

MITIGATION STRATEGIES



Overview

Based on the established hazards and their associated risks, a range of alternative mitigation strategies were considered by the Plan Update Committee, City staff and key stakeholders, utilizing the State and Local Mitigation Planning How-To Guide: Developing the Mitigation Plan. Identification, analysis, and priority of the strategies were based on hazard characteristics, hazard ranking, costs-benefit analysis, benefits, community gain and acceptance and personal experience input from the Plan Update Committee. The analysis incorporated a cost-benefits approach when possible to help identify any potential difficulties or challenges to strategy implementation. Each strategy was categorized as low, moderate or high priority based on assessment of the need for the specific action, the projected cost of implementation, the potential beneficial effects from implementation of the action, and available funding sources. The Plan Update Committee took into consideration the benefits/disadvantages of each strategy and came to censuses of their priority. Many of the original and 2010 Plan Update mitigation strategies were continued into the 2015 Plan Update. These strategies were prioritized using the existing STAPLEE approach.

Mitigation strategies for each hazard identified in the Plan Update are included in this section. Cost estimates, when available, are provided but a more detailed budget will be needed when the strategy is initiated. Potential funding sources, responsible entities and an implementation schedule are also included.

Coastal Hazard Goal: Prepare and protect the health, safety, welfare, environment and infrastructure of residents and visitors during periods of coastal hazard events in the City of Superior.
Drought Hazard Goal: Prepare and protect the health, safety, welfare, environment and infrastructure of residents and visitors during periods of drought hazard events in the City of Superior.
Erosion Hazard Goal: Prepare and protect the health, safety, welfare, environment and infrastructure of residents and visitors during periods of erosion hazard events in the City of Superior.

<p>Thunderstorm Hazard Goal: Prepare and protect the health, safety, welfare, environment and infrastructure of residents and visitors during periods of thunderstorm hazard events in the City of Superior.</p>
<p>Winter Hazard Goal: Prepare and protect the health, safety, welfare, environment and infrastructure of residents and visitors during periods of winter hazard events in the City of Superior.</p>

The Hazard Mitigation Plan Update Committee reviewed the strategies included in the 2004 original plan and the 2010 Plan Update; provided an update for these strategies, including whether each strategy was completed, should be deleted or edited for the Plan Update. Refer to Appendix A for a list of updates to the original and 2010 plan mitigation strategies.

Several of the 2010 mitigation strategies are incorporated into this Plan Update. In addition, the committee identified and prioritized new mitigation strategies, including at least one mitigation strategy for every hazard. Broad goals were developed for each hazard and four objectives were developed. Mitigation strategies that relate to NFIP compliance are noted by an asterisk and a footnote. Because UW-Superior is a school, it is not required to participate in the NFIP. The following table includes the 2015 Plan Update mitigation strategies.

Hazards Addressed	Mitigation Strategy	
	Objective: Increase public awareness of natural weather related hazards	
Hazards Addressed	New Mitigation Strategies Included in the Plan Update	New
Winter Thunderstorm	Perform inventory of all City Streets to identify uncontrolled intersections, or directional flows that are inefficient. Recommend signing to alleviate dangerous intersections. These are particularly dangerous during times of snow accumulation, winter storms, thunderstorms, or poor visibility, and often encourage dangerous shortcuts through residential neighborhoods. <ul style="list-style-type: none"> • <u>Estimated Cost: TBD</u> • <u>Priority Scoring: Medium</u> • <u>Implementation Term: 0-2 years</u> • <u>Responsible Parties: Public Works</u> • <u>Potential Funding Sources: WDNR, EPA, HMGP</u> 	X
Winter Thunderstorm	Identify/Inventory undersized/damaged stormwater conduits in the primary system for projects or for inclusion in future projects to reduce system flood stage and localized flooding potential. <ul style="list-style-type: none"> • <u>Estimated Cost: TBD</u> • <u>Priority Scoring: Medium</u> • <u>Implementation Term: 0-2 years</u> • <u>Responsible Parties: ESDPW Public Works</u> • <u>Potential Funding Sources: HMGP, EPA, WDNR</u> 	X

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Hazards Addressed	Mitigation Strategy	
Winter Thunderstorm	Identify/Inventory undersized/damaged stormwater conduits in the secondary system to reduce localized flooding potential. <ul style="list-style-type: none"> • <u>Estimated Cost:</u> TBD • <u>Priority Scoring:</u> Medium • <u>Implementation Term:</u> 0-2 years • <u>Responsible Parties:</u> ESDPW Public Works • <u>Potential Funding Sources:</u> WDNR, HMGP 	X
Coastal	Consolidate unsafe parking areas on Wisconsin Point and provide safe access to the beaches of Wisconsin Point via elevated boardwalks at strategic and limited locations. The existing beach accesses are unsafe due to unstable sand cross dune beach access that is affected by coastal storms and repeated use. Damage is also occurring to delicate dune habitat and handicap accessibility is non-existent. <ul style="list-style-type: none"> • <u>Estimated Cost:</u> TBD • <u>Priority Scoring:</u> Low • <u>Implementation Term:</u> 2-5 years • <u>Responsible Parties:</u> ESDPW Public Works Parks and Recreation • <u>Potential Funding Sources:</u> WDNR 	X
All	Seek partnership and funds to implement a UW-Extension planning and educational process for Trained Responses to activities in anticipation of future hazards (i.e. Floods). <ul style="list-style-type: none"> • <u>Estimated Cost:</u> TBD • <u>Priority Scoring:</u> Medium • <u>Implementation Term:</u> Immediate (0-2 years) • <u>Responsible Parties:</u> Environmental Services Division of Public Works • <u>Potential Funding Sources:</u> HMGP, CDBG 	X
All	Seek partnership with Douglas County for planning and mitigation efforts that have been successful-to ensure BMPs are known and cost savings are realized. Additional funding would allow FD Staff to work with both Schools and Senior Citizens in the Community. <ul style="list-style-type: none"> • <u>Estimated Cost:</u> TBD • <u>Priority Scoring:</u> Medium • <u>Implementation Term:</u> Immediate (0-2 years) • <u>Responsible Parties:</u> Environmental Services Division of Public Works • <u>Potential Funding Sources:</u> HMGP 	X
Tornado	City of Superior Fire Department Tornado Drill-all area Schools, continuation through the month of October-annual basis. <ul style="list-style-type: none"> • <u>Estimated Cost:</u> TBD • <u>Priority Scoring:</u> Medium • <u>Implementation Term:</u> Immediate (0-2 years) 	X

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Hazards Addressed	Mitigation Strategy	
	<ul style="list-style-type: none"> • <u>Responsible Parties:</u> Environmental Services Division of Public Works • <u>Potential Funding Sources:</u> TBD 	
<p>Thunderstorm Winterstorm</p>	<p>Upgrade the Hill Ave Viaduct. Faxon Creek flows through an old viaduct. This project would replace crumbling infrastructure and upsize the culvert that conveys the creek. This project could reduce flooding elevation in the area by 1.5 feet.</p> <ul style="list-style-type: none"> • <u>Estimated Cost:</u> \$1.1 million • <u>Priority Scoring:</u> High • <u>Implementation Term:</u> Immediate (0-2 years) • <u>Responsible Parties:</u> Environmental Services Division of Public Works • <u>Potential Funding Sources:</u> ESD 	X
<p>Thunderstorm Winterstorm</p>	<p>Develop a project to reduce stormwater impact to Pickle Pond. Pickle Pond is adjacent to the St. Louis River AOC. Rehabilitating the pond to remove contaminated soils and limit pollutants entering it is key to delisting St. Louis River as impaired waters.</p> <ul style="list-style-type: none"> • <u>Estimated Cost:</u> \$1 million • <u>Priority Scoring:</u> Medium • <u>Implementation Term:</u> Immediate (0-2 years) • <u>Responsible Parties:</u> Environmental Services Division of Public Works, DNR, Fish & Wildlife, NERR • <u>Potential Funding Sources:</u> DNR, US Fish & Wildlife, Army Corps of Engineers, WI Coastal, Clean Water State Revolving Fund, EPA 	X
<p>Thunderstorm Winterstorm</p>	<p>Expand the current capacity of the Butler Dry Detention Basin. By increasing capacity to the basin, it would alleviate upstream flooding issues. The Faxon Creek Watershed is upstream of the basin and still experiences flooding issues.</p> <ul style="list-style-type: none"> • <u>Estimated Cost:</u> \$750,000 • <u>Priority Scoring:</u> Low • <u>Implementation Term:</u> • <u>Responsible Parties:</u> Environmental Services Division of Public Works • <u>Potential Funding Sources:</u> WI Coastal, Clean Water State Revolving Fund, EPA, DNR <p>2015 Update Comments: Goal is to convert the dry pond to a wet detention pond, treating SW for TSS and increasing detention capabilities while simultaneously preparing for increased demand from possible natural hazards .</p>	X
<p>Erosion Thunderstorm Winterstorm</p>	<p>Moccasin Mike Road Reconstruction is a project to address structural, drivability, width, and safety issues along Moccasin Mike Road. Moccasin Mike Road is the sole access serving a municipal landfill and the recreational and culturally significant area of Wisconsin Point. The project would not only include roadway reconstruction but would also address multiple, large-diameter culvert crossings that undermine the stability of the roadway and impact stream and embankment erosion.</p> <ul style="list-style-type: none"> • <u>Estimated Cost:</u> \$2 - \$3 million • <u>Priority Scoring:</u> High • <u>Implementation Term:</u> Immediate (0-2 years) • <u>Responsible Parties:</u> Public Works Department 	X

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Hazards Addressed	Mitigation Strategy	
	<ul style="list-style-type: none"> • <u>Potential Funding Sources:</u> EPA, DNR, WisDot 	
<p>Thunderstorm Winterstorm</p>	<p>Develop a project that mitigates flooding issues and basement backups in the Northeastern part of Billings Park. This area has combined system and has experienced sewer issues. The existing pipes are currently undersized for the number of homes developed in the area. The project could potentially include connecting the northern part of Billings Park to the wet detention pond.</p> <ul style="list-style-type: none"> • <u>Estimated Cost:</u> \$500,000 • <u>Priority Scoring:</u> High • <u>Implementation Term:</u> 0-5 years • <u>Responsible Parties:</u> Environmental Services Division of Public Works • <u>Potential Funding Sources:</u> WI Coastal, Clean Water State Revolving Fund, EPA, DNR 	<p>X</p>
<p>Thunderstorm Winterstorm</p>	<p>Purchase land and develop Apple Pond project. This pond would collect storm flow from the Tower Ave corridor and Winter Street corridor and alleviate sewer backups in the area.</p> <ul style="list-style-type: none"> • <u>Estimated Cost:</u> \$1 million • <u>Priority Scoring:</u> Medium • <u>Implementation Term:</u> 5-10 years • <u>Responsible Parties:</u> Environmental Services Division of Public Works • <u>Potential Funding Sources:</u> WI Coastal, Clean Water State Revolving Fund, EPA, DNR 	<p>X</p>
<p>Actions:</p>		
<p>All</p>	<p>Maintain the Hazard Mitigation page on the City’s website to distribute information, encourage participation and coordinate with other organizations.</p> <ul style="list-style-type: none"> • <u>Estimated Cost:</u> Staff time • <u>Priority Scoring:</u> High • <u>Implementation Term:</u> Immediate-ongoing • <u>Responsible Parties:</u> Environmental Services Division of Public Works • <u>Potential Funding Sources:</u> Department budget <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • The City of Superior Hazard Mitigation Website will continue to remain updated and maintained. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • The City of Superior will manage social media in conjunction with the Hazard Mitigation Website 	
<p>All</p>	<p>Compile and distribute educational materials regarding weather related hazards.</p> <ul style="list-style-type: none"> • <u>Estimated Cost:</u> \$5,000 • <u>Priority Scoring:</u> Medium • <u>Implementation Term:</u> Ongoing • <u>Responsible Parties:</u> Various City Departments 	

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Hazards Addressed	Mitigation Strategy
	<ul style="list-style-type: none"> • <u>Potential Funding Sources:</u> WCMG, EMPS <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • ESDPW has developed and distributed literature focused on flooding mitigation techniques. Educational information includes: Stormwater Flood Control Program-what to do when a sewer backup occurs. This is an ongoing strategy. Red Cross distributes information on weather-related hazards as well. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • Red Cross, Disney and the City of Superior will approach local schools to discuss and distribute information associated with disaster preparedness. • Red Cross and the City of Superior anticipate working towards hosting a “Install” of free smoke detectors. Installation is part of the communication effort and ensures proper usage.
<p>All</p>	<p>Encourage educators in the Superior School District, UW-Superior and WITC to incorporate local natural hazard related material into their educational curricula. An updated version of the Hazard Mitigation Plan is available on the City Website.</p> <ul style="list-style-type: none"> • <u>Estimated Cost:</u> \$250-\$500 annually • <u>Priority Scoring:</u> Medium • <u>Implementation Term:</u> Ongoing • <u>Responsible Parties:</u> Environmental Services Division of Public Works • <u>Potential Funding Sources:</u> WCMG, EMPG <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • This is an ongoing strategy. The Hazard Mitigation Plan is on the City Website and is updated at least annually. All educators are encouraged to view it. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • Removed the pursuit of having updated ‘printed’ copies at all educational centers and reinforce through the City Website and Social Media that availability of the Plan-both saving the environment and general funds.
<p>Coastal Erosion Thunderstorm</p> <p>*Continued compliance with the NFIP</p>	<p>* Participate in and help to promote any applicable local workshops to distribute informational materials to improve understanding and enforcement specifically of stormwater, floodplain, shoreline and wetland regulations in the City.</p> <ul style="list-style-type: none"> • <u>Estimated Cost:</u> Staff time and event based • <u>Priority Scoring:</u> Medium • <u>Implementation Term:</u> Ongoing • <u>Responsible Parties:</u> Various City Departments • <u>Potential Funding Sources:</u> Department budget <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • In 2010 the City ESDPW hosted a Riparian landowner workshop that included topics such as erosion control and stream bed/shoreline restoration. The workshop was offered to riparian landowners in the City. • In 2012, ESDPW sponsored a Low Impact Development workshop targeting engineers, developers, planners and other water resource professionals. • In 2015 ESDPW promoted a Rain Garden Workshop for homeowners that was offered by MN Sea Grant and the Regional Stormwater Protection Team. Workshop was not held due to low registrants. • ESDPW applied for a 2016-2017 WI Coastal Management Grant to host a workshop to educate contractors and consultants about

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Hazards Addressed	Mitigation Strategy
	<p>erosion control and stormwater management regulations in the City.</p> <p>2015 Update Comments</p> <ul style="list-style-type: none"> • Changed implementation to ‘ongoing’ in order to build upon the growth of ‘in person’ events and educational opportunities.
	<p align="center">Objective: Educate and encourage property owners, developers, local officials and other stakeholders to take action to decrease their vulnerability to the impacts of natural hazards.</p>
	<p>Actions:</p>
<p>Erosion Thunderstorm</p>	<p>Encourage and educate owners of large impervious areas regarding stormwater best management practices in order to mitigate stormwater damage.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$5,000-\$10,000 • <u>Priority Scoring</u>: High • <u>Implementation Term</u>: Ongoing • <u>Responsible Parties</u>: Environmental Services Division of Public Works • <u>Potential Funding Sources</u>: PDM, HMPG <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • The Stormwater Utility offers and promotes a Credit Program to Non-Single Family Unit Customers. Within this Credit Program, customers contain and reduce runoff from their properties. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • Both the cost to implement and implementation term has been adjusted to reflect the staff cost and material creation and printing. • The City SWU will continue to operate and evolve based upon use and regulatory requirements.
<p>Coastal Erosion Thunderstorm Winterstorm</p> <p>*Continued compliance with the NFIP</p>	<p>* Develop a public education strategy to encourage the use of building practices that mitigate hazard damage on new and existing buildings and infrastructure.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: Staff time, TBD • <u>Priority Scoring</u>: Medium • <u>Implementation Term</u>: Ongoing • <u>Responsible Parties</u>: Environmental Services Division of Public Works, Planning and Zoning Department, Building Inspection Division of Public Works, and various other City Departments as applicable • <u>Potential Funding Sources</u>: EMPG, CDBG <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • ESDPW offers a Stormwater Credit Program to Non Single Family Unit Developers. Within this Credit Program, developers implement approved best management practices that contain and reduce stormwater runoff on the property. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • The implementation term has been changed to ‘ongoing’ • Both ESDPW, Public Works and Building Inspection are working in tandem to outline future development impacts as part of their educational material at project inception.
<p>Erosion</p>	<p>Develop literature and other educational strategies to encourage property owners to take measures to prevent erosion on their property including planting ground cover on slopes and building retaining walls where necessary.</p>

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Hazards Addressed	Mitigation Strategy
	<ul style="list-style-type: none"> • <u>Estimated Cost</u>: Staff time/Event cost TBD • <u>Priority Scoring</u>: Medium • <u>Implementation Term</u>: Ongoing • <u>Responsible Parties</u>: Environmental Services Division of Public Works, Parks and Recreation Department • <u>Potential Funding Sources</u>: Wisconsin’s Shoreland Management Program, WCMP, EAA, RPG1, RPG2, LPG, URGP, LWCF <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • ESDPW has continually developed and distributed educational materials encouraging property owners to plant native plants, build rain gardens and other stream stabilization activities to prevent erosion. In 2011 ESDPW held a native tree sale for homeowners. • ESDPW applied for a 2016-2017 WI Coastal Management Grant to host a workshop to educate contractors and consultants about erosion control and stormwater management regulations in the City. <p>Update Comments</p> <ul style="list-style-type: none"> • The implementation term has been updated to ‘ongoing’ as the 2011 tree sale was successful, the City would be pursuing additional strategies to build upon these mitigation benefits.
<p>All</p>	<p>Develop a hazard tree assessment and a tree storm damage plan.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: TBD • <u>Priority Scoring</u>: Medium • <u>Implementation Term</u>: Short (2-5 years) • <u>Responsible Parties</u>: City of Superior Parks and Recreation Department • <u>Potential Funding Sources</u>: PDM, HMPG <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • No action <p>2015 Update Comments</p> <ul style="list-style-type: none"> • City Parks and Recreation will continue to pursue funding opportunities to complete this mitigation strategy.
<p>All</p>	<p>Continue participation and implementation of the Community Development Block Grant and other related programs, focusing on mitigating damage from hazard events.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: TBD • <u>Priority Scoring</u>: Low • <u>Implementation Term</u>: Ongoing • <u>Responsible Parties</u>: Superior Planning Department, Community Development Block Grant Advisory Board • <u>Potential Funding Sources</u>: CDBG, CDBG-PEFP, CDBG-PFP <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • The City implements annual application and expenditure of funds as an entitlement community. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • The implementation term is changed to ‘ongoing’ as the City participates annually.

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Hazards Addressed	Mitigation Strategy
Objective: Encourage research to quantify the effects of hazards on City of Superior resources	
Actions:	
<p>All</p>	<p>Seek a partnership and develop resources to provide shoreline and dune restoration at Wisconsin Point.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$1.4 million • <u>Priority Scoring</u>: High • <u>Implementation Term</u>: Short Term (2-5 years) • <u>Responsible Parties</u>: Environmental Services Division of Public Works • <u>Potential Funding Sources</u>: HMGP, PDM, EAA, EPA <p>Action: 2010-2015</p> <ul style="list-style-type: none"> • ESDPW applied for funding through multiple agencies. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • The City will continue to pursue avenues of partnership and funding for Wisconsin Point.
<p>All</p>	<p>Develop and maintain a geographic database for natural hazard events, including location, weather conditions and resulting damage.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: Staff time • <u>Priority Scoring</u>: Medium • <u>Implementation Term</u>: Ongoing • <u>Responsible Parties</u>: Environmental Services Division of Public Works • <u>Potential Funding Sources</u>: HMGP, PDM, EAA <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • ESDPW maintains a database of sewer call-outs for each rain event. No progress in developing a centralized database of hazard events. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • Update the GIS to create a parcel layer for natural hazard events based upon past statistics. • Implementation term is now ongoing, as the GIS is actively managed and updated.
<p>Thunderstorm Winterstorm</p>	<p>Conduct a comprehensive survey aimed at identifying areas of yard and street flooding.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$12,000 • <u>Priority Scoring</u>: Medium • <u>Implementation Term</u>: Immediate (0-2 years) • <u>Responsible Parties</u>: Environmental Services Division of Public Works, City Council/Mayor • <u>Potential Funding Sources</u>: WCMP, PDM, FMA, LPG <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • ESDPW has not made any changes at this time. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • The City is researching further since the 2012 flood event, the impacted central business district and surrounding residential properties-apply to the GIS database. • Pursuit of funding will be a priority in the coming year to complete the survey process.

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Hazards Addressed	Mitigation Strategy
<p>All</p> <p>*Continued compliance with the NFIP</p>	<p>* Develop resources, including digital infrared ‘orthophoto’ mapping, to identify locations of potential hazard areas for use in property and resource management in the City. This effort should include detailed mapping of coasts and shorelines for the purpose of coastal management and determining erosion rates in coastal areas.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$150,000 • <u>Priority Scoring</u>: Low • <u>Implementation Term</u>: Short (2-5 years) • <u>Responsible Parties</u>: Public Works Department, Planning and Zoning Department • <u>Potential Funding Sources</u>: WCMP, PDM, FMA, MFCG, OLIS <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • Funding unavailable, no action taken at this time. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • Funding pursuit will continue. Discussion with Douglas County will occur for a larger use of equipment and mutual aid.
<p>Coastal Erosion</p>	<p>Encourage research and education efforts through beach and stream monitoring.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: TBD • <u>Priority Scoring</u>: Low • <u>Implementation Term</u>: Short Term (2-5 years) • <u>Responsible Parties</u>: Environmental Services Division of Public Works, UW-Extension • <u>Potential Funding Sources</u>: WCMG, EMPG <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • The Lake Superior National Estuarine Research Reserve (NERR) of UW-Superior has done monitoring of the St. Louis Estuary. • In 2015 ESDPW applied for EPA Urban Waters Small Grant to develop small stream monitoring program <p>2015 Update Comments</p> <ul style="list-style-type: none"> • The City will continue to support UW-Superior and the NERR through its participation of grant writing support and pursuit of funding to stabilize erosion areas as outlined in the Donohue and Associates report.
<p>Erosion</p>	<p>Seek a partnership with a research institution to determine erosion rates and erosion hazards along publicly and privately owned shorelines within the City. Integrate the new information into land use planning, comprehensive planning and public education whenever feasible.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: TBD • <u>Priority Scoring</u>: Low • <u>Implementation Term</u>: Short (2-5 years) • <u>Responsible Parties</u>: Public Works Department, Planning and Zoning Department, Superior City Council, Parks and Recreation • <u>Potential Funding Sources</u>: WCMP, PDM, FMA, RPG1, LPG, MFCG <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • No updates. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • Bayfield County and UW-Eau Claire completed a shoreline erosion study. Coordination efforts will begin to what format the data is in and how the partnership started.

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	Objective: Minimize human, economic and environmental disruption from natural hazards
	Actions:
Thunderstorm Winterstorm Coastal Erosion	<p>Create a long-term Stormwater Management Plan.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$60,000 - \$80,000 • <u>Priority Scoring</u>: High • <u>Implementation Term</u>: Immediate (0-2 years) • <u>Responsible Parties</u>: Environmental Services Division of Public Works • <u>Potential Funding Sources</u>: Lake Superior Coastal Management, Wisconsin’s Shoreland Management Program, University of Wisconsin Sea Grant Program, WCMP, MFCG, HMGP, PDM, EMPG, DNR <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • ESDPW is currently working on changes to the Stormwater Program and creating a long-term stormwater management plan. The plan is likely to be linked with a more comprehensive plan for the ESDPW. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • Reapply for funding to complete task. The anticipated cost remains the same.
Thunderstorm Winterstorm Tornado	<p>Install a backup generator at the municipal garage gasoline pumps. Critical public safety vehicles are fueled at this location.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: TBD • <u>Priority Scoring</u>: High • <u>Implementation Term</u>: Immediate (0-2 years) • <u>Responsible Parties</u>: Streets Division of Public Works • <u>Potential Funding Sources</u>: PDM, HMGP, EMPG, AFG <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • No updates. <p>2015 Update Comments:</p> <ul style="list-style-type: none"> • Funding opportunities exist through potential Assistance to Firefighters funding. Funding cycle dependent upon annual AFG funding.
Thunderstorm Winterstorm	<p>Allocate and or facilitate the acquisition of emergency generators for Environmental Services Division facilities. Acquisition of a generator for the main wastewater treatment plant is necessary, as this facility lacks backup power and cannot operate in the event of an electrical outage. Portable generators are needed for the lift stations. Additional items such as foundations, hook-ups and transport of these generators are also necessary. Upgraded phase protection for all motors at the main facility and lift stations is also needed to protect from lightning damage.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$1.5 million • <u>Priority Scoring</u>: High • <u>Implementation Term</u>: Immediate (0-2 years) • <u>Responsible Parties</u>: Environmental Services Division of Public Works • <u>Potential Funding Sources</u>: PDM, HMPG <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • Ongoing facility planning is considering size and scope of power needs at the main WWTP. CSTEP 2 can act as a 24-hour storage

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Hazards Addressed	Mitigation Strategy
	<p>basin during power outages. There are currently 2 portable generators to be used as necessary for lift stations.</p> <p>2015 Update Comments</p> <ul style="list-style-type: none"> • ESDPW would add that other beneficial projects included new transformers at the main facility and new Programmable Logic Controllers (PLCs) at lift stations. These will aid in the functioning of the plant and optimize the flow through lift stations. • Priority moved to medium.
<p>Thunderstorm Winterstorm</p>	<p>Develop a project to determine the maximum capacity of the Main Wastewater Treatment Plant. This determination is an important step in developing a control strategy to route and store flows in the upstream system.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$105,000 • <u>Priority Scoring</u>: High • <u>Implementation Term</u>: Ongoing • <u>Responsible Parties</u>: Environmental Services Division of Public Works • <u>Potential Funding Sources</u>: PDM, HMGP <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • This is an ongoing strategy. The main strategy has been to reduce SSO's and basement backups by improving collection system flow into the main WWTP. Completed projects to improve flow include; new pumps installed at Lift Station 5 and improvements to the East 2nd St. Diversion Chamber. These projects improve flow into the plant and allow for better understanding of the maximum capacity. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • Monitor flow and design capacity with 2016 pump overhaul and installation.
<p>Thunderstorm Winterstorm</p>	<p>Develop a system wide hydrologic and hydraulic model of the wastewater/stormwater collection system to analyze improvements to the system.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$300,000 • <u>Priority Scoring</u>: High • <u>Implementation Term</u>: 5 years • <u>Responsible Parties</u>: Environmental Services Division of Public Works • <u>Potential Funding Sources</u>: PDM, HMGP <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • There is a skeleton of a model for the city-wide wastewater collection system. It only includes the main trunks of the system, not every node, nor every line. A response to the June 2012 flood, a hydrologic and hydrologic (stormwater) model of the Faxon Creek watershed has been developed. There is no city-wide stormwater model. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • Increase estimated cost to \$300,000 • Increase implementation to 5 years
<p>Thunderstorm Winterstorm</p>	<p>Develop a project to evaluate the functionality of the Winter Street Diversion Chamber to assist in flow routing during wet weather events.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$25,000 • <u>Priority Scoring</u>: High

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Hazards Addressed	Mitigation Strategy
	<ul style="list-style-type: none"> • <u>Implementation Term</u>: Immediate (0-2 years) • <u>Responsible Parties</u>: Environmental Services Division of Public Works • <u>Potential Funding Sources</u>: PDM, HMGP <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • Some maintenance has been done to the chamber. Efforts have been made to determine the scope of work necessary at the Winter Street Diversion Chamber. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • Cost increase due to updated Engineering estimates.
<p>Thunderstorm Winterstorm</p>	<p>Develop a project to evaluate the capacity and/or storage at Lift Station No. 5.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$40,000 • <u>Priority Scoring</u>: High • <u>Implementation Term</u>: Immediate (0-2 years) • <u>Responsible Parties</u>: Environmental Services Division of Public Works • <u>Potential Funding Sources</u>: PDM, HMGP <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • The physical limitations restrict additional storage at Lift Station #5, but a project completed in 2015 upgraded pumps. This allows water to flow through better and rely less on the storage capacity at Lift Station 5. The next step is to determine real-time management of the pumps as to not stress the downstream system with excessive flow. • A new larger forcemain is also in the works. This will allow more water to pass through the system, optimizing storage capacity at Lift Station 5. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • City will monitor the Lift Station 5 for flow rate and restrictions. Cost may change based upon results.
<p>Thunderstorm Winterstorm</p>	<p>Develop a project to develop and evaluate alternatives to increase capacity (flow and storage) for CSTP 2.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$40,000 • <u>Priority Scoring</u>: High • <u>Implementation Term</u>: Immediate (0-2 years) • <u>Responsible Parties</u>: Environmental Services Division of Public Works • <u>Potential Funding Sources</u>: PDM, HMGP <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • A system was installed in 2015 to automate the effluent discharge of CSTP #2. This allows for better utilization of the current storage capacity as it is no longer dependent on a person to manually start the system during extreme flows. <i>A flow meter is in consideration to further optimize the capacity of CSTP #2 by directing flow to the main treatment process after wet weather events.</i> <p>2015 Update Comments</p> <ul style="list-style-type: none"> • Cost update based upon Engineer review.

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Hazards Addressed	Mitigation Strategy
<p>Thunderstorm Winterstorm</p>	<p>Develop a project to determine the capacity of additional conveyance from the Central Business District to Combined Sewer Treatment Plant (CSTP) #2 by hydrologic and hydraulic modeling and develop feasible improvement options.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$30,000 • <u>Priority Scoring</u>: High • <u>Implementation Term</u>: Immediate (0-2 years) • <u>Responsible Parties</u>: Environmental Services Division of Public Works • <u>Potential Funding Sources</u>: PDM, HMGP
<p>All</p> <p><i>*Continued compliance with the NFIP</i></p>	<p>* Work in cooperation with community planning and zoning efforts with regard to hazard mitigation efforts. This effort should address the effects of hazards on new and existing building and infrastructure.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$50,000 • <u>Priority Scoring</u>: Medium • <u>Implementation Term</u>: Immediate (0-2 years) • <u>Responsible Parties</u>: Various City of Superior Departments • <u>Potential Funding Sources</u>: Lake Superior Coastal Management, Wisconsin’s Shoreland Management Program, University of Wisconsin Sea Grant Program, WCMP, MFCG, HMGP, PDM, EMPG <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • ESDPW, PW and Building Inspection have worked on new permitting processes associated with building within the City. 2015 Update Comments • ESDPW will discuss potential hazard mitigation strategies for flooding and erosion hazards, which have affected multiple structures during the 2012 flood. • Cost update based upon projected effort to complete and implement process.
<p>All</p>	<p>Provide technical assistance in applying for mitigation funding on behalf of private or otherwise non-eligible parties seeking aid in improving the structural, social and economic security of the Port.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: TBD • <u>Priority Scoring</u>: Medium • <u>Implementation Term</u>: Short (2-5 years) • <u>Responsible Parties</u>: Superior Planning Department/ City of Superior Port Development Authority (Planning Commission, Waterfront Redevelopment Commission, Superior Board of Harbor Commissioners, Harbor Technical Advisory Committee) • <u>Potential Funding Sources</u>: EAP, HMGP, PDM, WCMP, SBL, PWDF, HAP <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • No changes.
<p>Coastal Thunderstorm Winterstorm</p>	<p>Continue the Residential Property Buyout Program to fund the mitigation of properties that may or may not be located in the floodplain but suffer repetitive loss claims to the City of Superior.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$150,000-\$350,000 • <u>Priority Scoring</u>: Medium • <u>Implementation Term</u>: Immediate (0-2 years) • <u>Responsible Parties</u>: City of Superior Planning and Zoning Department

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Hazards Addressed	Mitigation Strategy
	<ul style="list-style-type: none"> • <u>Potential Funding Sources</u>: HMGP, PDM, FMA <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • ESDPW applied for and received funding to buyout property that had been damaged from basement flooding. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • City was successful is buyout of property. The site was turned to green space. Having gone through the process, the cost has been updated to include a range of property values in higher risk (flood) areas.
<p>Coastal Thunderstorm Winterstorm</p>	<p>Maintain and upgrade a comprehensive warning system to include the entire City of Superior. The comprehensive system may include:</p> <ul style="list-style-type: none"> ▪ Commercial or public radio and/or TV stations ▪ Cable TV emergency news inserts ▪ Telephone trees/mass telephone notification: “First Call” ▪ Outdoor siren system* ▪ NOAA Weather Radio ▪ Community Emergency Response Teams (CERT) * (* elements are currently not active in the City) <ul style="list-style-type: none"> • <u>Estimated Cost</u>: TBD • <u>Priority Scoring</u>: Medium • <u>Implementation Term</u>: Short (2-5 years) • <u>Responsible Parties</u>: City of Superior, cooperative with Douglas County Emergency Management, Public Safety Committee, Superior Police Department, Superior Fire Department • <u>Potential Funding Sources</u>: HMGP, PDM, EMPG, CDBG <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • No changes
<p>Coastal Thunderstorm Winterstorm</p>	<p>Participate in “StormReady”: The National Weather Service established the StormReady program to help local governments improve the timeliness and effectiveness of hazardous weather related warnings for the public. To be officially StormReady, a community must:</p> <ul style="list-style-type: none"> ▪ Establish a 24-hour warning point and emergency operations center ▪ Have more than one way to receive severe weather warnings and forecasts and to alert the public ▪ Create a system that monitors weather conditions locally ▪ Promote the importance of public readiness through community seminars ▪ Develop a formal hazardous weather plan, which includes training severe weather spotters and holding emergency exercises <ul style="list-style-type: none"> • <u>Estimated Cost</u>: Staff time • <u>Priority Scoring</u>: Medium • <u>Implementation Term</u>: Short (2-5 years) • <u>Responsible Parties</u>: City of Superior, Douglas County Emergency Management, Public Safety Committee • <u>Potential Funding Sources</u>: HMGP, PDM, EMPG, CDBG <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • No changes. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • Project remains important and funding will be outlined for any possibility.

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Hazards Addressed	Mitigation Strategy
<p>Coastal Thunderstorm Winterstorm</p>	<p>Encourage the acquisition of NOAA weather radios for all unequipped critical facilities.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: TBD • <u>Priority Scoring</u>: Medium • <u>Implementation Term</u>: Immediate (0-2 years) • <u>Responsible Parties</u>: City of Superior, Douglas County Emergency Management, Superior Fire/Police Department • <u>Potential Funding Sources</u>: HMGP, PDM, EMPG, CDBG <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • No changes. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • Project remains important and funding will be outlined for any possibility.
<p>Coastal Erosion</p>	<p>Implement the goals and objectives consistent with the Nemadji River Basin Project to reduce erosion and sedimentation at the mouth and along the banks of the Nemadji River.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: TBD • <u>Priority Scoring</u>: Medium • <u>Implementation Term</u>: Short (2-5 years) • <u>Responsible Parties</u>: Environmental Services Division of Public Works, Parks and Recreation Department • <u>Potential Funding Sources</u>: Lake Superior Coastal Management, Wisconsin’s Shoreland Management Program, University of Wisconsin Sea Grant Program, U.S. Dept of Agriculture, WCMP, EAA, RPG1, RPG2, LPG, URGP, ADLP, AUGS, LWCF, MFCG, TEF <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • No changes. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • Project remains important and funding will be outlined for any possibility.
<p>Drought Thunderstorm</p>	<p>Improve fire and emergency response access to the Superior Municipal Forest and adjacent neighborhoods by participating in training offered annually by the Wisconsin Department of Natural Resources.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: Staff time • <u>Priority Scoring</u>: Medium • <u>Implementation Term</u>: Short (2-5 years) • <u>Responsible Parties</u>: Superior Fire Department • <u>Potential Funding Sources</u>: HMGP, PDM, EMPG, PWDF <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • No changes. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • Project remains important and funding will be outlined for any possibility.

Hazards Addressed	Mitigation Strategy
<p>Thunderstorm Winterstorm</p>	<p>Increase storm and combined sewer capacity and decrease inflow/infiltration to maximize capacity of storm and combined sewers to prevent sewer overflows during heavy rain events.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: TBD • <u>Priority Scoring</u>: Medium • <u>Implementation Term</u>: Short (2-5 years) • <u>Responsible Parties</u>: Environmental Services Division of Public Works • <u>Potential Funding Sources</u>: PDM, HMPG <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • There was a sewer lining project of the 10-foot diameter pipe that conveys Faxon Creek at Central Park, completed in 2014. Old brick were removed and shotcrete applied, this increased the hydraulic efficiency by 30% for a 100-year storm and decreases flood elevation level by 2 feet for 100-year storm for the surrounding area. Project was partially funded through FEMA. • ESD continually performs sewer lining projects to minimize I&I and maximize the capacity of storm and combined sewers. • The City’s Stormwater Flood Control Project is an ongoing effort to reduce inflow and infiltration entering the sanitary and combined sewer system through private plumbing. • From August 2014 to August 2015, there were no sanitary sewer overflows. This is the first time in the history of the City sewer system without a discharge of untreated sewage to the environment for a 1-year period. <p>2015 Update Comment</p> <ul style="list-style-type: none"> • Project remains important and funding will be outlined for any possibility
<p>Thunderstorm Winterstorm</p>	<p>Investigate the feasibility of implementing a relief storm sewer project to separate stormwater from sanitary sewers to avoid sewer overflows and prevent the release of untreated sewage.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: TBD • <u>Priority Scoring</u>: Medium • <u>Implementation Term</u>: Short (2-5 years) • <u>Responsible Parties</u>: Environmental Services Division of Public Works • <u>Potential Funding Sources</u>: PDM, HMPG <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • Storm sewers were added in several areas that previously was served by combined system. Roughly 9000 feet of storm sewers were added along Tower Ave in 2013. In 2015, approximately 700 feet of storm sewer were installed in Fisher Ave and 700 feet in Clough Avenue. This separation reduces the likelihood of basement flooding and sewer overflows. • Also, Billings Park, South Superior, Central Business District are all projects include the addition of storm sewers, separating from existing combined sewers. • Improvements were made at Lift Station 4 and forcemain in 2015. The installation of an 18” HDPE pipe (previously a 16” ductile iron pipe) will increase capacity of flow and reduce the potential for sanitary sewer overflows and sewer backups in the area. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • Edit to say “<i>Increase the capacity of sewer system by adding relief storm sewers to separate stormwater from sanitary sewers to avoid sewer overflows and prevent the release of untreated sewage</i>”

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Hazards Addressed	Mitigation Strategy
<p>Thunderstorm Winterstorm</p>	<p>Develop and distribute information on alternate routing for motorists in the event of hazardous storm conditions or evacuation to assist motorists in travel without avoidable delays to work, home, or other destinations and to conduct an efficient and orderly evacuation of the City.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: TBD • <u>Priority Scoring</u>: Medium • <u>Implementation Term</u>: Short (2-5 years) • <u>Responsible Parties</u>: Public Works Department, WisDOT • <u>Potential Funding Sources</u>: WisDOT, EMPG, CDBG-PEFP, CDBG-PFP, FDA, TEF, OLIS <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • No changes. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • Project remains important and funding will be outlined for any possibility.
<p>Thunderstorm Winterstorm</p>	<p>Cooperate with Wisconsin Department of Transportation to implement ITS (Intelligent Transportation System) for District 8. This project seeks to improve safety and dissemination of real-time information to commuters and travelers to improve traffic flow and decrease secondary delays, including accidents and can apply to travel during inclement weather and during disasters.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: TBD • <u>Priority Scoring</u>: Medium • <u>Implementation Term</u>: Short (2-5 years) • <u>Responsible Parties</u>: Public Works Department, WisDOT • <u>Potential Funding Sources</u>: WisDOT, EMPG, CDBG-PEFP, CDBG-PFP, FDA, TEF, OLIS <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • No changes. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • Project remains important and funding will be outlined for any possibility.
<p>Thunderstorm Winterstorm</p>	<p>Cooperate/facilitate/support installation, operation, and maintenance of Variable (Changeable) Message Signs (VMS), Road Weather Information Sensors (RWIS), and use of these tools for public education to promote safe travel within Superior and between Superior, Wisconsin and Duluth, Minnesota. District 8 ITS proposes the following:</p> <ul style="list-style-type: none"> ▪ Permanent VMS at USH 53 SE of split with USH 2; USH 53 near Blatnik Bridge; USH 53 southbound at south end of Blatnik Bridge; USH 2 eastbound at east end of Bong Bridge; USH 2 at SH 35. ▪ RWIS remote processing units on the Bong and Blatnik Bridges. ITS plan proposes RWIS stations on the Bong Bridge and on the south end of the Blatnik Bridge. ▪ RWIS associated bridge de-icing systems for both Bong and Blatnik bridges. ▪ Data from these tools can be made available on websites, phone recordings, radio and television stations, and message signs. <ul style="list-style-type: none"> • <u>Estimated Cost</u>: TBD • <u>Priority Scoring</u>: Medium • <u>Implementation Term</u>: Short (2-5 years) • <u>Responsible Parties</u>: Public Works Department, WisDOT

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Hazards Addressed	Mitigation Strategy
	<ul style="list-style-type: none"> • <u>Potential Funding Sources</u>: WisDOT, EMPG, CDBG-PEFP, CDBG-PFP, FDA, TEF, OLIS <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • No changes. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • Project remains important and funding will be outlined for any possibility.
Coastal	<p>Continue implementation of Superior’s Special Area Management Plan (SAMP). The SAMP may be used to manage critical coastal wetland areas that buffer the City from coastal hazards, since coastal and shore lands within 300 feet of the shore are not eligible as SAMP wetlands.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: Staff time • <u>Priority Scoring</u>: Medium • <u>Implementation Term</u>: Immediate (0-2 years) • <u>Responsible Parties</u>: Public Works Department • <u>Potential Funding Sources</u>: Lake Superior Coastal Management, Wisconsin’s Shoreland Management Program <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • No changes. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • Project remains important and funding will be outlined for any possibility.
Thunderstorm	<p>Continue development and encourage growth of the Stormwater Flood Control Program.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$150,000 + \$200,000 • <u>Priority Scoring</u>: Medium • <u>Implementation Term</u>: Short Term (2-5 years) • <u>Responsible Parties</u>: Environmental Services Division of Public Works • <u>Potential Funding Sources</u>: PDM, HMPG <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • This is an ongoing strategy. The program has a 100% success rate in elimination flooding issues caused by sewer flows of all those who completed the program (151 completed participants as of the end of 2014). <p>2015 Update Comments</p> <ul style="list-style-type: none"> • Project remains important and funding will be outlined for any possibility.
Winterstorm	<p>Replace hazardous portable steam generators with hot water pressure washers that aid in steaming frozen culverts and inlets in the spring to keep snowmelt runoff from flooding private and public property.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$80,000 (4 units @ \$20,000 each) • <u>Priority Scoring</u>: Medium • <u>Implementation Term</u>: Immediate (0-2 years) • <u>Responsible Parties</u>: Environmental Services Division of Public Works • <u>Potential Funding Sources</u>: EMPG, PDM

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Hazards Addressed	Mitigation Strategy
	<p>Actions: 2010-2015</p> <ul style="list-style-type: none"> No changes. <p>2015 Update Comments</p> <ul style="list-style-type: none"> Project remains important and funding will be outlined for any possibility.
Tornado	<p>Study the feasibility of and support for adopting a local regulation which would require new mobile home parks and future expansions of existing parks to provide for a tornado shelter and mobile home/manufactured home tie-downs.</p> <ul style="list-style-type: none"> <u>Estimated Cost</u>: Staff time <u>Priority Scoring</u>: Medium <u>Implementation Term</u>: Short (2-5 years) <u>Responsible Parties</u>: Planning Department <u>Potential Funding Sources</u>: PDM, HMGP <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> No changes. <p>2015 Update Comments</p> <ul style="list-style-type: none"> Project remains important and funding will be outlined for any possibility.
Drought Thunderstorm	<p>Improve fire and emergency response access to the Superior Municipal Forest and adjacent neighborhoods by installing cistern wells in critical areas where residential neighborhoods interface with the Superior Municipal Forest, including points between Kimball's, Kelly and Kilner bays.</p> <ul style="list-style-type: none"> <u>Estimated Cost</u>: TBD <u>Priority Scoring</u>: Low <u>Implementation Term</u>: Short (2-5 years) <u>Responsible Parties</u>: Superior Fire Department <u>Potential Funding Sources</u>: HMGP, PDM, EMPG, PWDF <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> No changes. <p>2015 Update Comments</p> <ul style="list-style-type: none"> Project remains important and funding will be outlined for any possibility.
Thunderstorm Winterstorm *Continued compliance with the NFIP	<p>* Encourage Low Impact Development throughout the City to minimize flooding.</p> <ul style="list-style-type: none"> <u>Estimated Cost</u>: TBD <u>Priority Scoring</u>: Low <u>Implementation Term</u>: Short (2-5 years) <u>Responsible Parties</u>: Planning Department <u>Potential Funding Sources</u>: HMGP, PDM <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> No changes.

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Hazards Addressed	Mitigation Strategy
	<p>2015 Update Comments</p> <ul style="list-style-type: none"> • Project remains important and funding will be outlined for any possibility.
<p>Drought Thunderstorm</p>	<p>Install fire hydrants that would be fed by the Cloquet water line at 120 Billings Drive just west of Chipmunk Hollow and another on 28th Street at the Whitebirch Trail turnoff.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: TBD • <u>Priority Scoring</u>: Low • <u>Implementation Term</u>: Short (2-5 years) • <u>Responsible Parties</u>: Superior Fire Department • <u>Potential Funding Sources</u>: HMGP, PDM, EMPG, PWDF <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • No changes. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • Project remains important and funding will be outlined for any possibility.
<p>Drought Thunderstorm</p>	<p>Develop a fire prevention plan for the Superior Municipal Forest.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: TBD • <u>Priority Scoring</u>: Low • <u>Implementation Term</u>: Immediate (0-2 years) • <u>Responsible Parties</u>: Superior Fire Department, Parks and Recreation Department • <u>Potential Funding Sources</u>: HMGP, PDM, EMPG, PWDF <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • No changes <p>2015 Update Comments</p> <ul style="list-style-type: none"> • Project remains important to the City. Funding options will be explored.
<p>Thunderstorm Winterstorm</p>	<p>Install inlet restrictor valves into the City’s stormwater and wastewater sewer systems to prevent stormwater overflows during heavy rain events.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$20,000 to \$50,000 annually • <u>Priority Scoring</u>: Low • <u>Implementation Term</u>: Short (2-5 years) • <u>Responsible Parties</u>: Environmental Services Division of Public Works • <u>Potential Funding Sources</u>: PDM, HMGP <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • No changes. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • Project remains important and funding will be outlined for any possibility.

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Hazards Addressed	Mitigation Strategy
<p>Thunderstorm</p>	<p>Continue development and growth of the Rain Barrel and Compost Bin Program.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$25,000 yearly • <u>Priority Scoring</u>: Low • <u>Implementation Term</u>: Immediate (0-2 years) • <u>Responsible Parties</u>: Environmental Services Division of Public Works • <u>Potential Funding Sources</u>: PDM, HMGP <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • This is an ongoing strategy. ESD, in partnership with other organizations, has a Rain Barrel and Compost bin sale every year except in 2015. ESD gave away leftover barrels (held a WWTP product) for individuals to make their own barrels. ESD continually encourages the use of rain barrels for homeowners to slow down runoff. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • ESDPW will pursue discussions with partnering Non Profits to expand upon reaching multiple homeowner audiences.
<p>Thunderstorm</p>	<p>Continue development and encourage growth of the Rain Garden Project. Explore options to expand this program to a rooftop garden project.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$50,000-\$100,000 • <u>Priority Scoring</u>: Low • <u>Implementation Term</u>: Short (2-5 years) • <u>Responsible Parties</u>: Environmental Services Division of Public Works • <u>Potential Funding Sources</u>: PDM, HMGP <p>Actions: 2010-2015</p> <ul style="list-style-type: none"> • ESD has made no progress. University of Wisconsin – Superior maintains a green roof on their student center. <p>2015 Update Comments</p> <ul style="list-style-type: none"> • ESDPW and PW divisions continue to pursue LID throughout future city projects including implementation of Rain Gardens in proposed design.
<p>UW-Superior</p>	<p>University of Wisconsin - Superior Section</p>
	<p>The University of Wisconsin-Superior (UW-Superior) consists of 20 occupied buildings scattered across a 120-acre campus nested within the City of Superior. The campus has approximately 400 employees and more than 2,631 students, including many international students. The campus has 5 residential buildings. Many campus academic buildings are available for students to use 24 hours a day, 7 days a week. Offices are typically staffed from 7:45 am to 4:30 pm. Classes may be in session through 10 pm. The campus relies upon the municipality for water, sanitary and garbage disposal, and police and fire protection. Most buildings are heated by high pressure steam generated by the campus heating plant and distributed to buildings through underground lines.</p>
<p>Thunderstorm Winter Storm</p>	<p>Upgrade and extend the warning and emergency communications system in and on campus facilities, including communication systems between buildings and with outside agencies and responders. Presently, the university relies upon all-hazard weather alert radios in each building, e-mail, telephones, and door-to-door contacts to broadcast emergency information throughout campus. While these systems may function well during non-emergency situations, the methodology does not allow dissemination of immediate information during emergencies within buildings or building-to-building. Fewer methods are available once offices closed, but classes are still in session.</p>

Hazards Addressed	Mitigation Strategy
	<p>Upgrading the telephone system or installing a public address system (such as incorporating it with the fire alarm systems) would permit simultaneous communication among all buildings. Developing alternative methods of communication, such as satellite phones and amateur radio, would allow UW-Superior to communicate with off-site responders such as City Police and Fire during an emergency.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$80,000 • <u>Priority Scoring</u>: High • <u>Implementation Term</u>: Immediate (0-2 years) • <u>Responsible Parties</u>: UW-Superior, Superior Fire/Police Department • <u>Potential Funding Sources</u>: HMGP, PDM, EMPG <p>Actions 2010-2015</p> <ul style="list-style-type: none"> • UW-Superior completed networking of all building fire alarm systems on the main campus including the installation of external and internal speakers in selected locations. In addition to providing increased life and property safety through 24/7 fire monitoring, the networked system is used to provide real-time verbal emergency messages and instructions to occupants within buildings and on the exterior grounds of UW-Superior. • The fire alarm and emergency notification system in Holden Fine Arts needs to be extended to include notification in rehearsal rooms where sound proofing prevents hallway notifications from being heard. • Additional exterior speakers are needed to extend emergency notifications throughout campus. <ul style="list-style-type: none"> ○ Additional exterior speakers were added to Ross/Hawkes in 2013. • UW-Superior has subscribed to RAVE Mobile Services for use as an emergency notification system. The RAVE mobile system is provided as an opt-in sign up option for students and staff to receive emergency text and phone messages issued by UW-Superior. • UW-Superior has partnered with Douglas County Emergency Management and other community businesses as a supporter of the Code Red reverse 911 system used in Douglas County Wisconsin.
<p>Thunderstorm Winter Storm</p>	<p>Acquire emergency power generators at UW-Superior to protect critical infrastructure and essential building functions. Some buildings have no generators, and some existing diesel emergency generators should be converted to a more stable power source, such as natural gas to operate for extended periods. UW-Superior facilities that currently have generators require the relocation of transfer switches and transformers to above ground and/ or exterior locations to protect them from future flooding. UW-Superior needs to maintain heat and essential services in buildings during power outages, especially residential buildings and buildings used as community shelters during emergencies.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$80,000 - \$150,000 per building • <u>Priority Scoring</u>: High • <u>Implementation Term</u>: Immediate (0-2 years) • <u>Responsible Parties</u>: UW-Superior • <u>Potential Funding Sources</u>: PDM, HMGP, EMPG <p>Actions 2010-2015</p> <ul style="list-style-type: none"> • Renovation of two residence halls in 2012-2013 included the addition of a new shared natural gas powered emergency generator. • The new academic building completed in 2011 included a new high capacity emergency generator. • No diesel-powered generators were converted to natural gas. Conversion of existing generators would be very costly. Consideration for natural gas-powered generators will be made when existing generators are replaced with new units.

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Hazards Addressed	Mitigation Strategy
	<ul style="list-style-type: none"> No diesel-powered generators were converted to natural gas. As a result of the 2012 flood that affected nearly all of campus, emergency generators were replaced in Wessman Arena and Barstow Hall. The generator for Barstow Hall was moved to an above ground outdoor location to protect it from future flooding. UW-Superior buildings that still require generator installation are the Service Center and the Public Safety Building, both of which contain critical operational and notification systems for the entire campus. UW-Superior buildings that still require replaced and/or relocated generators are Wessman Arena, Holden Fine Arts, Crownhart Residence Hall and Curren-MacNeil- Ostrander Residence Hall.
<p>Thunderstorm Winter Storm</p>	<p>Provide appropriate signage for spaces identified. Presently, the campus is utilizing simple guidance provided by the National Weather Service and FEMA regarding general shelter locations. Determining suitable shelter locations for people with disabilities needs the direction of a skilled engineer or architect.</p> <ul style="list-style-type: none"> <u>Estimated Cost</u>: \$25,000 <u>Priority Scoring</u>: Medium <u>Implementation Term</u>: Short (2-5 years) <u>Responsible Parties</u>: UW-Superior <u>Potential Funding Sources</u>: PDM, HMGP, EMPG <p>Actions 2010-2015</p> <ul style="list-style-type: none"> Swenson Hall, constructed in 2011, was built without a usable basement for sheltering. The design of the building was intended to maximize natural daylighting, which caused challenges to identify spaces for use as weather shelters. Suitable weather shelter locations were identified by a joint onsite evaluation by the Fire Department, Douglas County Emergency Management and UW-Superior’s Public Safety and Environmental Health and Safety departments. Weather shelter locations were identified on floor plans and with signage.
<p>Thunderstorm Winter Storm</p>	<p>Install or implement basement flood prevention measures such as back-flow prevention. UW-Superior experienced significant losses in 2005, 2007, 2009 and 2010 when rainfall caused flooding in two key buildings on campus, including the archives at the library.</p> <ul style="list-style-type: none"> <u>Estimated Cost</u>: \$250,000 <u>Priority Scoring</u>: Medium <u>Implementation Term</u>: Short (2-5 years) <u>Responsible Parties</u>: UW-Superior, Environmental Services Division of Public Works <u>Potential Funding Sources</u>: PDM, HMGP <p>Actions 2010-2015</p> <ul style="list-style-type: none"> UW-Superior installed in 2011, a bio-swale/ detention pond outside of the Jim Dan Hill Library to control the ground water and surface runoff during rain events Due to the 2012 flood, multiple flood mitigation projects were completed from 2012 to 2014 through three steam line repair projects <ul style="list-style-type: none"> Bulk-heads were installed at every steam line entrance to every building served by the central steam plant system to control flood waters from entering the buildings through the steam conduit system. Multiple steam pits throughout campus were raised in order to protect the steam conduit system from future flooding Sump pumps located in steam and signal pits were connected to building generators to maintain operation through storm

Hazards Addressed	Mitigation Strategy
	<p>events and a centralized monitoring system was installed to verify the operation of each pump.</p> <ul style="list-style-type: none"> • The parking lot for the recently remodeled residence halls, Ross and Hawkes Halls, contains a bio-swale and detention ponds to control the parking lot runoff during large rain events. • UW-Superior finished a backflow prevention project for Old Main to separate storm and sanitary sewer as well as reroute roof leaders directly to the stormwater sewer system. This project also repaired and/or replaced backflow preventers throughout the building’s sewer system and installed sump pumps where possible to help reduce the volume of stormwater through the foundation drain tile. • UW-Superior is currently finishing a backflow prevention project for Old Main to separate storm and sanitary sewer as well as reroute roof leaders directly to the storm water sewer system. This project is also repairing and/ or replacing backflow preventers throughout the building’s sewer system and installing sump pumps where possible to help reduce the volume of storm water through the foundation drain tile.
<p>Thunderstorm Winter Storm</p>	<p>Incorporate stormwater management practices into building/construction plans.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$275,000 • <u>Priority Scoring</u>: Low • <u>Implementation Term</u>: Long (5-7 years) • <u>Responsible Parties</u>: UW-Superior, Environmental Services Division of Public Works • <u>Potential Funding Sources</u>: PDM, HMGP <p>Actions 2010-2015</p> <ul style="list-style-type: none"> • UW-Superior installed in 2011, a bio-swale/ detention pond outside of the Jim Dan Hill Library to control the ground water and surface runoff during rain events • Due to the 2012 flood, multiple flood mitigation projects were completed from 2012 to 2014 through three steam line repair projects <ul style="list-style-type: none"> ○ Bulk-heads were installed at every steam line entrance to every building served by the central steam plant system to control flood waters from entering the buildings through the steam conduit system. ○ Multiple steam pits throughout campus were raised in order to protect the steam conduit system from future flooding ○ Sump pumps located in steam and signal pits were connected to building generators to maintain operation through storm events and a centralized monitoring system was installed to verify the operation of each pump. • The parking lot for the recently remodeled residence halls, Ross and Hawkes Halls, contains a bio-swale and detention ponds to control the parking lot runoff during large rain events. • UW-Superior finished a backflow prevention project for Old Main to separate storm and sanitary sewer as well as reroute roof leaders directly to the storm water sewer system. This project also repaired and/ or replaced backflow preventers throughout the building’s sewer system and installed sump pumps where possible to help reduce the volume of storm water through the foundation drain tile. • The City of Superior completed a project the summer of 2015 to separate a low lying parking area (lot 7) on UWS campus from an overwhelmed city storm sewer system that in high rain events backflows into the parking lot and overwhelms UW-Superior’s storm sewer system. Included in this project was an increase to the size of the storm sewer system adjacent to campus.

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Hazards Addressed	Mitigation Strategy
<p>All</p>	<p>Update campus blueprints and facility and grounds data with GIS and provide prints from GIS information for use by emergency responders.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$30,000 • <u>Priority Scoring</u>: Low • <u>Implementation Term</u>: Long (5-7 years) • <u>Responsible Parties</u>: UW-Superior • <u>Potential Funding Sources</u>: PDM, HMGP, EMPG <p>Actions 2010-2015</p> <ul style="list-style-type: none"> • An engineering firm in 2014 completed a whole campus survey of all utilities and infrastructure and created a GIS system that the UW-Superior GIS department is maintaining and sharing with local government. • As new buildings have been constructed, CAD information has been acquired for building construction plans and are available to local government. • UW-Superior Facilities Management in currently scanning all prints that are not available in CAD in order to archive and better distribute information electronically as needs arise.
<p>All</p>	<p>Develop a records and archived holdings management and protection plan to preserve and protect vital campus records and the archived materials at the UW-Superior library. The Jim Dan Hill Library is a government repository and holds valuable materials of a historical nature. A plan to respond to emergencies that might impact valuable items should also be developed, along with a safe and secure off-site records location, such as computer back up.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$10,000 • <u>Priority Scoring</u>: Low • <u>Implementation Term</u>: Short (2-5 years) • <u>Responsible Parties</u>: UW-Superior • <u>Potential Funding Sources</u>: PDM, HMGP, National Historic Publications and Records Commission <p>Actions 2010-2015</p> <ul style="list-style-type: none"> • The archives in the Jim Dan Hill Library were relocated to a new facility on the second floor of the building. The archive has the appropriate security, fire protection and environmental systems to protect the archive collections.
<p>All</p>	<p>Advise students and campus employees of risks and how to take appropriate measures, provide written materials and sponsor campus-wide events that promote personal preparedness activities.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$2,000 • <u>Priority Scoring</u>: Medium • <u>Implementation Term</u>: Short (2-5 years) • <u>Responsible Parties</u>: UW-Superior • <u>Potential Funding Sources</u>: PDM, HMGP <p>Actions 2010-2015</p> <p>Students and employees have been informed of personal preparedness and campus emergency action plans through the following activities:</p> <ul style="list-style-type: none"> • UW-Superior has a web site available to all employees, students and prospective students and their families that hosts all of the

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Hazards Addressed	Mitigation Strategy
	<p>emergency action plans. Information on how to access this resource is shared several times a year via email, posters, and printed literature.</p> <ul style="list-style-type: none"> • Ready Week is held each September to educate students and employees about preparing for emergencies at home and at work, as part of “Preparedness Month,” “Campus Safety Awareness Month” and “Campus Fire Safety Month” national campaigns. Hands-on activities, posters, demonstrations and flyers are used to convey the messages. • Fire drills and tornado drills are conducted at least once a year in all buildings. Prior to the drills, educational information is disseminated via handouts, in-person tabling in public areas, and via the campus email newsletters and web sites. • Active shooter exercises have been held in several formats for the benefit of students, staff and administrative. • The campus conducts one or more table top emergency response exercises annually to maintain skill levels. • UW-Superior promotes “SafeAlerts” several times a year to students and employees. SafeAlerts is the campus brand name for RAVE Mobile Services that broadcasts emergency text, voice and email notifications from UW-Superior.
<p>All</p>	<p>A catastrophic loss of the heating plant or the 3 boilers that provide steam to heat a majority of the campus, including the residential facilities and WITC, would cause devastating losses particularly in winter months. Installing universal connectors into the existing steam distribution system that will accept a mobile boiler would help prevent a catastrophic loss of campus facilities.</p> <ul style="list-style-type: none"> • <u>Estimated Cost</u>: \$150,000 • <u>Priority Scoring</u>: Medium • <u>Implementation Term</u>: Short (2-5 years) • <u>Responsible Parties</u>: UW-Superior • <u>Potential Funding Sources</u>: PDM, HMGP, RCP, DOA <p>Actions 2010-2015</p> <ul style="list-style-type: none"> • There was no progress made in installing a universal connector as described above. A future project to modify the boilers from coal backup fuel to fuel oil will consider including this in the specifications. • UW-Superior did experienced a catastrophic loss of its heating plant as a result of significant flooding in June 2012, affecting 2 of the 3 boilers and the underground steam distribution system throughout campus. The repairs to the steam distribution system were completed over a three year period, ending in 2014.