

# Lake Minnetonka Conservation District 2008 Video Launch Monitoring Summary

Environmental Sentry Protection, LLC

## Background

For the 2008 season, the Lake Minnetonka Conservation District (LMCD) contracted with Environmental Sentry Protection, LLC (ESP) to operate launch monitoring cameras (ILIDS<sup>1</sup>) at the 2 busiest boat launches on Lake Minnetonka: Grays Bay and Maxwell Bay. The main goals of the program were to:

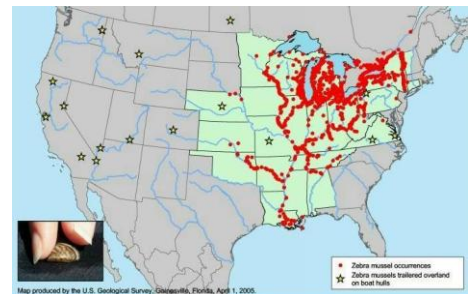
- 1) Reduce the risk of AIS introduction into Lake Minnetonka through dawn to dusk monitoring for non-intern hours, and review a sample 24 weeks of videos to measure launch traffic and the level of cleanoff compliance.
- 2) Improve public education on AIS including if possible notifying violators of illegal transport.
- 3) Identify AIS violators who had attached weeds on their boat and trailer while launching.
- 4) Operate Maxwell Bay and Grays Bay cameras in an always-on state.

This report presents a summary of this project, analysis of these videos, and recommendations.

## Why Automated Monitoring?

### To Complement the DNR Intern Program

Interns were present on Fri/Sat/Sun and holidays (Memorial Day through Labor Day) at Grays Bay and Maxwell Bay (45 days from 6am to 5pm). The ILIDS provided inspection coverage during the periods when interns were not present which accounted for approximately 59% of the activity at the launches.



### To Reduce Risk of New AIS Introductions

Lake Minnetonka faces threats from new varieties of AIS such as Hydrilla (newly discovered in Indiana, and Wisconsin), Brazilian Elodea (Powderhorn Lake, Minneapolis), and Zebra Mussels that are accessible from 55 boating accesses in Minnesota. These invasives carry significant impact to lake ecology, property values, recreational enjoyment, and native species. Zebra mussels have no control technique that can be used to eradicate their presence once they infest a lake. Zebra Mussels die off and litter shorelines with razor sharp edges and foul smell. As they move up the Mississippi River and around Lake Superior, they have been identified in Lake Ossawinnamakee, Zumbro Lake, and Lake Mille Lacs in Minnesota. In Wisconsin they have already spread to 100 bodies of water. In Michigan, 227 lakes have Zebra mussels. One study shows the primary method of introduction is from mature mussels attaching to plants transported by boaters. Therefore it's clear why leveraging limited resources to get boaters to clean their boats is critical.

<sup>1</sup> The ILIDS is a hardened stainless steel casing holding a network based video camera, 12V battery, power conversion/sensing circuitry, and solar panels. The remote systems on the Internet convert uploaded MPEG4 videos and store the results in an Internet accessible database.

## Project Implementation

The reinstallation used the same site locations from 2007. Permission was obtained from the DNR and the City of Minnetonka to operate cameras at Grays Bay and Maxwell Bay. A request to use power from a light pole for Maxwell Bay was not granted. A secondary solar panel was installed to provide necessary power. There was only one point late in the fall where insufficient power was available at Maxwell to operate the camera, but this was for only part of the day and was resolved by adjusting the angle of the panel.

## Summary Video/Launch Counts

From May 10 through October 10, 2008 (5am-10pm) over 42,142 videos were captured at these two launches for the season representing an estimated 14,762 launches broken down as follows:

	Videos	Launches	Possible AIS Violations
Reviewed-Grays	8192	2789	2
Reviewed-Maxwell	5460	1897	4
<b>Total reviewed</b>	<b>13652</b>	<b>4686</b>	<b>6</b>
Non-reviewed Grays	7859	2698	
Non-reviewed Maxwell	3267	1029	
<b>Total non-reviewed</b>	<b>11126</b>	<b>3727<sup>2</sup></b>	
Intern Period Grays	9545	3276	
Intern Period Maxwell	7819	2684	
<b>Total Intern Period</b>	<b>17364</b>	<b>5960<sup>2</sup></b>	
<b>Total for all Periods</b>	<b>42142</b>	<b>14373</b>	

Interns were present on Fri/Sat/Sun and holidays (Memorial Day through Labor Day).

## Findings / Observations

**The percentage of boats launching weeds was measured at 0.13% for the 2008 season. This is quite lower than the control period in 2006 (7.4%) and still lower than in 2007 (0.3%).** Increased awareness of the monitoring by boaters was evident in conversations.

**Cameras were of high enough resolution to capture near lane launches and at times secondary lane registration numbers.** The overall number of launches was 4686 for the reviewed periods. Of these launches, 49.4% of the boats could be identified by registration number or license number which reflects the effort to count all launches across all lanes, at all times of review. Initial suspect violations need to be reviewed with original video format and Quicktime to rule out straps, chains.

**Boaters seemed to slow prior to launch to allow camera inspection.** As in 2007, it was observed that boaters (specifically when next to an ILIDS unit) seemed to slow their boat/trailer while proceeding past the I-LIDS to confirm they had cleaned their craft.

---

<sup>2</sup> The average percentage of launches for the reviewed period was 34.3%. This was applied to other video counts to obtain estimated numbers for launches.

## **Grays Bay**

The footing location used was near the launch on the west side. This offered a close look at the trailers of boats launching, a connection to a power source, and indirect light from the overhead streetlight. Boats that stopped at night had registration numbers that could clearly be viewed. Because the camera was always on, it could be logged into at any time to check configuration settings. On one occasion a network outage from Comcast caused a lost connection to the Internet.

## **Maxwell Bay**

An external solar panel was used to provide power to the camera so it could be running all the time.

## **Education**

A Babe Winkelman AIS cleanoff brochure was developed under a grant with Minnesota DNR and 10,000 copies were provided to local bait shops.

## **Audio message**

A recorded audio message was deployed at Maxwell Bay late in the season to remind boaters of the need to inspect and clean prior to launch. This message was audible only to boaters at the launch and was programmed to play several times before resting for a period of time.

## **Video Review**

Videos were only reviewed for selected weeks and only for times the interns were not present. Usually these days were Monday through Thursday, but after Labor Day, entire weeks were reviewed. During the 24 weeks of video review for the 2 sites there were 13 videos captured. Of these, 4686 were unique launches and 13 boats were seen launching weeds.

## **Camera Outages / DVD Deliverables**

There were 9 camera outage days that lasted longer than 2 hours that were documented during the course of the season which was below the threshold of 10 allowable outages. All DVD reports were provided to staff within the time periods requested.

## **Violation Follow-up - Enforcement**

There were 6 suspect AIS violations (0.13% of launches) that were documented and reported to LMCD staff. Details on the incidents were provided in weekly reports to the LMCD. ESP is not aware of further processing of this information through the DNR or other agencies.2007.

## **Resolution of 2007 Issues**

<b>2007 Issue</b>	<b>2008 Resolution</b>
Start dates of two launches were delayed.	Both launches were operational on 5/10.
Power source for solar powered ILIDS installations as a limitation.	An external solar panel was used on Maxwell and an improvement to the circuit board allowed power conservation.
Downtime of cameras	Camera downtime was limited to 9 outages > 2 hours.
Delays in weekly reporting.	Improvements were made to the web based interface so video reviews could be conducted more efficiently.
Frequency of video captures at Grays Bay	Camera cycle times were reduced by tuning the camera configuration and limiting the capture period to 15 seconds.

## Recommendations

These recommendations are suggested for 2008 with the primary goals of increasing the effectiveness of automated monitoring as a complement to DNR interns.

**1) Meet with the DNR to share suspect AIS violations videos and review possible actions.**  
To further reduce the risk of boaters launching new AIS into Lake Minnetonka, boaters identified as launching aquatic plants into Lake Minnetonka need to understand there is a consequence for behaviors in violation of state law. A meeting with DNR enforcement officials to share suspect AIS violations and to review procedural steps is an important first step. As stated last year the lack of having a procedure in place with DNR enforcement for rapid response to violations negates a timely response and has a lessened impact on behaviors.

By example, in 2008, the Burnett County sheriffs department working with the Wisconsin DNR leveraged ILIDS to take action on both AIS violations and clean-offs observed at the boat launches. 5 uncontested citations were issued via the mail based on video evidence alone. Also, 10 gift certificates were given to boaters who had performed exceptional cleanoffs. The method for reviewing the videos involved having 4 separate authorities view suspect violations to reach concurrence on whether a citation should be issued.

**2) Use additional ILIDS at other launches to optimize in-person resources at peak times.**  
The 2008 video monitoring program had improved success over 2007 in its ability to measure boat traffic, provide continuous reliable monitoring, and have reviewed results reported within several days. Lessons learned on how to achieve these levels of higher functionality can be extended to other launches, especially where there is a foundation or network available for use. Leveraging statistical information on launch activity can point to areas of greater boater usage.

## Cost/Benefit Data

Number of videos captured	42,142
Approximate hours on duty	2635
Total seasonal cost	\$11,059
Cost per video (non-intern hours)	\$0.26
Cost per hour on duty	\$4.19

### About the Company

**Environmental Sentry Protection, LLC** offers a stand-alone system to monitor boat launch events with network video and make a history available for web review by lake constituents and enforcement officials. It is a tamper-proof, onsite solution to capture boater clean-off activities to ensure compliance with the Aquatic Invasive Species laws so lakes can be protected from the extensive and irreversible impact of Aquatic Invasive Species such as Eurasian Watermilfoil, Curlyleaf Pondweed, and Zebra Mussels. Utilizing Internet connectivity for video storage, alerting, and remote management, this system offers continuous monitoring at boat launches.

For more information visit [www.environmentalsentry.com](http://www.environmentalsentry.com)

Or contact Eric Lindberg at 763-473-0051

# Appendix A

## 2007 LMCD Launch Video Review Summary

Time Period	Launch	Videos	Launches	ID'd	% ID'd	# Probable AIS Violations	% Violating
5/10/2008-05/16/08	Grays Bay	500	324	195	60%	0	
5/18/2008-5/22/08	Maxwell	446	152	89	59%	0	
5/27/2008-05/29/08	Grays Bay	300	89	51	57%	0	
6/2/08-6/5/08	Maxwell	205	55	31	56%	0	
06/09/08-6/12/08	Maxwell	396	127	44	35%	0	
06/09/08-06/12/08	Grays Bay	516	125	54	43%	0	
6/16/08-6/19/08	Maxwell	572	225	99	44%	0	
6/23-6/26/08	Grays Bay	1272	404	193	48%	0	
6/23-6/26/08	Maxwell	559	203	116	57%	0	
6/30-7/3/08	Maxwell	597	232	108	47%	0	
7/7-7/10/08	Grays Bay	951	227	116	51%	0	
7/14-7/17/08	Grays Bay	624	236	114	48%	0	
7/14-7/17/08	Maxwell	526	178	67	38%	1	
7/21-7/24/08	Grays Bay	638	232	125	54%	2	
7/21-7/24/08	Maxwell	496	167	79	47%	0	
7/28-7/31/08	Grays Bay	945	219	94	43%	0	
7/28-7/31/08	Maxwell	297	102	47	46%	0	
8/4-8/7/08	Grays Bay	523	198	88	44%	0	
8/4-8/7/08	Maxwell	329	115	52	45%	1	
8/11-8/14	Maxwell	190	72	40	56%	2	
8/18-8/22	Grays Bay	602	246	116	47%	0	
8/18-8/22	Maxwell	320	110	56	51%	0	
8/25-8/28	Grays Bay	325	122	52	43%	0	
9/14-9/20	Grays Bay	996	367	194	53%	0	
9/21-9/27	Maxwell	527	159	87	55%	0	
<b>Total</b>		<b>13652</b>	<b>4686</b>	<b>2307</b>	<b>49%</b>	<b>6</b>	<b>0.13%</b>

## 2008 LMCD Probable AIS Violation Summary

Location	Date/Time	Time	Boat Description	Vehicle Description	Observed
Maxwell	7/14/2008	16:18	18' Gray/Red Ranger bass boat	Black Avalanche w/ Ranger decal on window	Aquatic plant on trailer being launched. Boater looking right at camera. <b>Probable AIS violation.</b>
Grays Bay	7/23/2008	16:32	Pontoon Sun Tour	Conv Van RoadTrek	Weed on starboard pontoon Probable <b>AIS violation.</b>
Grays Bay	7/24/2008	14:05	Stratos Pro XL Bass Boat Black/Yellow/white	?	Weed under spare tire on trailer. <b>Probable AIS violation.</b>
Maxwell	8/5/2008	10:25 13:42	White Lund 1809 ProVSE	Gold Ford SUV	Dried weed on middle of rear trailer axle. <b>Probable violation.</b>
Maxwell	8/13/2008	16:19	Polaris PWC - White/Gray	White Chev Tahoe	Multiple weeds on rear trailer axle. <b>Obvious AIS violation.</b>
Maxwell	8/14/2008	6:19	18' Bass boat	Black Ford Pickup Crewcab	Plants on middle of rear axle being launched. <b>Probable violation.</b>

**Total Probable or Obvious Violations**

**6 Percentage**

**0.13%**