COMPLETE		053009	Green Bay - Open Water Dnr Sta 6
09/10/2012 10:53	COMPLETE		053242	Green Bay - Nr Shr Std Sta 52a02
09/10/2012 10:53	COMPLETE		053242	Green Bay - Nr Shr Std Sta 52a02
10/03/2012 11:26	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9
10/03/2012 11:26	COMPLETE		053015	Green Bay - Open Water Dnr Sta 9
10/03/2012 11:42	COMPLETE		053283	Green Bay - Nr Shr Stdy Sta 77a47
10/03/2012 11:55	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09
10/03/2012 11:55	COMPLETE		053306	Green Bay - Green Bay Nr Shr Stdy Sta 72a09

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Start Date	Status	Field ID	Station ID	Station Name
10/03/2012 12:19	COMPLETE		053009	Green Bay - Open Water Dnr Sta 6
10/03/2012 12:30	COMPLETE		053242	Green Bay - Nr Shr Std Sta 52a02
10/03/2012 12:30	COMPLETE		053242	Green Bay - Nr Shr Std Sta 52a02

Documents

Title	Description	Author	Published	Comments
Algal Count Data		SLOH	04/11/2012	
Application - Frequency and Severity of Harmful Algal Blooms (HABs) of Cyanobacteria and Cyanotoxin (Microcystin) in the Green Bay Area of Concern	Application for grant		05/01/2011	
Frequency and Severity of Harmful Algal Blooms (HABs) of Cyanobacteria and Cyanotoxin (Microcystin) in the Green Bay Area of Concern	Final report for Frequency and Severity of Harmful Algal Blooms (HABs) of Cyanobacteria and Cyanotoxin (Microcystin) in the Green Bay Area of Concern Project (2011 AOC Capacity grant)	Tracy Valenta	10/11/2012	
Green Bay MSD Harmful Algal Bloom QAPP	Approved QAPP with signatures	Tracy Valenta	09/08/2011	
Labslip for algae enumeration and Microcystin	Grant Report		05/09/2011	
Notes on uploading 2011 lab data	Background information on uploading the laboratory data	Ron Arneson	10/03/2012	
State Lab of Hygiene Invoice	Invoices and test costs	SLOH	04/18/2012	

Budget

Budget Description: Budget for CAP_3_2011 - Frequency and Severity of Harmful Algal Blooms (HABs) of Cyanobacteria and Cyanotoxin (Microcystin) in the Green Bay Area of Concern. **Start Date:** 05/01/2011 **End Date:** 12/31/2099

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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