

MPCA Vessel Discharge Permit Informational Meeting

St. Paul & Duluth

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Minnesota Pollution Control Agency

Clean Water Act

(1972 and other Amendments)

- Eliminate discharge of pollutants to surface waters
- Fishable and swimmable waters
- NPDES Permits to regulate discharges
- Special attention on toxics
- Control stormwater

Meeting the CWA Goals

- Designated Uses
 - Drinking (domestic consumption)
 - Fishing / Swimming
 - Industrial Processes
 - Wildlife
 - Agricultural Irrigation
- WQ Standards (pollutant limits for each designated use)

Meeting the CWA Goals

- NPDES Permits – Regulating Pollutant Discharges to Surface Waters
 - Technology Based Effluent Limits (TBELs)
 - Minimum Level of Treatment / Level playing field
 - Driver for pollutant elimination
 - Water Quality Based Effluent Limits (WQBELs)
 - Protect designated uses
 - Specific to the receiving water

Legal Actions Affecting States

- **State Legislation**
 - Michigan regulation of oceangoing vessels
 - Minnesota proposed legislation
- **Federal Exemption Successfully Challenged**
 - **1973:** EPA excluded vessel discharges from NPDES permitting.
 - **September 2006:** U.S. District Court decision in CA eliminates the vessel discharge exemption effective September 30, 2008.
 - **EPA** appealing decision.
 - **EPA** developing a permitting strategy.

(www.epa.gov/owow/invasive_species/ballast_water.html).

Aquatic Invasive Species Prevention in Lake Superior

**Vectors:
Pathways**

Concept Map

Maritime Commerce:

Ballast Water
Hull/Anchor fouling

Water

Recreation:

Boating equipment
Livewells
Fishing equipment
Bait

Agency Activities:

Stocking/hatcheries
Assessment
Harbor maintenance
Navigation
Homeland security
Research

Tourism:

Charter fishing
Ecotours
Float planes
Diving

Organisms in Trade:

Pets/Aquariums
Aquatic plants
Shoreline restoration
Bait
Live food fish
On-line sales

Canals and Diversions

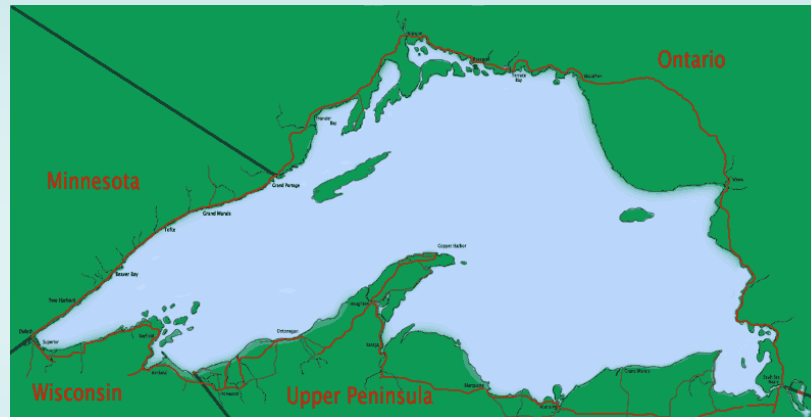
Locks
Power canals
Compensating works
Diversions

Illegal Activities:

Plants
Fish stocking
On-line sales

Commercial Fishing:

Fishing
equipment/vessels
Bait
Fish Aquaculture



Vessel Discharges

Ship-borne Water	Fouling	Ship-borne Sediments	Bio-film
<ul style="list-style-type: none">▪ Ballast water.▪ Bilge water.▪ Engine cooling water.▪ Propeller shaft cooling water.▪ Fire-control water.▪ Sanitary system water.▪ Chain locker water.▪ Incidental water (e.g. deck wash).	<ul style="list-style-type: none">▪ Hull fouling.▪ Sea chest/ water intake fouling.▪ Internal pipe fouling.▪ Anchor and chain fouling.▪ Propeller shaft fouling.	<ul style="list-style-type: none">▪ Ballast tank sediments.▪ Bilge sediments.▪ Chain locker sediments.	<ul style="list-style-type: none">▪ Ballast tank surfaces.▪ Bilge surfaces.▪ Internal pipe surfaces.

State Actions – Vessel Discharges

- Carrying out the responsibility to protect water quality and stop AIS
- Preserving state authority to protect water quality
- Fulfilling legal responsibility to regulate vessel discharges as a source of biological pollution

Minnesota Overview



MPCA, March 2008

Minnesota's Vessel Discharge Regulation Work Plan

1. Encourage/support federal action on Great Lakes shipping
2. Communication and coordination.
3. Participate in State legislative activities
4. Develop state regulatory program for vessel discharges - rulemaking and permit

Encourage/support federal action on Great Lakes shipping

- Participate in EPA's vessel permit development work group
- Support a federal approach
- Comment on proposed federal regulations

Communication and coordination



Courtesy of US Army Corps of Engineers, photo by Jerry Bielicki

- MN state agencies, DNR
- Other states
- USCG, EPA
- Great Ships Initiative
- Great Lakes Organizations, more

➔ MPCA ballast web page coming in March

Participate in State legislative activities

- Provide/share information with State Legislature
- Potential MPCA budget initiative in 2009 for implementation of state ballast water program

Develop state vessel discharge regulatory program (rulemaking)

- Limited Rulemaking
 - Modify Minn. R. 7001.1030, subp. 2A to remove exemption of vessels from NPDES permitting (a state exemption)
 - Publish Request for Comment in March
 - Goal: rule changes in place by Sept. 30

Develop state vessel discharge regulatory program (permit)

- General Permit Development Process
 - Informal stakeholder input
 - Draft permit/application developed
 - Draft permit/ application placed on 30-day public notice in State Register
 - Comments submitted/revisions made, if necessary
 - Permit issued

Where Are We Now?

- Informal stakeholder input phase
 - Lasts until start of public notice of general permit/application
- Gathering technical information



Courtesy of US Army Corps of Engineers, photo by Jerry Bielicki

General Permit Tentative Schedule

Early March	Initial stakeholder input meetings
Mid-March	MPCA begins drafting initial permit/ application
April/May	Stakeholder input meetings on initial draft permit/ application
June	Start 30-day public notice
September	General permit applications available on-line

Opportunities for Public Input

- Written/ verbal comments any time during informal phase (before public notice)
- 1st Stakeholder Meetings (March 3,4)
- 2nd Stakeholder Meetings (Spring- after initial permit/ application drafted but prior to permit on public notice)
- Written comments during public notice period (Anticipate June 30- July 30)

What's Next?

- Drafting of the initial general permit/
application for informal stakeholder
comment



State vessel discharge regulatory program (permit)

- General NPDES/SDS Permit Proposed
- Permit Components
 - General conditions applicable to all
 - Applicability-what vessels covered
 - Effluent limitations
 - Best management practices
 - Technology based standards
 - Water quality based effluent limits
 - Compliance schedule
 - Reporting & inspection requirements

General Requirements

- Application, record keeping, equipment calibration, etc.
- Application required for covered vessels
 - Covered vessels under consideration are commercial vessels having potential to discharge ballast water into Minnesota waters of Lake Superior and associated tributaries
 - Includes NOBOB vessels
 - Focus is on ballast water discharges

WHY BALLAST WATER?



Why Ships Must Conduct Ballasting Operations

- To maintain vessel stability while underway with varying loads
- To maintain vessel structural integrity with a variety of loading patterns
- To maintain adequate immersion of propulsion, rudder and side thrusters
- To provide for varying ship height and water depth restrictions

Great Lakes Shipping Vessels

- Vessels range from 600 to 1000 feet in length and 60 to 100 feet in width
- Ballast capacity
 - Smaller vessels- 2.7 million gallons
 - Largest vessels- 15.5 million gallons
- Frequency of ballast exchange
 - Ballast water is commonly taken on or discharged many times during loading, unloading and transiting

Ballasted Vessels Types St Mary's Locks-2006

- Oceangoing
 - Total # into Lake Superior-233
- Lakers, American
 - Total number into Lake Superior-1327
- Lakers, Canadian
 - Total number into Lake Superior-645

Top Ballast Receivers - 2005

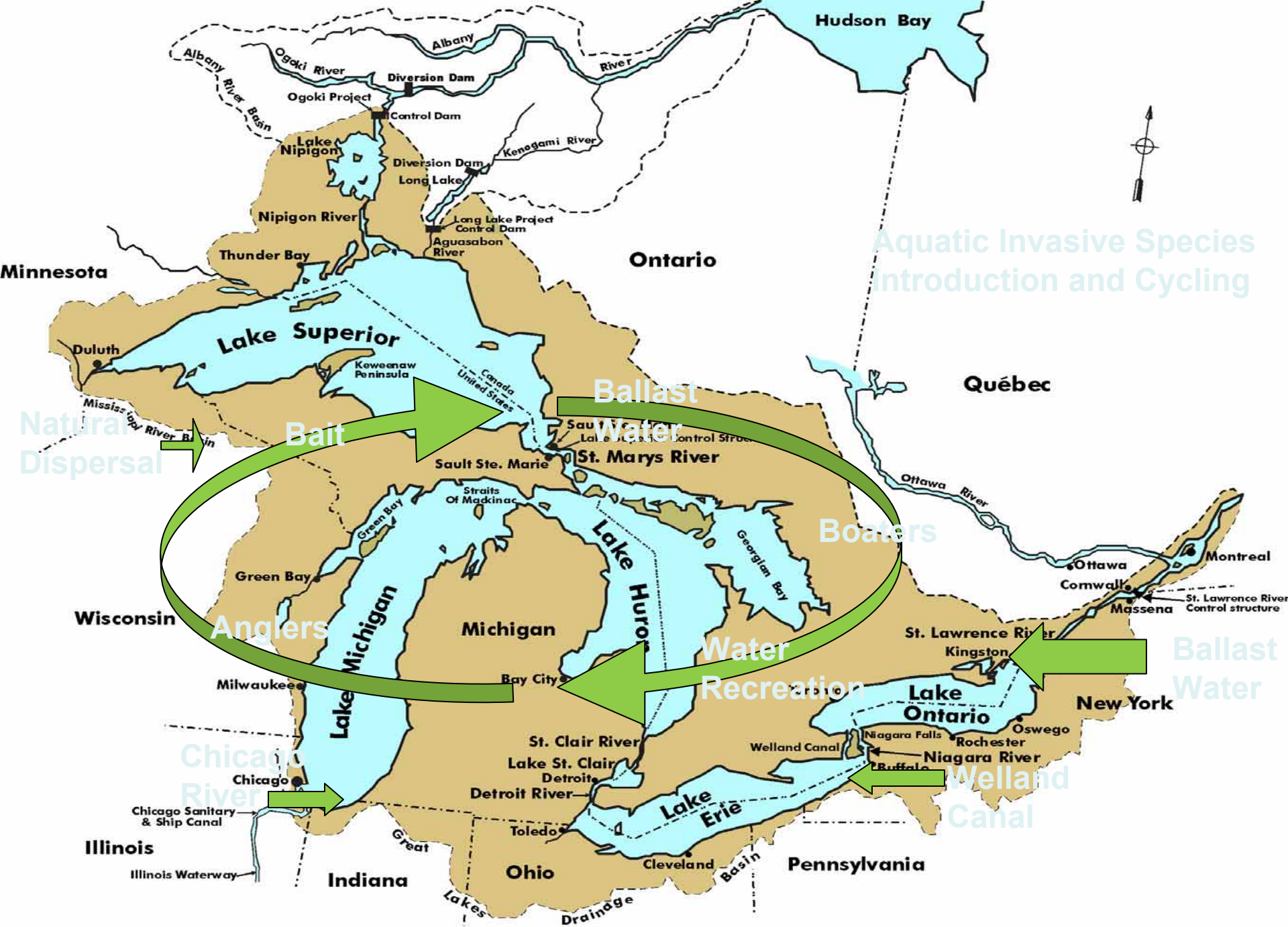
Port Name	# Ballast Out	Tonnage (MT)
Superior-Duluth	692	20,405,580
Two Harbors, MN	197	7,104,920
Calcite, MI	290	3,295,525
Marquette, MI	271	3,292,608
Toledo, Ohio	205	2,573,223
Stoneport, MI	201	2,375,589

(top 5 locations by each # discharges and tonnage received)

Top Ballast Donors - 2005

Port Name	# Ballast in	Tonnage (MT)
Detroit, MI	521	7,430,946
Nanticoke, Ontario	270	6,118,144
Gary, IN	122	4,035,966
Saint Clair, MI	100	3,960,969
Indiana Harbor, IN	176	3,771,433
Cleveland, Ohio	325	3,573,223
Hamilton, Ontario	234	3,054,880
Sault-Ste-Marie	231	2,292,395

These ports will be important for prevention efforts.



Applicability

- Hundreds of vessels considered
- Oceangoing and laker vessels for sure
- Cruise vessels
- Tugboats
- Barges

Applicability Comparison of Other Ongoing & Proposed Regulatory Programs

Regulatory Program	Proposed Fed. U. S. S.1578 (Inouye) H.R 2830 (Oberstar)	Proposed S. 2517(Rest-MN Senate) HF 2963 (Hansen)	California Coastal Ecosystems Protection Act	IMO Regulation D-2
Application to type of vessels	Oceangoing only	Oceangoing and Great Lakes Ships	Oceangoing only	Oceangoing only

Effluent Limitations

- Best Management Practices
 - Ballast water exchange
 - Oceangoing in deep ocean waters
 - Lakers in mid lake
 - Modification of location of intake ports and screening
 - Avoidance of ballast water intake in designated hotspots
 - Ballast water management plans

Ballast Water Exchange Issues

- Very large volumes of ballast water
- Typical shipping vessel will have 10 to 20 separate tanks
- Only can exchange one tank at a time in order to maintain stability
- Voyage duration may be short
 - Duluth to Two Harbors

Water Quality Based Effluent Limits

- Minn. R. 7050.0150 Subp. 3-“Species composition shall not be altered materially--by the discharge of sewage, industrial waste, or other wastes to the waters”
- Chlorine or bromine residuals, etc.
- Lake Superior is classified an ORVW
- Cost and attainability of BAT standards

Ballast Water Technology Based (BAT) Standards Comparison

	S.1578 H.R 2830	S. 2517(Rest- MN Senate)HF 2963(Hansen)	California	IMO Regulation D-2
Organisms>50 micrometers	< 1 living org/10 cu meter	Same as S. 1578/HR 2830	No detectable living organisms	< 10 viable org. per 1 cu meter
Organisms < 50 & > 10 micrometers	< 1 colony forming unit / 100 ml	Same as S. 1578/HR 2830	< 0.01 living organisms per 1 ml	< 10 viable organisms per 1 ml
Toxicogenic Vibro cholera	< 1 colony forming unit per 100 ml	Same as HR 2830	< 1 colony forming unit per 100 ml	< 1 colony forming unit per 100 ml
Escherichia enterococci	<126 colony forming units per 100 ml	Same as S. 1578/HR 2830	Same as S. 1578	< 250 colony forming units per 100 ml
Organisms < 10 micrometers	-----	-----	< 1000 bacteria & < 10000 viruses / 100 ml	-----

Comparison of Other Compliance Schedules

Regulatory Program	Proposed Fed. U. S. S.1578 (Inouye), H.R. 2830 (Oberstar)	Proposed S. 2517(Rest-MN HF2963Hansen	California Coastal Ecosystems Protection Act	IMO Regulation D-2
Date of compliance with technology based standards	<p>H.R. 2830 Date of first dry docking after 12/31/08, but no later than 12/31/13 Full compliance may not be required until 2015</p> <p>S. 1578 <1500 cu m ballast capacity Existing before 1/1/1, by 1/1/15 1500- 5000 cu m existing by 1/1/13</p>	Date of first dry docking after 1/1/11 for new/existing ships, but no later than 1/1/12	<p>< 1500 metric tons, New (after 2009) in 2009 as const. Existing (before 2009) by 2016</p> <p>1500-5000 metric tons New- 2009 as const., Existing by 2014</p> <p>> 5000 metric tons New (after 2011) as const. Existing (before 1012) by 2016</p>	Same as California

Treatment System Costs

Manufacturer	Capacity 000's cu m/hr	Estimated Footprint cu m		Estimated Capital Cost \$'000		Estimated Operating Cost \$/1000 cu m
		200cu m/hr	2000 cu m/hr	200 cu m	2000 cu m	
Alfa Laval Tumble AB	5	3	10	NA *	NA*	80
Greenship	>10	1.6	15	300	2300	NA*
NEI	>10	3	6	150	250	50
Severn Trent De Nora	>10	11	11	350	500	20
Techcross	>10	1.6	4	150	NA*	10

From "Ballast Water Treatment Technology, June 2007" by Llyods Register

* Not Available

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Vessel Modification Issues

- Modifications to intake and discharge ports usually must be done in dry dock
- Limited number of dry dock facilities exist
- Such modifications done over many years
- Treatment systems installation must usually be done while at dry or wet dock
- Laker ships not in use only 1/15 to 3/15
- # of qualified technicians are limited

Reporting & Inspection

- Discharge monitoring reports
 - Monthly reports to MPCA
 - Signed by designated official
- Annual Reports
- Records Retention for at least 5 years
- Inspections every two years
- Sludge and bottom sediment disposal record

Questions / Comments

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Next Steps



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