

## Wisconsin Department of Natural Resources SWIMS Project Summary

### General Project Information

**Project ID:** LPT-440-12

**Name:** TOWN OF WASHINGTON: LMI-Lake Management Plan Implementation Project for Anvil Lake

**Type:** Lakes Grant

**Subtype:** Lake Protection Grant

**Status:** COMPLETE

**Start Date:** 9/1/2011

**End Date:** 12/31/2017

**Purpose:** The Town of Washington is sponsoring a project on Anvil Lake, Vilas County. The project will focus on studying water quality and developing an Anvil Lake Management Plan (LMP).

Project activities include: 1) Develop water and P budget; 2) Water quality evaluation and groundwater assessment; 3) WiLMS simulation modeling; 4) Stakeholder participation; 5) Collect sediment cores for historical and future lake water quality assessment; 6) Implementation of County sewage ordinance and association shoreline restoration project; 7) Develop annual reports, a scientific investigations report and LMP.

Project deliverables include: 1) Precipitation and lake-stage data presented \201Creal time\201D on USGS website; 2) Annual USGS WI data reports, scientific investigations report and LMP.

Specific Conditions for this project: Reports and LMP need Dept. review and approval.

WDNR Lakes Management Coordinator will be provided with an electronic (pdf or word) copy of all reports and stakeholder participation materials, GIS maps, and project data.

**Objective:****Comments:** Grantee is TOWN OF WASHINGTON**Outcome:****Study Design:****QA Measures:**

### People

Name	Role	Status	Start Date	End Date	Organization	Comments
Dantoin, Eric	TEAM_MEMBER	ACTIVE	9/1/2011		USGS	
Reardon, Tom	TEAM_MEMBER	ACTIVE	9/1/2011			
Robertson, Dale	TEAM_MEMBER	ACTIVE	9/1/2011		USGS	
Town of Washington,	GRANT_RECIPIENT	ACTIVE	9/1/2011		Town of Washington	

### Project Statuses

Date	Reported By	Status	Comments
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### Actions

Action	Detailed Description	Start Date	End Date	Status
Habitat Restoration - Shoreland	Shoreland Restoration	9/1/2011	12/31/2017	PROPOSED
Informational Meetings		9/1/2011	12/31/2015	PROPOSED

## Wisconsin Department of Natural Resources SWIMS Project Summary

Lake Management Plan Implementation		9/1/2011	12/31/2015	PROPOSED
Project Deliverable	Project deliverables include: 1) Precipitation and lake-stage data presented \201Creal time \201D on USGS website; 2) Annual USGS WI data reports, scientific investigations report and LMP.	9/1/2011	12/31/2015	PROPOSED
Lakes Protection Grant		9/1/2011	12/31/2015	PROPOSED
Lake Management Plan Implementation	The Town of Washington is sponsoring a project on Anvil Lake, Vilas County. The project will focus on studying water quality and developing an Anvil Lake Management Plan (LMP). Project activities include: 1) Develop water and P budget; 2) Water quality evaluation and groundwater assessment; 3) WiLMS simulation modeling; 4) Stakeholder participation; 5) Collect sediment cores for historical and future lake water quality assessment; 6) Implementation of County sewage ordinance and association shoreline restoration project; 7) Develop annual reports, a scientific investigations report and LMP.	9/1/2011	12/31/2017	COMPLETE
Grant Awarded	The Town of Washington is sponsoring a project on Anvil Lake, Vilas County. The project will focus on studying water quality and developing an Anvil Lake Management Plan (LMP).  Project activities include: 1) Develop water and P budget; 2) Water quality evaluation and groundwater assessment; 3) WiLMS simulation modeling; 4) Stakeholder participation; 5) Collect sediment cores for historical and future lake water quality assessment; 6) Implementation of County sewage ordinance and association shoreline restoration project; 7) Develop annual reports, a scientific investigations report and LMP.	9/1/2011	12/31/2015	COMPLETE
Information and Education		9/1/2011	12/31/2015	PROPOSED
Waterway Ordinance Update		9/1/2011	12/31/2015	PROPOSED
Grant Awarded	The Town of Washington is sponsoring a project on Anvil Lake, Vilas County. The project will focus on studying water quality and developing an Anvil Lake Management Plan (LMP).  Project activities include: 1) Develop water and P budget; 2) Water quality evaluation and groundwater assessment; 3) WiLMS simulation modeling; 4) Stakeholder participation; 5) Collect sediment cores for historical and future lake water quality assessment; 6) Implementation of County sewage ordinance and association shoreline restoration project; 7) Develop annual reports, a scientific investigations report and LMP.	9/1/2011		COMPLETE
Nutrient Budget Development		9/1/2011	12/31/2015	PROPOSED

### Monitoring Stations

## Wisconsin Department of Natural Resources SWIMS Project Summary

Station ID	Name	Comments
643401	Anvil Lake - Deep Hole	

### Assessment Units

WBIC	Segment	Local Name	Official Name
968800	1	Anvil Lake	Anvil Lake
970400	1	Beatrice Lake	Beatrice Lake
976100	1	Carpenter Lake	Carpenter Lake
984700	1	Finger Lake	Finger Lake
988300	1	Harmony Lake	Harmony Lake
1013600	1	Rade Lake	Rade Lake
1019000	1	Spirit Lake	Spirit Lake
1022600	1	Tinsel Lake	Tinsel Lake
1163700	1	Un Lake	Unnamed
1163800	1	Un Lake	Unnamed
1163900	1	Un Lake	Unnamed
1164000	1	Local Water	Unnamed
1164400	1	Un Lake	Unnamed
1164450	1	Un Lake	Unnamed
1164475	1	Un Lake	Unnamed
1164500	1	Un Lake	Unnamed
1164600	1	Un Lake	Unnamed
1164700	1	Un Lake	Unnamed
1599500	1	Eagle River	Eagle River
1599900	1	Duck Lake (Eagle Chain)	Duck Lake
1600000	1	Lynx Lake (Eagle Chain)	Lynx Lake
1600100	1	Otter Lake (Eagle Chain)	Otter Lake
1600200	1	Eagle Lake (Eagle Chain)	Eagle Lake
1600300	1	Scattering Rice Lake (Eagle Chain)	Scattering Rice Lake
1600400	1	Deerskin River	Deerskin River
1600400	2	Deerskin River	Deerskin River
1601300	1	Deerskin Lake	Deerskin Lake
1601400	2	Blackjack Creek	Blackjack Creek
1601500	1	W. Br. Blackjack Creek	West Branch Blackjack Creek
1601600	1	Blackjack Springs outlet	Unnamed
1601800	1	Unnamed Creek (T41n,R11e,S35,Ssw,64)	Unnamed

**Wisconsin Department of Natural Resources  
SWIMS Project Summary**

1601900	1	E. Br. Blackjack Cr, Golddigger Creek	East Branch Blackjack Creek
1603300	1	Dollar Lake	Dollar Lake
1603400	1	Voyageur Lake (Eagle Chain)	Voyageur Lake
1603600	1	Tambling Lake	Tambling Lake
1603700	1	Catfish Lake (Eagle Chain)	Catfish Lake
1603800	1	Cranberry Lake (Eagle Chain)	Cranberry Lake
1604000	1	Local Water	Unnamed
1604100	1	Un Lake	Unnamed
1604200	1	Bass Lake	Bass Lake
1604300	1	Spring Meadow Creek	Spring Meadow Creek
1604400	1	Un Spring	Un Spring
1604500	1	Spring Meadow Springs	Unnamed
1604600	1	Spring Meadow Springs pond	Un Spring
1604610	1	Spring Meadow Springs pond	Unnamed
1605000	1	Ninemile Creek	Ninemile Creek
1605200	1	Lower Ninemile Lake	Lower Ninemile Lake
1606900	1	Un Spring	Un Spring
1608100	1	Un Spring	Un Spring
1608300	1	Upper Ninemile Lake	Upper Ninemile Lake
1608800	1	Un Spring	Un Spring
3000165	1	Unnamed (Sucker Creek Springs)	Sucker Creek Springs
5003672	1	Spring Meadow Creek Springs	Unnamed
5003674	1	Spring Meadow Creek Springs	Unnamed
5003678	1	Spring Meadow Creek Springs	Unnamed
5003700	1	Lower Spring Meadow Springs	Unnamed
5003708	1	Lower Spring Meadow Springs	Unnamed
5003712	1	Lower Spring Meadow Springs	Unnamed
5508789	1	Blackjack Springs	Unnamed
5508967	1	Local Water	Unnamed
5509572	1	Local Water	Unnamed
5510378	1	Spring Meadow Creek Springs	Unnamed
5510392	1	Spring Meadow Creek Springs	Unnamed
5510412	1	Spring Meadow Creek Springs	Unnamed
5510631	1	Lower Spring Meadow Springs	Unnamed
5510651	1	Lower Spring Meadow Springs	Unnamed

## Wisconsin Department of Natural Resources SWIMS Project Summary

Lab Account Codes				
Account Code	Description	Start Date	End Date	
<b>Forms</b>				
Form Code	Form Name			
SECCHI_TEMPDO	Lake Monitoring - Secchi, Temperature and D.O.			
<b>Methods</b>				
Method Code	Method Description			
<b>Fieldwork Events</b>				
Start Date	Status	Field ID	Station ID	Station Name
3/13/2012 13:00	COMPLETE	DH001	643401	Anvil Lake - Deep Hole
3/13/2012 13:05	COMPLETE	DH002	643401	Anvil Lake - Deep Hole
3/26/2012 11:15	COMPLETE	DH003	643401	Anvil Lake - Deep Hole
4/17/2012 11:00	COMPLETE	DH004	643401	Anvil Lake - Deep Hole
4/17/2012 11:15	COMPLETE	DH005	643401	Anvil Lake - Deep Hole
5/1/2012 13:30	COMPLETE	DH100	643401	Anvil Lake - Deep Hole
5/11/2012 12:00	COMPLETE	DH101	643401	Anvil Lake - Deep Hole
5/19/2012 10:00	COMPLETE	DH102	643401	Anvil Lake - Deep Hole
5/22/2012 16:10	COMPLETE	DH006	643401	Anvil Lake - Deep Hole
5/22/2012 16:19	COMPLETE	DH007	643401	Anvil Lake - Deep Hole
5/23/2012 17:00	COMPLETE	DS-6	643401	Anvil Lake - Deep Hole
5/29/2012 13:00	COMPLETE	DH103	643401	Anvil Lake - Deep Hole
6/15/2012 14:00	COMPLETE	DH104	643401	Anvil Lake - Deep Hole
6/18/2012 10:15	COMPLETE	DH008	643401	Anvil Lake - Deep Hole
6/18/2012 10:25	COMPLETE	DH009	643401	Anvil Lake - Deep Hole
6/25/2012 15:45	COMPLETE	DH105	643401	Anvil Lake - Deep Hole
7/3/2012 10:30	COMPLETE	DH106	643401	Anvil Lake - Deep Hole
7/8/2012 14:00	COMPLETE	DH107	643401	Anvil Lake - Deep Hole
7/17/2012 10:00	COMPLETE	DH010	643401	Anvil Lake - Deep Hole
7/17/2012 10:00	COMPLETE	DH011	643401	Anvil Lake - Deep Hole
7/17/2012 10:00	COMPLETE	DH012	643401	Anvil Lake - Deep Hole
7/17/2012 10:00	COMPLETE	DH014	643401	Anvil Lake - Deep Hole
7/17/2012 10:00	COMPLETE	DH015	643401	Anvil Lake - Deep Hole
7/17/2012 10:15	COMPLETE	DH013	643401	Anvil Lake - Deep Hole
7/19/2012 11:00	COMPLETE	DH108	643401	Anvil Lake - Deep Hole

7/4/2024

**Wisconsin Department of Natural Resources  
SWIMS Project Summary**

7/24/2012 9:00	COMPLETE	DH109	643401	Anvil Lake - Deep Hole
7/31/2012 11:15	COMPLETE	DH110	643401	Anvil Lake - Deep Hole
8/12/2012 12:15	COMPLETE	DH111	643401	Anvil Lake - Deep Hole
8/13/2012 12:00	COMPLETE	QA-1	643401	Anvil Lake - Deep Hole
8/13/2012 12:05	COMPLETE	QA-2	643401	Anvil Lake - Deep Hole
8/13/2012 12:30	COMPLETE	QA-3	643401	Anvil Lake - Deep Hole
8/14/2012 17:00	COMPLETE	DH16	643401	Anvil Lake - Deep Hole
8/14/2012 17:25	COMPLETE	DH17	643401	Anvil Lake - Deep Hole
8/14/2012 17:30	COMPLETE	DH18	643401	Anvil Lake - Deep Hole
8/19/2012 13:25	COMPLETE	DH112	643401	Anvil Lake - Deep Hole
8/30/2012 13:25	COMPLETE	DH113	643401	Anvil Lake - Deep Hole
9/9/2012 13:25	COMPLETE	DH114	643401	Anvil Lake - Deep Hole
9/18/2012 13:15	COMPLETE	DH20	643401	Anvil Lake - Deep Hole
9/18/2012 13:25	COMPLETE	DH21	643401	Anvil Lake - Deep Hole
9/25/2012 15:30	COMPLETE	DH115	643401	Anvil Lake - Deep Hole
10/2/2012 15:00	COMPLETE	DH116	643401	Anvil Lake - Deep Hole
10/16/2012 10:00	COMPLETE	DH23	643401	Anvil Lake - Deep Hole
10/16/2012 10:15	COMPLETE	DH21	643401	Anvil Lake - Deep Hole
10/16/2012 10:20	COMPLETE	DH22	643401	Anvil Lake - Deep Hole
10/17/2012 12:00	COMPLETE	QA B1	643401	Anvil Lake - Deep Hole
10/17/2012 12:00	COMPLETE	QA BLANK	643401	Anvil Lake - Deep Hole
10/17/2012 12:05	COMPLETE	QA B2	643401	Anvil Lake - Deep Hole
10/17/2012 12:30	COMPLETE	QA B3	643401	Anvil Lake - Deep Hole
10/17/2012 23:00	COMPLETE	QA W1	643401	Anvil Lake - Deep Hole
10/17/2012 23:00	COMPLETE	QA W2	643401	Anvil Lake - Deep Hole
10/17/2012 23:00	COMPLETE	QA W3	643401	Anvil Lake - Deep Hole
1/10/2013 11:35	COMPLETE	DH23	643401	Anvil Lake - Deep Hole
1/10/2013 11:43	COMPLETE	DH24	643401	Anvil Lake - Deep Hole
3/26/2013 13:00	COMPLETE	DH25	643401	Anvil Lake - Deep Hole
3/26/2013 13:00	COMPLETE	DH26	643401	Anvil Lake - Deep Hole
5/7/2013 15:00	COMPLETE	SMITTYS 050713	643401	Anvil Lake - Deep Hole
5/7/2013 15:00	COMPLETE	TRIB2 050713	643401	Anvil Lake - Deep Hole
5/24/2013 10:00	COMPLETE	DH27	643401	Anvil Lake - Deep Hole
5/24/2013 10:55	COMPLETE	DH28	643401	Anvil Lake - Deep Hole
5/31/2013 13:30	COMPLETE	DH117	643401	Anvil Lake - Deep Hole

7/4/2024

## Wisconsin Department of Natural Resources SWIMS Project Summary

6/12/2013 8:00	COMPLETE	DH118	643401	Anvil Lake - Deep Hole
6/12/2013 16:05	COMPLETE	DH29	643401	Anvil Lake - Deep Hole
6/12/2013 16:13	COMPLETE	DH30	643401	Anvil Lake - Deep Hole
6/24/2013 11:00	COMPLETE	DH119	643401	Anvil Lake - Deep Hole
7/11/2013 11:45	COMPLETE	DH31	643401	Anvil Lake - Deep Hole
7/11/2013 11:45	COMPLETE	DH31	643401	Anvil Lake - Deep Hole
7/11/2013 11:46	COMPLETE	DH32	643401	Anvil Lake - Deep Hole
7/11/2013 11:46	COMPLETE	DH32	643401	Anvil Lake - Deep Hole
7/11/2013 11:47	COMPLETE	DH33	643401	Anvil Lake - Deep Hole
7/11/2013 11:47	COMPLETE	DH33	643401	Anvil Lake - Deep Hole
7/11/2013 11:53	COMPLETE	DH34	643401	Anvil Lake - Deep Hole
7/11/2013 11:53	COMPLETE	DH34	643401	Anvil Lake - Deep Hole
7/11/2013 13:00	COMPLETE	DH120	643401	Anvil Lake - Deep Hole
7/22/2013 12:25	COMPLETE	DH35	643401	Anvil Lake - Deep Hole
7/22/2013 12:33	COMPLETE	DH36	643401	Anvil Lake - Deep Hole
7/22/2013 15:00	COMPLETE	DH121	643401	Anvil Lake - Deep Hole
8/4/2013 13:00	COMPLETE	DH122	643401	Anvil Lake - Deep Hole
8/14/2013 10:41	COMPLETE	DH38	643401	Anvil Lake - Deep Hole
8/14/2013 10:43	COMPLETE	DH39	643401	Anvil Lake - Deep Hole
8/14/2013 10:45	COMPLETE	DH40	643401	Anvil Lake - Deep Hole
8/14/2013 11:35	COMPLETE	DH37	643401	Anvil Lake - Deep Hole
8/18/2013 11:00	COMPLETE	DH123	643401	Anvil Lake - Deep Hole
8/25/2013 14:00	COMPLETE	DH124	643401	Anvil Lake - Deep Hole
9/11/2013 11:00	COMPLETE	DH125	643401	Anvil Lake - Deep Hole
9/18/2013 13:20	COMPLETE	DH39	643401	Anvil Lake - Deep Hole
9/18/2013 13:30	COMPLETE	DH40	643401	Anvil Lake - Deep Hole
9/23/2013 10:00	COMPLETE	DH126	643401	Anvil Lake - Deep Hole
10/21/2013 10:45	COMPLETE	DH41	643401	Anvil Lake - Deep Hole
2/12/2014 12:00	COMPLETE	DH42	643401	Anvil Lake - Deep Hole
2/12/2014 12:00	COMPLETE	DH43	643401	Anvil Lake - Deep Hole
4/7/2014 11:07	COMPLETE	DH44	643401	Anvil Lake - Deep Hole
4/7/2014 11:11	COMPLETE	DH45	643401	Anvil Lake - Deep Hole
4/7/2014 11:14	COMPLETE	DH46	643401	Anvil Lake - Deep Hole
4/26/2014 12:00	COMPLETE	TRIB 1	643401	Anvil Lake - Deep Hole
4/26/2014 12:15	COMPLETE	TRIB 4	643401	Anvil Lake - Deep Hole

## Wisconsin Department of Natural Resources SWIMS Project Summary

5/1/2014 12:00	COMPLETE	TRIB1	643401	Anvil Lake - Deep Hole
5/1/2014 12:15	COMPLETE	TRIB4	643401	Anvil Lake - Deep Hole
5/7/2014 16:00	COMPLETE	TRIB1	643401	Anvil Lake - Deep Hole
5/7/2014 16:00	COMPLETE	TRIB4	643401	Anvil Lake - Deep Hole
5/13/2014 9:00	COMPLETE	TRIB1	643401	Anvil Lake - Deep Hole
5/13/2014 9:00	COMPLETE	TRIB4	643401	Anvil Lake - Deep Hole
5/15/2014 12:00	COMPLETE	DH47	643401	Anvil Lake - Deep Hole
5/15/2014 12:00	COMPLETE	DH48	643401	Anvil Lake - Deep Hole
5/16/2014 12:00	COMPLETE	TRIB4	643401	Anvil Lake - Deep Hole
5/23/2014 8:30	COMPLETE	TRIB4	643401	Anvil Lake - Deep Hole
6/10/2014 9:00	COMPLETE	DH127	643401	Anvil Lake - Deep Hole
6/22/2014 11:00	COMPLETE	DH128	643401	Anvil Lake - Deep Hole
6/23/2014 10:30	COMPLETE	DH49	643401	Anvil Lake - Deep Hole
6/23/2014 10:40	COMPLETE	DH50	643401	Anvil Lake - Deep Hole
7/4/2014 10:00	COMPLETE	ANVIL LAKE	643401	Anvil Lake - Deep Hole
7/17/2014 11:00	COMPLETE	DH130	643401	Anvil Lake - Deep Hole
7/23/2014 10:15	COMPLETE	DH51	643401	Anvil Lake - Deep Hole
7/23/2014 10:26	COMPLETE	DH52	643401	Anvil Lake - Deep Hole
8/8/2014 8:00	COMPLETE	DH131	643401	Anvil Lake - Deep Hole
8/26/2014 10:00	COMPLETE	DH53	643401	Anvil Lake - Deep Hole
8/26/2014 10:02	COMPLETE	DH132	643401	Anvil Lake - Deep Hole
8/26/2014 10:07	COMPLETE	DH54	643401	Anvil Lake - Deep Hole
8/26/2014 10:09	COMPLETE	DH55	643401	Anvil Lake - Deep Hole
8/26/2014 10:11	COMPLETE	DH56	643401	Anvil Lake - Deep Hole
9/25/2014 12:45	COMPLETE	DH57	643401	Anvil Lake - Deep Hole
9/25/2014 12:53	COMPLETE	DH58	643401	Anvil Lake - Deep Hole

### Documents

Title	Description	Author	Published	Comments
2017 EWM Monitoring & Control Strategy Assessment Report - Anvil Lake Association	The DASH strategy employed on Anvil Lake in 2017 was unable to reduce the occurrence and density of EWM in North Bay, indicating the effort of 129 diver hours was unable to keep pace with the expansion of the EWM population. Qualitative mapping indicated that the acreage of colonized EWM in Anvil Lake increased from 14.8 acres in 2016 to 30.9 acres in 2017.	Onterra, LLC	4/1/2018	



## Wisconsin Department of Natural Resources SWIMS Project Summary

Anvil Lake - Vilas County, Wisconsin, Comprehensive Management Plan	This report builds upon the 2011 lake protection plan and covers the typical management planning study components assessing the lake's watershed, water quality, use, and aquatic plant community. The management planning project incorporated aquatic plant information following the establishment of EWM and CLP and fills the gap in the lake's planning needs by developing long-term monitoring and management of the lake.	Eddie Heath, Tim Hoyman, Paul Garrison, and Brenton Butterfield, Onterra, LLC	1/1/2018	
Anvil Lake - Vilas County, Wisconsin, Comprehensive Management Plan [Appendices]	Appendices for the Anvil Lake Comprehensive Management Plan including public participation materials, PI survey data, and comments on the draft plan.	Eddie Heath, Tim Hoyman, Paul Garrison, and Brenton Butterfield, Onterra, LLC	1/1/2018	

### Budget

**Combined Budgets:**

**Combined WSLH:**

**Combined Total:** \$0.00

### Funding

Organization	Source	Type	Amount	Start Date	End Date
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