

Project Title: The current beneficial use impairment of drinking water in the St. Clair River, and the criteria involved in delisting.

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This project was completed by Rachael Miksys, a student at Wayne State University, in conjunction with her mentor, Rosanne Ellison of the United States Environmental Protection Agency, as part of a Wayne State University Program entitled Research Internships for a Sustainable Environment with Undergraduate Participation (RISEUP)

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1.0 Introduction

1.1 St. Clair River Drinking Water Beneficial Use Impairment

There are a number of different beneficial use impairments that can be declared by governmental agencies on the environment. These use impairments can range from fish consumption, to taste and odor in the water. In the case of the St. Clair River, the beneficial use impairment specifically targets drinking water due to its impairment by spills. There are multiple stake holders involved in this issue as it encompasses public health, environmental quality, and industry. Delegates from these stake holder groups have developed a set of criteria that must be met in order to remove the current impairment on drinking water, as well as attempting to satisfy all of these groups involved. The St. Clair River not only borders Michigan, but Canada as well. In the investigation of the drinking water criteria, Canadian involvement was also considered.

1.2 Map of the St. Clair River



1.3 Project Background

For this study, the St. Clair River is being studied specifically due to **Its** contribution of water to proximal drinking water facilities. The water in the St. Clair River is impaired due to spills of hazardous

substances and oil from facilities surrounding the river. This has been a recognized problem for many years, and the need to identify proper notification procedures, among other criteria, has been demanded by citizen action committees as well as local governments.

There are several different legislations in place including the joint water agreement between Ontario and Michigan, the area contingency plan, as well as the **Clean water Act**. All of these legislations must be taken into account when planning and executing the criteria of the beneficial use impairment.

The Environmental Protection Agency, along with Michigan Department of Environmental Quality and other agencies have produced a specific list of criteria that must be met in order to delist the St. Clair River's beneficial use impairment for drinking water. The criteria include identification of spill notification systems in place, identification of spill response procedure, and an inventory of all the current monitoring programs in place.

The facilities causing the spills along the St. Clair River are there to stay, so the only way to ensure the delisting of the beneficial use impairment is to safeguard the water that will could potentially make it way to drinking water facilities. Identifying that an appropriate spill notification system is in place provides assurance that facility operators will be notified prior to the water entering the facility. The monitoring programs will also provide security that no unidentified spills will occur along the river. Lastly, knowing the appropriate spill response procedures are in place will expedite the cleanup process to restore cleanliness to the drinking water.

Rose Ellison, the project mentor, works for the **Environmental protection agency** with the goal of focusing on beneficial use impairments. This specific beneficial use impairment is on the forefront of being delisted by the end of the summer, which is an incredibly fast turn around considering some delisting projects can span 20 years before the beneficial use impairment has been successfully remediated.

With a focus on contaminants and their long-term effect on the environment, this project demonstrates a completely different and realistic goal when dealing with contaminants. In this specific case the goal is not to remove the sources of the contaminants completely, but rather to find a way to safe guard the environment from them. In a real world setting multiple stakeholders are involved, so an agreement must be made to reach the best solution to help the environment, the public, and local industry. This project

helps find sustainable solutions to an environmental problem by finding a way to take into account the needs of all of these different stakeholders while maintaining the level of expectation for a quality environment for years to come.

The content of this report is directed at providing thorough, informative, and analytical information relating to delisting criteria for drinking water beneficial use impairments in the St. Clair River. This results of this project are intended to be used as a resource to the general public and citizen action committees, who are also stakeholders in this case.

The specific goal of this project was to follow the outlined criteria to delist the beneficial use impairment of drinking water on the St. Clair River. Although the criteria call for already **in place** monitoring programs, notification systems, and response procedures it is not known if that is the case. This project will help to identify if there are any gaps that will prevent the delisting criteria from fully safeguarding the drinking water from spill contamination.

1.4 Local Removal Criteria

The local removal criteria as set forth by the Environmental Protection Agency, Michigan Department of Environmental Quality, and local environmental stakeholders is as follows:

- Ensuring that all US local, State, federal, private, or NGO organizations with spill prevention, notification and response plans or programs applicable to this BUI are identified; and, verifying and documenting that the plans and programs of each organization are in place, current, approved (as applicable), and implemented; and,
- All existing water quality monitoring programs and activities (including Canadian monitoring efforts covering the US side) for the St. Clair River AOC, water intakes, and delivered water are documented. Documentation includes: monitoring program/project title; monitoring organization; monitoring time frame; parameters and frequency monitored; and, monitoring reporting type and frequency; and,
- Local, multi- jurisdictional and multi-national spill notification procedures for spills affecting the St. Clair River are identified and documented, as well as the frequency and type of spill notification exercises and testing.

The following sections are the result of intense research into the current state of all of the above removal criteria. These sections below will attempt to guide the removal criteria to decide if the criteria in place will fully safeguard drinking water, as well as satisfy all of the stakeholders involved in this issue.

1.5 Methods

By working in conjunction with Roseanne Ellison from the United States Environmental Protection Agency, the methods of completing this project involve using already established documents to identify spill notification procedures, response plans, and monitoring programs. These documents will come from the Environmental Protection Agency, or other state and local agencies involved in spill prevention, response, or monitoring. This will also be the primary method of researching the current notification procedures.

The methods proposed for investigated facilities of interest and their spill prevention plans include utilizing the Environmental Protection Agency's ECHO database, which is open for public viewing. This database includes all facilities, and we will be able to search by zip codes bordering the St. Clair River. The facilities that will be of interest will be those within the zip codes that are within one mile from the river, and also hold a permit to discharge waste that classify them as a "major" permit holder. Additionally, we will also include facilities within a mile that hold facility response plans or SPCC plans signifying that they are able to store more than a million gallons of oil.

The methods of obtaining all of the current monitoring programs begin with sifting through a 2002 inventory list of all monitoring programs on the Great Lakes between the United States and Canada. This list will be checked to ensure the program includes the St. Clair River, monitors water quality, and most importantly has not expired. Lastly, this list will be correlated with Michigan Department of Environmental Quality employees to ensure accuracy and obtain insight on any newer programs that would not be included on our list.

2.0 Results of Major Facilities and their Regulations

2.1 Regulations for Compliance

2.1.1 Resource Conservation and Recovery Act (RCRA)

Facilities that handle hazardous waste are regulated under the Resource Conservation and Recovery Act. This act is in

place to ensure that all hazardous waste is store and handled in a manner that protects the environment.

(EPA, 2013)

2.1.2 Spill Prevention, Control, and Countermeasure (SPCC)

Spill Prevention, Control, and Countermeasure plans are required by facilities that store oil. As part of the clean water act, an SPCC plan specifically is in place as a preventative measure to protect oil from reaching waters. The EPA often reviews this plan during facility inspections.

(EPA, 2014)

2.1.3 Facility Response Plans (FRP)

Facilities that require a facility response plan are classified by the Environmental Protection Agency as having the potential to cause “substantial harm”. The FRP is required in addition to a SPCC plan due to the storage of one million gallons of oil.

2.1.4 Clean Water Act (CWA)

The Clean Water Act established the necessity to obtain a permit in order to discharge a pollutant into waters. The permits that are obtained allow for facilities to be distinguished as major or non-major permit holders according to the National Pollutant Discharge Elimination System (NPDES).

(EPA, 2012)

2.2 Facilities of Interest

There are eight major facilities along the St. Clair River that currently hold permits to discharge into the St. Clair River. These eight facilities of interest were selected if they were within a mile of the shore of the St. Clair River, and if they were classified as holding a National Pollutant Discharge Elimination System (NPDES) permit that classifies them as a “major” discharge point source. The Environmental Protection Agency’s Envirofacts database was used to follow these guidelines, as is viewable to the public. These facilities are listed below, as well as the drinking water relevant regulations that apply.

2.2.1 Dunn Paper Inc

Dunn Paper Inc. is located at 218 Riverview St, Port Huron MI 48060. This facility is currently being regulated under RCRA for being a small quantity generator of hazardous waste. This facility is also being regulated under the Clean Water Act for holding a major discharge permit, of which it is

in serious violation. An enforcement action has been issued, and the facility is not meeting its compliance schedule.

2.2.2 E B Paper Inc

E B Paper Inc. is located in at 1700 Washington Ave, Port Huron MI 48060. This facility is currently being regulated under RCRA for being a small quantity generator of hazardous material. This facility is also being regulated under the Clean Water Act for holding a major discharge permit. This facility does have an expired permit, but is not considered to be in any violations.

2.2.3 Cargill Salt

Cargill Salt, located in St.Clair, is currently under the following regulations: SPCC, CWA, and RCRA. Cargill operates to produce salt, packages, and then ships.

2.2.4 Detroit Edison Company

Detroit Edison Company, located in East China, is currently under the following regulations: SPCC, FRP, CWA, and RCRA. The DTE company facility is a power plant, operating to produce electric power from fossil fuels, as well as transmission of power to transformers.

2.2.5 Michigan Petroleum Technologies

Michigan Petroleum Technologies, located at 3030 Moak St, Port Huron MI 48060. This facility is current being regulated under an SPCC, which is a self-reported spill prevention plan.

2.2.6 Mueller Brass

Mueller Brass is located at 2199 Lapper Ave, Port Huron MI 48060. This facility is currently being regulated under SPCC, which is a self-reported spill prevention plan. This facility is as regulated under RCRA for being a large quantity generator of hazardous waste, and is currently in noncompliance state for pre-transport waste guidelines.

2.2.7 Detroit Edison Company

This facility is located at 4505 King Road, East China MI 48054. This facility is currently regulated under the Clean Water Act for holding a major discharge permit. This facility is in noncompliance under the clean water act, and has had an expired discharge permit since October 2013. This facility is also regulated under RCRA for being a conditionally exempt small quantity generator of hazardous waste and is

not in any violations. This facility is currently under review by EPA region 5 and the MDEQ to determine if this facility requires a FRP for storage of over a million gallons of oil.

2.2.8 City of Port Huron Waste Water Treatment Plant

This facility is located at 100 Merchant St, Port Huron MI 48060. This facility is currently being regulated under the Clean Water Act for holding a major permit to discharge biosolids, CSO, POTW, and pretreatment. This facility is not in compliance with the Clean Water Act as their permit expired in October of 2013. This facility is also being regulated under RCRA for being a conditionally exempt small quantity generator, and has received no violations under this statute.

2.2.9 City of Marysville Waste Water Treatment Plant

This facility is located at 980 East Huron Blvd, Marysville MI 48040. This facility is currently being monitored under the Clean Water Act as a major discharge permit holder. This facility discharges biosolids, CSO, and POTW. This facility is not considered to be in violation, although the discharge permit expired in October of 2013.

2.2.10 City of Marine City Waste Water Treatment Plant

This facility is located at 1696 South Parker St, Marine City MI 48039. This facility is regulated under the Clean Water Act for holding a major discharge permit to discharge biosolids and POTW. This facilities permit expired in October of 2013, and is considered to be in significant violation due to reporting.

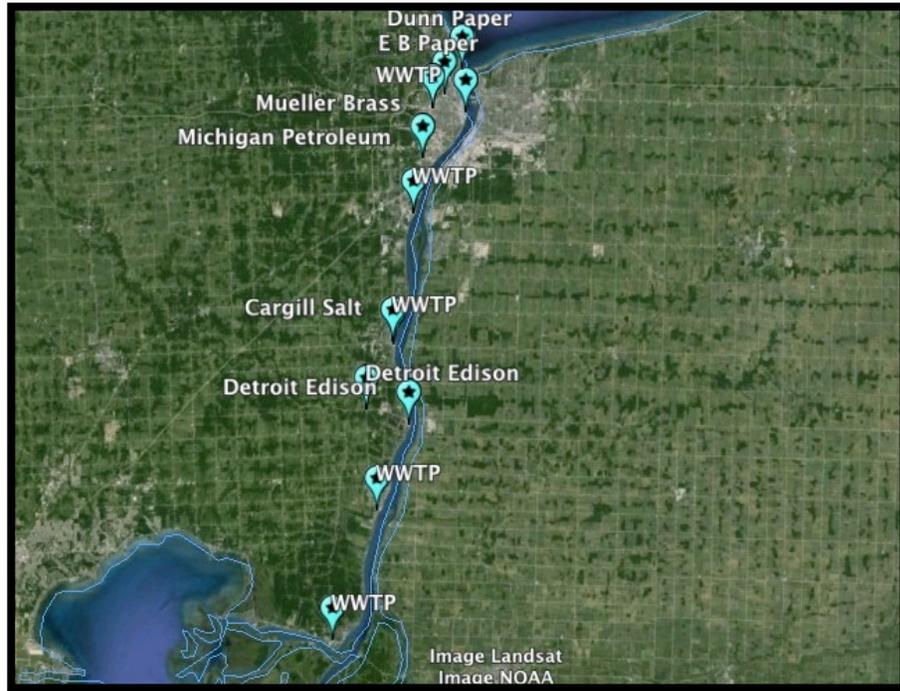
2.2.11 City of Algonac Waste Water Treatment Plant

This facility is located at 451 State Street, Algonac MI 48001. This facility is currently being regulated under the Clean Water Act for holding a major discharge permit to discharge biosolids and POTW. This facility has no violations, but the discharge permit did expire in October of 2013.

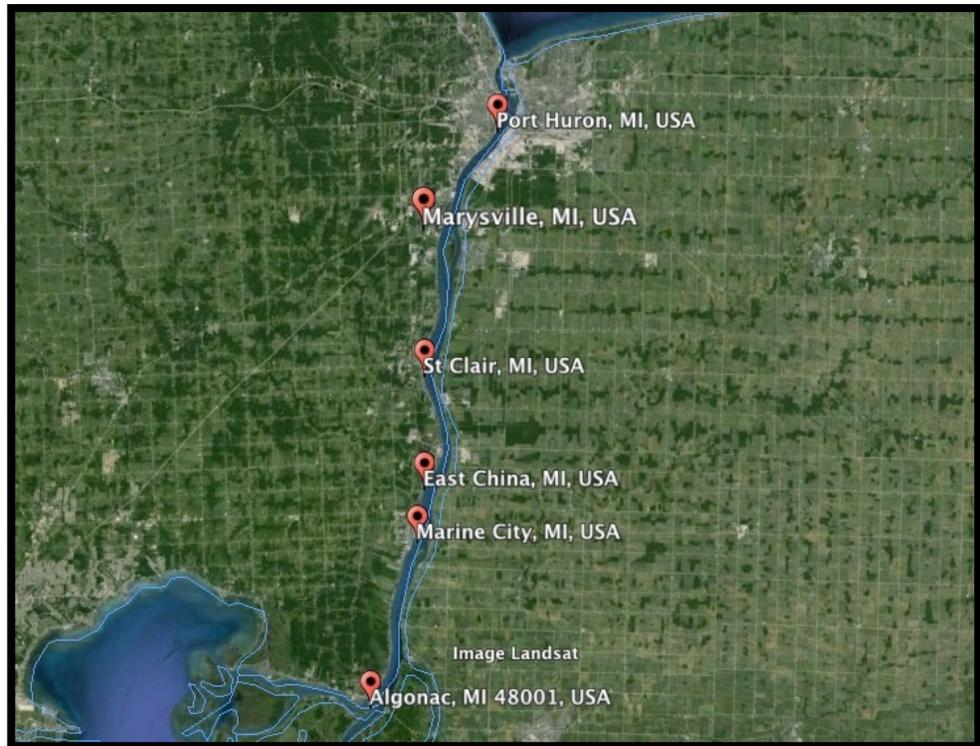
2.2.12 City of St. Clair Waste Water Treatment Plant

This facility is located at 300 Cedar St, St. Clair MI 48079. This facility is currently being regulated under RCRA for being a conditionally exempt small quantity generator of hazardous waste, and is not in violation. The facility is also regulated under the Clean Water Act for holding a major discharge permit to discharge biosolids, CSO, and POTW. The discharge permit expired in October of 2013, and the facility is considered to be in noncompliance, and currently resolving an issue of discharges exceeding limits.

2.3 Map of Facilities of Interest



2.4 Map of St. Clair River Water Intakes



2.5 Summary Table of Facility Compliance Violations

Facility Name	Regulation	Reason
Dunn Paper	Clean Water Act	Serious violation in compliance schedule
E B Paper	Clean Water Act	Expired discharge permit
Mueller Brass	RCRA	Pre-transport of hazardous waste violation
Detroit Edison Company	Clean Water Act	No facility response plan, under review for requirements
Marine City Waste Water Treatment Plant	Clean Water Act	Violation for reporting and expired permit
Marysville Waste Water Treatment Plant	Clean Water Act	Expired permit
St. Clair Waste Water Treatment Plant	Clean Water Act	Exceeding discharge limits, expired permit
Algonac Waste Water Treatment Plant	Clean Water Act	Expired permit

3.0 Results of Water Quality Monitoring Programs for the St. Clair River

3.1 Current Monitoring Programs in the United States

3.1.1 Toxic Release Inventory Michigan- Waste and Water

This monitoring program is run through Michigan Department of Environmental Quality, it conducts annual tests for chemicals in waste and water.

3.1.2 Michigan Permit Compliance System

This monitoring program is run through Michigan Department of Environmental Quality, it operates to monitor effluent for contaminants of concern.

3.1.3. Public Water Supply Surveillance

This monitoring program is run through Michigan Department of Environmental Quality Drinking Water Division, it operates to provide annual monitoring and monthly reporting for source and treated water.

3.1.4. Source Water Assessment Program

This monitoring program is run through Michigan Department of Environmental Quality Drinking Water Division, it operates to identify source waters and to assess them using models of flow.

3.2 Current Monitoring Programs in Canada

3.2.1 NPRI Water and Waste

The monitoring program is operated through Environment Canada. It requires facilities to report spills and produces annual reports of these spills.

3.2.2 UGLCC Water Quality Program

This monitoring program is run through Environment Canada. It tests the St. Clair River seven times a year to measure various chemical concentrations.

3.2.3 St. Clair River Water Quality

This monitoring program is run through Environment Canada. Monthly tests are done on the St. Clair River testing for suspended solids and chemicals within them.

3.2.4 Tributary Priority Pollutant Monitoring

This monitoring program is run through the Ontario Ministry of the Environment. It produces monthly and annual tests of pollutants that the Ministry has deemed as top priority.

3.2.5 Ontario Drinking Water Surveillance

This monitoring program is run through the Ontario Ministry of the Environment. It operates by testing monthly samples of raw and treated water for contaminants.

4.0 Results of Spill Notification Procedures

The current spill notification process is multi-faceted, and has the potential to follow several different pathways. Most importantly, there is a federal system in place if the national response center is notified of a spill. This system involves a cascade of notifications to state and local authorities. However, it is also possible that notification can begin at the state level. The identification of the response plans when spill notification happens at each level is outlined below, as well as their diagrammed interconnectedness.

4.1 Spill Notification Requirements

When a spill is reported to either the National Response Center or the Pollution Emergency Alert System, the same information is asked of reporters regarding the spill. The reporter should be prepared to provide the following: name and address of the reporter, specific location, date and time of incident, name of the material released and quantity, source and cause of release, and medium of discharge. The reporter will also be asked to provide more information in the case of an evacuation or injury.

(EPA, 2011)

4.2 Identification of Local and State Spill Notification and Response Plans

Local authorities, including drinking water facilities, where there are affected waters are notified of spills through the Pollution Emergency Alert System (PEAS). PEAS is a statewide notification system that uses electronic alerts to provide notifications of potential spills so that proper precautions can be taken. If a call is made to the National Response Center, this information will be sent to PEAS, which will then send out a local alert. Similarly, a call can also be made directly to PEAS, which will result in activating the

same notification pathway. Since **over reporting** is never a bad issue, it is recommended to anyone reporting a spill to call both the NRC and PEAS to make sure all bases of proper notification and liability are covered.

Also along the local level of spill notification and response, the Emergency Planning and Community Right-To-Know Act (EPA, 2012) designates local authorities to inform the public of spills that have occurred, as well as responding to public requests for information. The St. Clair County Local Emergency Planning Committee and the Macomb County Local Emergency Planning Committee are the local authorities along the St. Clair River that are notified, and are responsible for notifying the public.

4.3 Identification of Multi-National Notification and Response Plans

Notification of spills across borders is traditionally supposed to follow a federal path of notification between the two countries. However, a memorandum of understanding has been established and agreed upon between the Michigan Department of Environmental Quality and the Canadian Ministry of Environment Spill Action Center. This memorandum has been proven to be effective and practical, and is procedurally followed as explained below.

4.3.1 Spill Notification of a spill originating in the US

For a spill originating in the United States, notification across the border begins when anyone calls one of the following- Michigan State Police, Michigan Department of Environmental Quality, or the PEAS hotline. A Pollution Emergency Communications Coordinator (PECC) from the Michigan Department of Environmental Quality is notified when a spill is reported through any of the above channels. If the PECC determines that the spill reported could cause an impact across the international border, then the PECC would ask Michigan State Police to notify the Canadian Ministry of Environment Spill Action Center. The PECC will also provide the State Police with the contact information of the MDEQ Emergency Management Coordinator to relay to Canadian Authorities.

Even if it is unlikely that the spill will affect Canadian shared waters, the PECC will still call the Michigan State Police with the MDEQ Emergency Management Coordinators contact

information. Additionally, this procedure should still be followed even if the spill is less than 1,000 gallons if it is expected to evoke citizen concern.

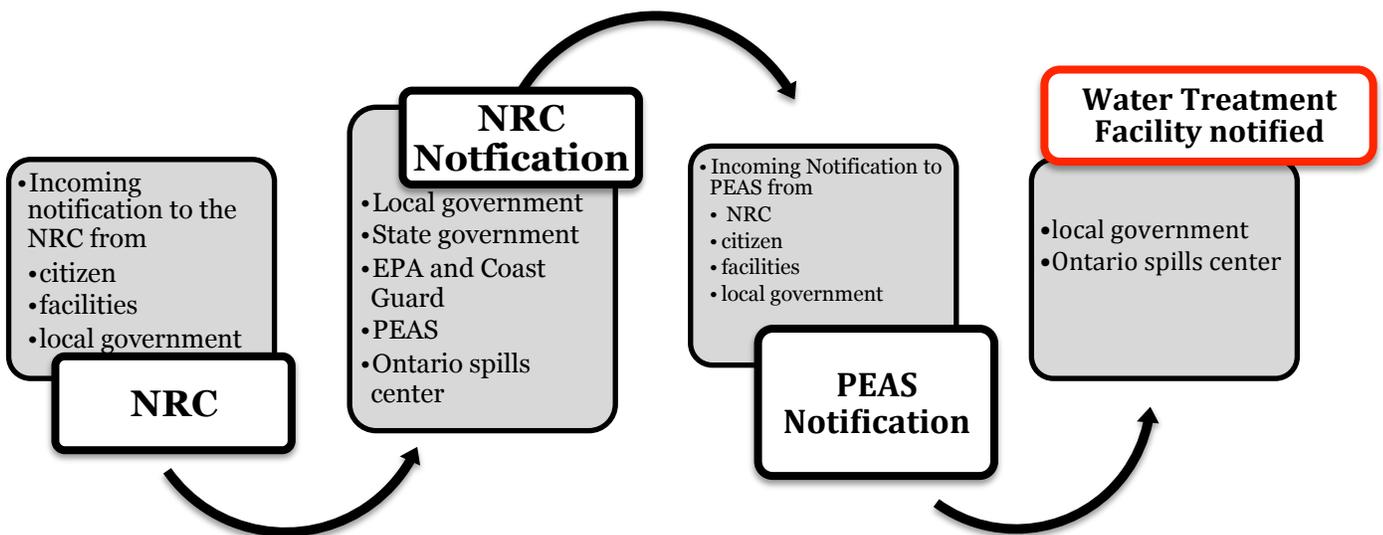
(MDEQ, 2003)

4.3.2 Spill Notification of a Spill Originating in Canada

If a spill originates in Canada, and is determined to potentially affect shared waters, it is agreed that the Canadian Ministry of Environment Spill Action Center will notify the Michigan State Police. The State Police will then contact the PECC, which will then notify the Michigan Department of Environmental Quality and its Emergency Management Coordinator. The PECC will contact the Canadian Ministry of Environment Spill Action Center to provide contact information, as well as the Michigan State Police to confirm Canadian notification of contact information. Canadian authorities will provide the Michigan Department of Environmental quality with updates of the spill.

(MDEQ, 2003)

4.4 The interconnected network of Spill Notification procedures resulting in water treatment facility notification



4.5 Identification of Spill Notification Exercises and Testing

The 2008 Southeast Michigan Area Contingency Plan for oil spills and hazardous wastes has indicated exercises as an essential role in spill notification. Section 1443 of the Area Contingency Plan dictates that preparedness must include testing exercises, along with planning, training, and certification. Furthermore, section 7130 of Federal Policy indicates that it is the US Environmental Protection Agency's Federal On-Scene Coordinator's duty to participate in area contingency planning, which includes spill response exercises.

5.0 Conclusions

5.1 Conclusion of Spill Prevention Criteria

There are a lot of violations in the facilities of interest, especially in regards to permits for discharging hazardous waste. The criteria calls for all of the facilities to be in compliance prior to delisting, so this BUI will bring attention to the issue. Furthermore, facility response plans are self-reported and are being followed by facilities that are required to have one showing cooperation from the facilities for this environmental issue.

5.2 Conclusion of Monitoring Criteria

It is my opinion that this tenant of the criteria needs the most improvement. During my research, it was extremely difficult to find current information regarding monitoring programs in the St. Clair River. Although the monitoring programs that are listed in this report are listed as still being current, there is also a large possibility that they are inactive. Monitoring programs are lacking either due to communication and publishing of monitoring results, or there just may be a lack of monitoring along the river all together. The major set back in regards to monitoring is funding to establish a monitoring program that will last longer than just a couple months or years.

5.3 Conclusion of Notification Criteria

While researching for this project, the PEAS notification system was established for spill notification. The establishment of a notification alert system that spans cities and the state was fifteen years in the making. Due to this new introduction, I believe this tenant of the criteria is now functional. However, this system is new and has yet

to be testing in a real life situation for effectiveness, which could potentially create problems down the road.

5.4 Can it be shown based on the removal criteria that the St. Clair River as a source is protected from spills?

Overall, the gaps in the criteria are not major issues that need to be addressed. Attention to this BUI by governmental agencies will most likely assure a speedy correction to any of the facilities that are not in compliance, and reflecting on current monitoring programs. The criteria have ensured that water is protected from spills at each stage of the spill process. The criteria begins with facility planning to prevent spills from occurring, moves to monitoring of water quality in the event of a spill, and ends at notification of involved parties to notify water treatment facilities to halt the uptake of contaminated water if a spill does occur. Although the potential for a spill can exist each day, the criteria sets forth governmental regulations that will help reduce this possibility. Since industry is a stakeholder in this issue, the idea of eliminating the potential threat of spills altogether is not feasible. However, these criteria offer the best solution in harmonizing all of the stakeholders involved in the beneficial use impairment.

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