Building a Foundation for Collaborative Sand Management in Northern Illinois

Sand Management Working Group

FINAL REPORT

June 2016

"Lake Michigan is a resource that impacts and defines our communities. There are challenges to ensure that our shoreline remains accessible, safe and clean. It is important that we share the responsibility for managing the shoreline, and maintaining the benefits."

-U.S. Representative Robert Dold

This report was prepared by Alliance for the Great Lakes using Federal Funds under award number NA13NOS4190105 from NOAA's Office for Coastal Management, U.S. Department of Commerce. The statements, findings, conclusions, and recommendations are those of the authors and do not necessarily reflect the views of NOAA's Office for Coastal Management or the U.S. Department of Commerce.

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Acknowledgements

Elected Officials

These federal, state, and local elected officials signed a joint letter inviting identified stakeholders to participate as members of the Sand Management Working Group.

U.S. Senate	U.S. Representatives	Illinois State Senators	Illinois State Representatives
Mark Kirk	Robert Dold	Daniel Biss	Scott Drury
	Janice Schakowsky	Melinda Bush	Robyn Gabel
		Terry Link	Sheri Jesiel
		Julie Morrison	Rita Mayfield

Members of the Sand Management Working Group

Thank you to these SMWG members who contributed their time and expertise to the development of a regional dialogue and collaborative approach to sand management for Illinois' northern coast.

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This report outlines the need for a regional approach to sand management on public lands driven by local governments, and possible action strategies for communities and decision makers to manifest a vision for collaborative sand management along Northern Illinois' Lake Michigan coast. The report was prepared by Alliance for the Great Lakes as a final product for a grant from the Illinois Department of Natural Resources' Coastal Management Program.

Project Lead-*Alliance for the Great Lakes* *(Alliance) was the project manager, partner in the development of strategies and materials needed to facilitate the decision making process of the Sand Management Working Group, and drafter of this Final Report. Alliance is committed to building the capacity of coastal communities and supporting sustainable management of critical Great Lakes resources.*

State Lead- *Illinois Department of Natural Resources' Coastal Management Program* *worked cooperatively with Alliance for the Great Lakes to design, develop, and fund this project. IDNR has a strong interest in sustainable shoreline management as a landowner, resource manager, and as a trustee of lands and waters held in the public trust.*

Agency Expertise- *U.S. Army Corps of Engineers* *(USACE) provided background information on coastal processes and regional sediment management technical expertise to the SMWG and project development team as needed. Mr. David Bucaro from the Chicago District, and Dr. Andrew Morang and Ms. Linda Lillycrop both from the Engineer Research and Development Center Coastal and Hydraulics Laboratory, were involved in this effort.*

Project Partners

Delta Institute *supported the decision making process of the Sand Management Working Group by summarizing key concepts of sediment management into an easy-to-understand format.*

Bluestem Communications *role in developing the Sand Management Working Group included developing a timeline and implementation strategy for reaching out to decision makers and Sand Management Working Group participants, developing the meeting plans and workshop structure, and facilitating participants during the workshops and meetings.*

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Executive Summary

The Lake Michigan shoreline is central to the identity of Illinois' North Shore communities from Evanston to Winthrop Harbor. For decades, these communities have managed their respective shorelines independently to protect beaches, harbors, and infrastructure from the natural coastal processes of erosion and sand accretion. The increasing presence of man-made structures has altered nearshore dynamics, creating a multitude of challenges for public shoreline managers. In turn, coastal communities in this region have suffered the economic and environmental consequences of a piecemeal approach to managing a regional resource.

Recognizing the complex nature of shoreline management, the Illinois Department of Natural Resources' (IDNR) Coastal Management Program funded an 18 month project with Alliance for the Great Lakes to facilitate public landowners in developing strategies to address shoreline and sand management issues. In March 2015, Alliance and IDNR convened federal, state, and local elected officials to raise their awareness of shoreline management as a regional issue; identify shared interests and opportunities for collaboration; and invite their participation in the development of a sustainable sand management strategy for Illinois' North Shore. At the conclusion of the this meeting, the elected officials designated participants to represent the broad public interests of local and regional governments and communities on a Sand Management Working Group (SMWG).

The 42 participants of the SMWG came together over the course of 8 months to discuss their individual shoreline management issues in a broad regional context; build a shared knowledge base; and identify potential strategies for sustainable shoreline management and coordinated action. Initial outcomes of the SMWG include:

- ***Shoreline Principles*** - A set of guiding values based on shared understanding that serves as the foundation for this collaborative approach
- ***Regional Public Assets*** - A list of public assets on which to focus management actions and resources to achieve maximum impact
- ***Action Strategies*** – A broad list of immediate needs and future activities to inform the development of a sustainable regional shoreline management strategy

For the purposes of emphasizing a regional approach, the SMWG focused their discussions on public lands and assets. There is no doubt private landowners play an important role in shoreline management, and future coordination efforts will include these key stakeholders. This work must continue to fully realize a shared vision for coordinated regional shoreline management. To that end, the SMWG identified 7 *Next Steps* to guide potential future actions.

Next Steps

- Continue as a regional sand management group and meet quarterly
- Identify and fund a group coordinator
- Seek financial resources for continued large group collaboration
- Share, gather and analyze data & make findings available in an accessible format
- Explore legislative, policy, and regulatory opportunities for improved management
- Vet shoreline project proposals & management practices in a collegial forum
- Develop an education & engagement strategy for private shoreline landowners

With the completion of Alliance for the Great Lakes' facilitation of this project, the IDNR Coastal Management Program plans to invite the participants of the Sand Management Working Group to continue identifying strategies and exploring options for sustainable shoreline management in the region.

I. Project Overview

The purpose of this project was to convene public landowners to collaboratively develop shared knowledge regarding shoreline management challenges, and develop potential strategies to maximize the quality of life, and the economic and environmental benefits provided by these public lands. The project goal was to increase the capacity of local community leaders to understand and articulate how a sustainable shoreline can be achieved through the implementation of shared sand management solutions, which would result in positive benefits for individuals, communities, and coastal natural areas of regional and global importance. It is vital that we grow our collective understanding regarding how regional sand management solutions can improve each community's resilience, reduce shoreline erosion and lakebed down cutting, achieve a more natural and aesthetically pleasing shoreline, reduce the costs associated with dredging and nourishment, and protect important natural areas that increase the quality of life and sense of place for local communities. In concluding this project, stakeholders identified actions needed to maintain and improve our shared public coastal resources.

a. Strategy

Decision makers along Illinois' northern coast were identified to participate in a regional dialogue about sustainable sand management. These decision makers became members of the Sand Management Working Group (SMWG), and agreed to participate in a series of four facilitated meetings designed to achieve our shared purpose. The process was iterative, meaning knowledge gained at the each meeting was built into subsequent meetings, and relied on the expertise of the SMWG members. Furthermore, we utilized an asset based approach. Asset based approaches utilize the human, social, and physical capital that exists within local communities, and acknowledges and builds on what people value most. Starting the conversation around the most valued community assets helps ensure that solutions are directed to where they are most needed. Finally, during this first phase of the project the critical stakeholders identified were municipalities and large landowners. There is no doubt that private landowners play an important role in shoreline management, and future efforts will include these key stakeholders.

b. Outcomes

Through this project, our intent was for local stakeholders to develop a community-driven sand management strategies focused on public assets that would identify critical actions needed to address shared regional challenges. Elected officials invited municipal representatives and public landowners to form the full Sand Management Working Group (Appendix 1), and to explore and understand regional sand management issues and identify fundamental actions

critical to developing a regional approach. The discussion and analysis of the working group resulted in five outcomes, each of which will be discussed in detail in the report that follows.

- Created *Shoreline Principles* to guide sand management
- Identified *Regional Assets* affected by sand management
- Developed *Management Goals* and *Challenges* for each of the regional assets
- Brainstormed and refined possible sand management *Action Strategies*
- Achieved consensus on *Next Steps* for continued regional collaboration

II. Problem Overview

a. Value of Illinois' Northern Coast

The Illinois coast of Lake Michigan is a dynamic geological setting. Coastal processes of waves, ice, and changing lake levels contribute to yearlong and seasonal erosion and deposition (accretion) along the beaches and across the nearshore lake bottom, although major change also can occur in days or even hours.[1] Along this stretch of the coast, the Pike-Root watershed covers over 105 square miles and contains more than 32 miles of Lake Michigan shoreline between Wisconsin border and Evanston, and includes a significant amount of high-quality natural habitat, anchored by 4,160-acres at Illinois Beach State Park.[2]

In addition, the Chiwaukee Prairie Illinois Beach Lake Plain contains 3,716 acres of wetlands of international importance. Within this area sits Illinois Beach State Park, the last remaining stretch of natural shoreline in the state. The Lake Plain wetlands and associated upland prairie and savanna complex covers approximately 15 miles of coastline and contains the highest quality coastal dune and swale ecosystem in the region, 6 globally rare representatives of fen, sedge meadow, freshwater marsh and seep wetland communities as well as critical savanna and dry prairie upland habitat. This area provides habitat for over 930 native plant species and 300 animal species, including 63 state protected species. In addition, the Lake Plain provides important services to humans, including protection of Lake Michigan water quality. This area provides significant tourism opportunities for local communities, supporting over two million visitors a year. This tourism engages community members in volunteer conservation stewardship, and provides high quality examples of coastal wetland communities for education and scientific research.

This northern coast borders the most populous part of the state, which is also the most densely populated coastal area in the entire Great Lakes region. Recreation plays a vital role along

[1] Chrzastowski, Michael. The Illinois Coast of Lake Michigan, found at: http://isgs.illinois.edu/sites/isgs/files/files/publications/chap25.pdf.
[2] Illinois Department of Natural Resources. Illinois Lake Michigan Implementation Plan, found at: http://www.dnr.illinois.gov/cmp/Documents/Illinois_Lake_Michigan_Implementation_Plan_FINAL.pdf.

Illinois' northern coast, with a total of 26 public beaches from Evanston to Illinois Beach State Park, multiple public marinas and small-boat harbors (North Point Marina, Waukegan Harbor, and Wilmette Harbor), and several boat-launching facilities consisting of lifts and/or ramps at one of their lakeshore parks. [3] Finally, it should be noted that the Illinois coast has the region's highest degree of engineering and human modification, and at the same time includes some of the most valuable real estate in Illinois. Coastal infrastructure design, engineered and constructed based on sustainable shoreline principles, provides significant value to communities, achieving a balance between the stability needed to construct recreational beaches and buildings, and the movement and distribution of sand along the shoreline needed to protect the shoreline from wave erosion.

b. Management Challenges

The Illinois Lake Michigan shoreline is constantly shifting and changing as sand and sediment naturally move from one place to another, this process is referred to as natural littoral drift or littoral transport. This movement of sediment by wave action is a natural ecological process that has occurred for thousands of years, and it is essential to shoreline stability since it replenishes sand and gravel supplies to beaches and dunes.[4] Man-made marine infrastructure (e.g. harbors, breakwaters, piers, revetments, jetties and private shoreline protection structures) installed along the coastline interrupted natural littoral drift, forever altering the flow of sand and the development of beaches in southern Lake Michigan.[5] These changes to natural sand erosion and deposition patterns create economic and environmental challenges for Illinois' coastal communities. Coastal erosion, the landward movement of the shoreline caused by the erosion of sand or other geologic materials along beaches, bluffs and/or lakebed, was the natural and predominant trend along the Illinois coast in the natural setting. The introduction of shore structures that interrupted the natural southward drift of littoral sand, has altered coastal processes and accelerated coastal erosion.[6]

In addition, accretion, the accumulation of (beach) sediment (including sand), deposited by natural littoral drift, is also interrupted to the point where beaches and foreshores along the northern Illinois coast are no longer restored by the sand or sediment accretion, which leads to

$3,736,000

A conservative estimate of the annual cost to manage public shoreline along the Northern Illinois coast.

10 out of 44 SMWG members & agencies provided costs in survey (Appendix 10)

[3] Illinois Coastal Management Program, Issue Paper, Shore Access and Recreation, found at: https://www.dnr.illinois.gov/cmp/Documents/5_Access_Recreation.pdf
[4] Illinois Coastal Management Program, Issue Paper, Coastal Erosion along the Illinois Coastal Zone, found at: https://www.dnr.illinois.gov/cmp/Documents/TAG_B_%20ShorelineErosion_2009_02_19.pdf
[5] Id.
[6] Id.

permanent beach loss.[7] Current patterns of natural sand deposition and erosion are impacting uses of beaches and harbors, and the structure and function of ecosystems and habitats. Coastal communities are no longer managing a natural system, but responding to a series of decisions made in the past that have reduced the resilience of the system to function naturally. Coastal ecosystems and coastal processes are public and regional assets that are today often managed within jurisdictional boundaries or along property lines. [8]

Illinois' northern coastal communities frequently manage coastal erosion and sand deposition individually, though they are all part of a continuous coastal system. Some communities manage accumulating sand that clogs harbor entrances, while neighboring communities find their beaches eroding and pay a premium to rebuild them. Municipalities and other landowners may be in conflict with each other, as one type of shoreline control intended to resolve a problem might impact a neighboring community or property owner. In addition, individualized solutions for either too much sand or not enough sand are costly and may work at cross-purposes. For example, while a harbor is being dredged and sand is removed, just miles away may be an ongoing beach replenishment project with sand being trucked in from far afield. Illinois' northern coastal communities are not managing the sand as a common asset, and may be missing opportunities for protection and enhancement of Lake Michigan coastal values in an effective, efficient and long-term manner.

c. Historic Shoreline Conditions[9]

The Illinois coast was formed approximately 14,000 years ago, when the glaciers retreated and deposited a thick layer of sediment. This lakebed sediment is comprised primarily of compact clay with small quantities of sand and gravel. The Illinois coastline is not uniform, and is comprised of a total of three distinct physiographic settings relevant to Illinois' northern coast.

Zion beach ridge plain

Between the Illinois-Wisconsin state line and North Chicago, the Illinois coast is a broad plain no more than about 10-15 feet above mean lake level and consisting of multiple sand ridges and intervening swales. It consists of sand and gravelly sand that has migrated onto the Illinois coast from the Wisconsin coast over the past few thousand years.

[7] Id.
[8] Chrzastowski, Id.
[9] Much of the information in this section is adapted or reprinted from the Lake Michigan Biodiversity Recovery Support Document. This historical information is attributed to Michael J Chrzastowski of the Illinois State Geologic Survey. This document is available at: https://www.csu.edu/cerc/documents/lakemichiganbiodiversityrecoverysupportdocument_000.pdf.

Illinois bluff coast

Between North Chicago and Winnetka the coast lies along the foot of bluffs that rise as much as ninety feet above mean lake level. Here the coast intercepts one of the moraines that formed on the margin of the receding glacial ice. Erosion along this bluff coast was once a major source of sand and gravel for the beaches and nearshore.

Chicago lake plain

From the Winnetka south to the northern Evanston shore, the coast has a progressively decreasing height of low bluff transitioning to low bank. This is where lakeshore erosion has cut into the higher elevation of the lake plain.

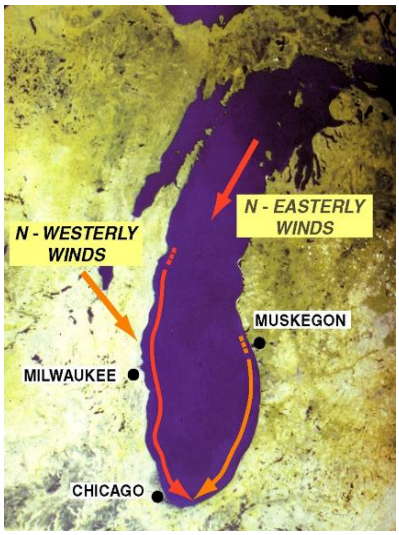


Figure 2. Natural Littoral Drift in Lake Michigan

Sediment flows along each eastern and western coast from the northern reaches of Lake Michigan to the southern shore (Figure 2). Each day, the natural action of waves pulls sand off the beaches or erodes bluffs and dunes. Some of the sand remains suspended in the water and is gradually pushed south by the prevailing winds and shoreline currents. When uninterrupted and undisturbed, this littoral transport forms great wide beaches along its path, beginning as far north as present-day Sheboygan, Wisconsin and Muskegon, Michigan and culminating along the southern shore. The immense quantities of sediment moving past Chicago each year would have filled a football field nine stories high if accrued. Prior to human alteration of the natural setting, the Indiana coast between Gary and Michigan City was the terminal zone for this littoral sediment. The fine-grained sand that reached this terminal zone was moved inland by wind and contributed to the formation of the Indiana dunes.

d. Current Shoreline Conditions

By the mid-1800's, a significant amount of the Illinois and Indiana coastline was armored and the flow of sand was interrupted by numerous breakwaters and jetties along the coast. These harbors and shore protection structures influenced the flow of sand by acting as sand traps. On the northern side of the sand trap, the accretion of sand occurs, creating wide beaches, but on the opposite side of the harbor structures, there is increased erosion without the natural replenishment of sand from littoral drift, accelerating the loss of the beach and resulting in nearshore downcutting (Figure 3). The interruption of the natural flow of sand in Lake Michigan and the resulting consequences is a significant problem. These consequences are exacerbated by the natural dynamics of Lake Michigan.

During episodes of high lake levels, rates of bluff erosion increase, the shoreline shifts landward, structures and beaches are submerged. During each intervening episode of low lake levels, navigation channels and harbors require extensive dredging of sediment. Bluff erosion has historically provided most of the sand to the nearshore zone. However, as more coastal structures are erected to protect the bluffs and armor the shoreline, less sand is available to the system. Consequently, the nearshore sand reservoir has shown a dramatic decrease in volume, allowing waves to erode the finer-textured lakebed sediments which inevitably accelerates coastal erosion and lakebed downcutting.[10]

Figure 3. Sand erosion & accretion near marine infrastructure at Waukegan Harbor

e. Definitions[11]

In order to ensure all Sand Management Working Group members had comprehensive background information to inform their discussion, at the March and July meetings the U.S. Army Corps of Engineers provided background on coastal processes including littoral sand transport, historic patters of sand transport along the Illinois North Shore of Lake Michigan and lessons learned from case studies from across the nation regarding regional sediment management. Some take away messages focused on the need for a strong understanding of system-wide impacts to develop long-term, holistic solutions, and a commitment to cooperative management that includes reliable funding for cross-jurisdictional vision and a plan.[12]

Natural Littoral Drift ***or Littoral Transport or Sand Transport***	• Movement of sediment by wave action • Essential to shoreline stability since it replenishes sand and gravel supplies to beaches and dunes • Natural ecological process occurring for thousands of years

[10] *Id.*
[11] Illinois Coastal Management Program, Issue Paper, Coastal Erosion along the Illinois Coastal Zone, found at: https://www.dnr.illinois.gov/cmp/Documents/TAG_B_%20ShorelineErosion_2009_02_19.pdf
[12] David Bucaro, U.S. Army Corps of Eng'rs, Presentation to the Illinois Sand Management Working Group (Apr, 2015).

Erosion	• Coastal erosion is the landward movement of the shoreline caused by the erosion of sand or other geologic materials along beaches, bluffs and/or lakebed • Although erosion was the natural and predominant trend along the Illinois coast in the natural setting, human activity along the coast has altered coastal processes and accelerated coastal erosion due to the introduction of shore structures that interrupted the natural southward net transport of littoral sand
Accretion ***or Deposition***	• The accumulation of (beach) sediment (including sand), deposited by natural littoral drift • A sustainable beach or foreshore often goes through a cycle of submersion during rough weather then accretion during calmer periods • If a coastline is not in a healthy sustainable state, then erosion can be more serious and accretion does not fully restore the original volume of the visible beach or foreshore leading to permanent beach loss
Lakebed Erosion ***or Downcutting***	• Underwater erosion across the bed of the lake, not the sand or gravelly sand, but the cohesive layers of glacial till or clay that underlie the sand • Caused by wave and current action, as well as ice • Non-reversible because the loss of cohesive material cannot be replaced • Long-term impact is the lowering of the lake bottom profile, which results in deeper water occurring closer to shore, profile is steeper between the beach and nearshore, allowing larger waves to impact the shore, which increases the potential for erosion along the beaches and the toe of the bluffs
Marine Infrastructure	• Constructed to facilitate the transport of goods throughout the Great Lakes; sand dunes were mined for commercial purposes • Interrupted natural littoral drift, forever altered the flow of sand and the development of beaches in southern Lake Michigan (e.g. harbors, breakwaters, piers, revetments, jetties and private shoreline protection structures)

III. Sand Management Working Group

a. Members

As part of a new effort in Illinois, invitations were extended to state and local elected officials for a kickoff meeting on March 9, 2015 (Appendix 1). The purpose of this meeting was to raise their awareness of shoreline management as a regional issue; identify shared interests and opportunities for collaboration; and invite their participation in the development of a sustainable sand management strategy for Illinois' North Shore (Appendix 2). At the conclusion of the March kickoff meeting, the elected officials were asked to help identify individuals with knowledge of valuable public assets affected by these issues, and whose decision making authority was essential to developing and implementing future management strategies. The elected officials or their designees, in addition to the local stakeholders they identified, convened 4 times over the next 7 months as members of the Sand Management Working Group (SMWG).

Figure 1

Members of the Sand Management Working Group and their Responsibilities

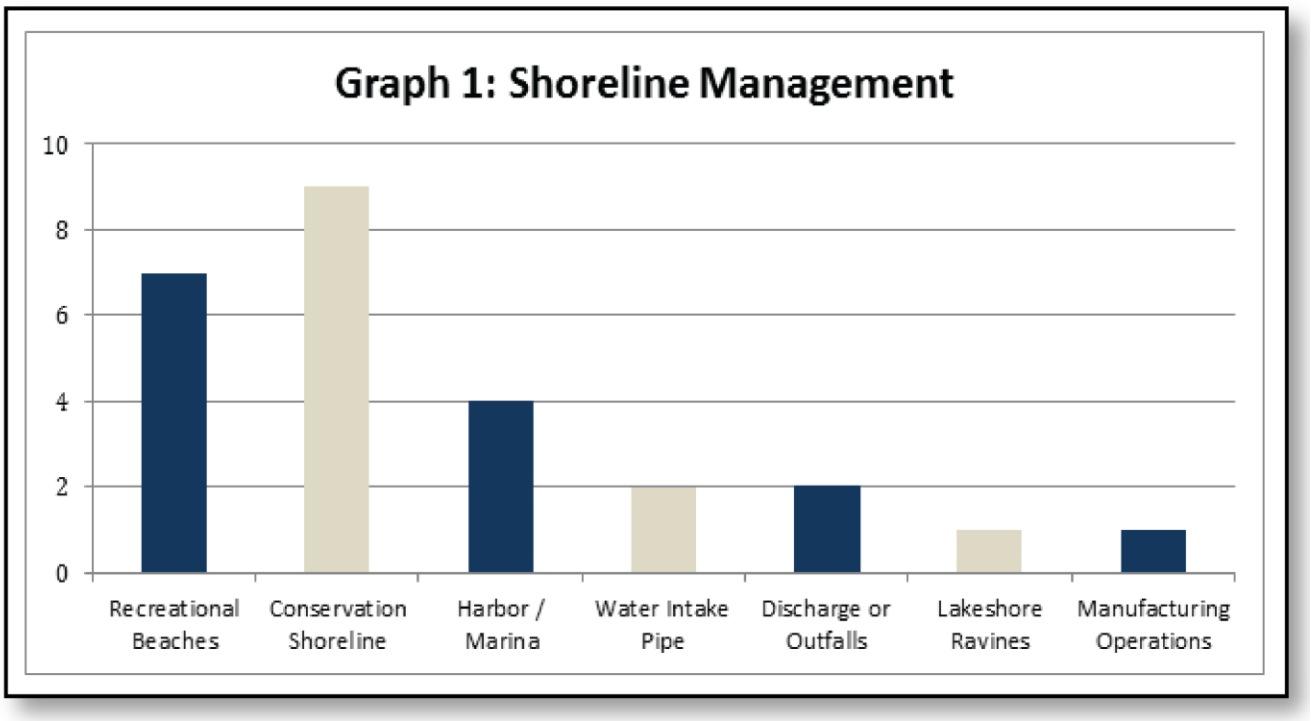
Stakeholder Category	Definition and Responsibilities
Elected Officials	Elected officials, such as Mayors, Congressional and State Representatives, who can lend support to this project from afar. • Introduce and invite stakeholders to participate in the project • Establish Shoreline Principles • Provide input on strategies and needs • Attend meetings and receive project updates
Public Landowners	Public agencies and organizations that own land along the Illinois. • Serve on the Sand Management Working Group • Participate in all meetings , provide local expertise, and report back to their municipality, agency, or company • Receive project updates and respond to surveys or requests for information • Recommend other key stakeholders • Review and provide feedback of the draft Sand Management Strategy

Members of the SMWG represented the interests of their communities (Appendix 3), and focused their discussions primarily on assessing the management issues of public lands and assets. Engaging residential landowners will be part of a larger dialogue and set of solutions. While taking a regional approach to sand management is a new for Illinois, it is also part of a growing trend around the country, as many coastal landowners begin to recognize the value of coordinating management decisions across jurisdictions.

Sustained Commitment

75% of the elected officials or their representatives who attended the kickoff meeting, continued to participate in the process by joining the Sand Management Working Group and attending at least one of the four meetings.

Discussions revealed a considerable variety in the public coastal assets and management challenges among the SMWG participants and the institutions, organizations, and businesses they represented. Graph 1 below illustrates the shoreline management responsibilities indicated by SMWG members from an online survey that had a 50% response rate (Appendix 10).



b. Meeting Timeline & Agendas

Kickoff Meeting: March 9, 2015

- **Attendees: Elected Officials**
- U.S. ACE presentation on shoreline conditions (Appendix 2)
- Discuss regional vision for the shoreline
- Identified *Shoreline Principles* (Figure 4)

SMWG Meeting #1: May 20, 2015

- **Attendees: Sand Management Working Group**
- Revised the *Shoreline Principles* (Figure 4)
- Brainstormed sand management challenges related to the regional assets

SMWG Meeting #2: June 17, 2015

- **Attendees: Sand Management Working Group**
- *Revised the Shoreline Principles (Figure 4)*
- Refined list of regional assets and challenges impacted by sand management
- Reviewed case studies of regional approaches to sand management (Appendix 6)

SMWG Meeting #3: July 15, 2015

- **Attendees: Sand Management Working Group**
- Affirmed the *Shoreline Principles* (Figure 4)
- Developed, for this meeting only, Sand Management Goals for Regional Assets (Appendix2)
- Finalized *Regional Assets* and *Challenges* (Figure 5)
- Reviewed Map of Regional Assets
- Learned about a current sediment budget study being conducted by U.S. Army Corps of Engineers (Appendix 2) & regional sand management case studies (Appendix 6)
- Learned about example of shoreline best management practices (Appendix 7)
- Discussed pros and cons of applying certain shoreline best management practices to achieve sand management goals for the identified regional assets (Appendix 4)
- Brainstormed list of possible Action Strategies (Appendix 8)

SMWG Meeting #4: Nov 24, 2015

- **Attendees: Sand Management Working Group**
- Refined *Action Strategies* (Figure 6)
- Achieved consensus on *Next Steps* (Figure 7)
- Reviewed and provided feedback on the Final Report

IV. Sand Management Working Group Outcomes

Utilizing an asset based approach, it was necessary to develop a foundational set of outcomes that built on each other as the group of elected officials, municipal staff, and landowners built trust in each other, the process, and that regional cooperation for their shared coast was not only possible but preferable. The following outcomes were each brainstormed and refined over multiple meetings.

a. Shoreline Principles

One of the first tasks for the Sand Management Working Group (SMWG) was to adopt a common set of *Shoreline Principles* that articulated the importance of the shoreline's natural character while protecting existing uses, economic development opportunities, and private property; principles that if abided by would realize a balance of economic, environmental and quality of life benefits for Illinois' northern coast. These *Shoreline Principles* were used throughout the SMWG meetings as a framework to guide the development of sand management strategies for *Regional Assets*. In March, the elected officials started the regional dialogue by sharing their vision for the coast and describing the functions and features most important to their residents. They also discussed how current and future conditions might impact these visions. Concerns over residential flooding, sustainability of sand nourishment, and Zion's nuclear power plant were shared alongside hopes for expanded beach access, preserving open space, and further integrating the lakefront into their communities.

In sharing their ideas and plans for their communities, participants identified the aspects that they all had in common. These commonalities were molded into a set of *Shoreline Principles* (Figure 4) and the group achieved consensus around them. In May, the Sand Management Working Group (SWMG) was convened and began by reviewing, discussing, and affirming the *Shoreline Principles* (Figure 4) crafted by the elected officials at the kickoff meeting. The *Shoreline Principles* (Figure 4) were revised and refined in subsequent meetings and a final draft was approved in July.

Figure 4

Shoreline Principles: a guide for sand management practices

1. Broad and fair access to shoreline recreation activities for all communities is a priority
2. Sand is an important public and ecological natural resource that impacts our economy, environment and public health and safety – shoreline management practices should reflect that importance.
3. Local and regional economic development is strongly connected to shoreline management practices that protect the public health and safety, and environmental assets in our communities.
4. Our shoreline is home to unique assets that can increase tourism and improve the quality of life of our residents.
5. Shoreline management practices implemented at one site should not cause adverse impacts to other sites.

b. Regional Assets and Related Sand Management Goals & Challenges

Identification by the Sand Management Working Group (SMWG) of *Regional Assets*, places where agreed sand management strategies were the most needed and valued, was critical to subsequent conversations about action strategies. In addition, articulating the *Sand Management Goals* & *Challenges* for each *Regional Asset* allowed the SMWG to share how they as landowners face similar and different choices when deciding how to manage sand.

At the first SMWG meeting in May, the SMWG was asked to identify assets affected by the movement of sand along the shoreline. Participants were divided into small groups where they rotated to three tables. Each table had a large shoreline map and was assigned a category: recreation, economy, or the environment. Each table's task was to brainstorm assets affected by sand management in each category (Appendix 2). In June SMWG members met again to further refine their initial brainstormed list into a list of *Regional Assets* and related sand management *Challenges* (Appendix 2).

In July, the SMWG was provided with maps of the *Regional Assets* they identified and a spreadsheet with the refined *Regional Assets*. Using these resources they refined the *Regional Public Assets and Their Sand Management Challenges* (Figure 5). Many Sand Management

Figure 5

Regional Public Assets and their Sand Management Challenges

Regional Public Assets	Management Challenges											
	Policies & Regulations	Communication	Sand migration / Too Little Sand	Sand Quality / Contamination	Loss of Littoral Drift	Lake bottom erosion	Access & Safety	Dredging	Unstable & Outdated Structures	Excess Sand	Funding	Fragmented Ownership
Illinois Beach State Park	■	■	■	■	■	■					■	
Waukegan Harbor	■			■			■	■	■		■	
Beaches	■		■	■	■				■	■	■	
Harbors & Marinas	■			■			■	■	■		■	
Nature Preserves, INAI sites, Parks / Open Space	■	■	■	■	■	■			■		■	■
Industry Sites *(former industry sites, nuclear waste, Superfund, etc.)*	■	■	■	■			■				■	■
Water Intake Structures			■		■	■				■	■	

Working Group (SMWG) members have been implementing sand management practices for the coastal land or infrastructure they manage (Graph 2). Through a survey of SMWG members (50% response rate), 20 sand management practices were identified to have occurred within the past year. The practices performed by SMWG members like vegetative controls (i.e.: natural engineering and living shorelines) are only a sample of the potential sand management practices possible (see Appendix 7 for a longer list).

c. Action Strategies

In order to achieve a shared understanding regarding common issues faced by coastal land managers and whether there were shared sand management solutions that could help achieve the *Shoreline Principles*, community leaders first needed a shared understanding of what actions are both possible and desirable. In regards to what may be possible, the Sand Management Working Group (SMWG) met in July to review and discuss potential strategies. First, to inform the SMWG discussion, there were several presentations, one on general background information regarding types of shoreline best management practices (Appendix 7), another on examples of regional collaborations that have chosen a particular type of shoreline best management practice to implement (Appendix 6). With this background information in mind the SMWG discussed the pros and cons of implementing different types of best management practices that could both achieve the *Management Goals* for the *Regional Assets* and the *Shoreline Principles* (Appendix 4). Using this discussion, in July, the SMWG spent about 30 minutes brainstorming potential action strategies (Appendix 8).

After the July meeting we had phone interviews (Appendix 9) with some members of the SMWG, and one of the topics of conversation was the brainstormed list of potential action strategies. In those phone interviews, some members of the SMWG identified issues with the brainstormed list of potential action strategies, which included: disjointed, too many, unclear about where to start, missing phases or timetables (short term vs. long term), and missing consensus on immediate next steps. The issues raised signaled a desire by some to refine the brainstormed list of action strategies. Recognizing the importance of refining the action strategies by the full SWMG, to grow shared knowledge and support collaboration, there was an additional facilitated conversation at the November SMWG meeting to address the issues and refine the brainstormed list of possible action strategies (Figure 6).

Figure 6

Action Strategies: top actions for regional collaboration

Action Strategies for Illinois' northern coast were developed for SMWG meetings ONLY, they do NOT represent recommendations for action by any of the partner organization or the SMWG. This list is not comprehensive, and is being provided to illustrate a range of options that merit further discussion.

1. Gather current data, identify data gaps, establish data sharing partnerships, and support data gathering efforts. Need: Hold initial meeting with government agencies to identify data gaps and data sources.

2. Track and analyze past and current dredging, sand nourishment, and other sand management practices, processes, and cycles. Need: SMWG members complete annual survey on their sand management practices; identify successful practices, dredging/sand loss cycles, and lessons learned.

3. Convene a policy and regulation working group to understanding current process and opportunities to improve efficiencies and effectiveness. Need: Invite and affirm SMWG members to participate. Develop comprehensive list of current policies and regulations governing sand management along the North Shore and identify potential policy changes.

4. Continue outreach to all coastal communities in Illinois North Shore ensuring full representation. Need: Outreach to coastal communities not currently engaging in the process.

V. Next Steps

Through this process, the SMWG identified specific next steps for the regional collaborative. It outlines what the SMWG would like to accomplish together in the next 6-8 months to advance the refined action strategies.

Figure 7

Next Steps – to advance regional collaboration on sand management

1. Continue as a regional sand management group and meet quarterly
2. Identify and fund a group coordinator
3. Seek funding for regional collaboration
4. Share, gather, and analyze data over time and have available through an accessible narrative
5. Analyze legislative/policy/regulatory opportunities and draft recommendations
6. Through a collegial forum, vet proposals on shoreline practices
7. Develop an engagement strategy for residential landowners

VI. Appendices

1. Joint Invitation to Participate as Sand Management Working Group Member
2. Sand Management Working Group Meeting Minutes: March, May, June, July
3. Spreadsheet of Sand Management Working Group members
4. Pros and Cons of Implementation of BMPs to Protect Regional Assets
5. Recent Studies
6. Case Studies of Regional Collaboration
7. Examples of Shoreline Management Practices
8. Brainstormed List of Potential Action Strategies
9. Phone Interviews
10. Survey Questions

Appendix 1

Joint Invitation to Participate as Sand Management Working Group Member

February 17, 2015

Re: Invitation to Join the Sand Management Working Group: Kick-Off Meeting, March 9, 2015

Dear

Lake Michigan and the shoreline represent one of the greatest economic, recreational and environmental assets of our region. One feature of this shoreline is that it is constantly shifting and changing as sand and sediment naturally move from one place to another. The patterns of sand movement can present management challenges for beaches, harbors and off shore habitats, which are often exacerbated by unpredictable costs, permitting and extreme weather. However, these challenges are not the whole story; there are also significant opportunities to work together to develop strategies that benefit individual communities and the North Shore region.

As leaders who represent the Illinois North Shore region, **your voice is critical** to developing a regional strategy that addresses these challenges and ensures coastal communities continue to benefit from the Lake Michigan shoreline.

Over the next several months, the **Sand Management Working Group** – comprised of local elected officials and other community leaders along the North Shore – will meet to identify and develop strategies for how to harness these opportunities. Members of the Working Group will develop a plan that articulates a regional vision and strategies for the long-term, sustainable management of sediment resources along Illinois' North Shore. Your vision and strategies will be drafted into a plan by the Alliance for the Great Lakes and presented to the federal and state leaders for consideration.

This letter is an **official invitation** for you, or a designee of your choice, to participate as a member of the **Sand Management Working Group**. Please join us for a kick-off meeting on **Monday, March 9**, 2015 from **12:30 to 3:00 pm** at the **Waukegan City Hall Council Chambers** (100 N. Martin Luther King Drive); refreshments and conversation will start at 12:30 pm, the meeting will start at 1:00 pm. This kick-off meeting will focus on federal and state leaders hearing from local leaders such as yourself about your vision for the Lake Michigan shoreline.

Your office will be contacted within the next week to confirm your attendance and a designee for the Sand Management Working Group. Please contact Laura Brown at lbrown@bluestemcommunications.org or 312-754-0403 to RSVP or request additional information. Thank you in advance for your time and consideration; we look forward to working together on this important project.

Sincerely,

U.S. Senator	**Illinois State Senators**	**Illinois State Representatives**
Honorable Mark Kirk	Honorable Daniel Bliss	Honorable Scott Drury
U.S. Representatives	Honorable Melinda Bush	Honorable Robyn Gabel
Honorable Robert Dold	Honorable Terry Link	Honorable Sheri Jesiel
Honorable Janice Schakowsky	Honorable Julie Morrison	Honorable Rita Mayfield

Illinois Department of Natural Resources, Diane Tecic, Coastal Management Program Director

Appendix 2

Sand Management Working Group Meeting Minutes: March, May, June, July

Illinois North Shore Sand Management Strategy Meeting
Monday, March 9, 2015 – Waukegan City Hall Council Chambers

Meeting Attendees

1. Sarah Shadnia, State Senator Melinda Bush
2. US Representative Robert Dold
3. Beth Koch, State Representative Sheri Jesiel
4. James Yoo US Representative Jan Schakowsky
5. Philippe Melin, US Representative Robert Dold
6. Jo-An Sabonjian, State Senator Julie Morrison
7. Alison Leipsiger, State Senator Daniel Biss
8. Deb Waszak, City of North Chicago
9. Mayor Wayne Motley, City of Waukegan
10. Bob Dorneker, City of Evanston
11. Pat DiPersio, Village of Winthrop Harbor
12. President Kathleen O'Hara, Village of Lake Bluff
13. Rick Stumpf, Park District of Highland Park
14. Steve Mandel, Lake County Board
15. Karen McCormick, State Representative Robyn Gabel
16. Ruben Sanchez, State Representative Rita Mayfield
17. Audrey Nixon, Lake County Board (District 9)
18. Matt Abbott, Senator Kirk
19. Sandy Hart, Lake County Board (District 13)
20. Mary Ross Cunningham, Lake County Board (District 14)

Meeting Goals

1. Develop a deeper appreciation of the shoreline communities' shared interests (shared = visions, challenges, and opportunities)
2. Reveal opportunities to work together
3. Commit to developing a regional Sand Management Strategy for Illinois' North Shore

Meeting Outline and Notes

I. Welcome by Mayor Motley

Mayor Motley welcomed everyone to the meeting, noting that this is a vital issue for Waukegan and that he and the City of Waukegan are committed to working with everyone and look forward to real progress. Waukegan is currently developing it's lakefront with partners such as IDNR, IEPA, Waukegan Park District and is excited about the opportunity to partner with other municipalities on a regional Sand Management Strategy. *(Please note that this is a summary of his welcome and are not exact quotes.)*

II. Welcome by US Representative Robert Dold

Rep. Robert Dold thanked everyone for attending to work on this issue together. Noted that Lake Michigan is a resource that impacts and defines our communities and that there are challenges to ensure that our shoreline remains accessible, safe and clean. It is important that we share the responsibility for managing the shoreline and maintaining the benefits. Emphasized that we are not here to discuss specific problems but begin to think about how we can work together to develop regional solutions. *(Please note that this is a summary of his welcome and are not exact quotes.)*

III. Setting the Stage

a. **Joel Brammeier**

Joel explained that this is a project led by the Alliance for the Great Lakes that is funded by the IDNR Coastal Management Program. Some of his key points included:

i. The strength of this project comes from the communities coming together to get things done – that is why we are here today.
ii. Lake Michigan is what creates vitality for our communities – the interface between land and water needs to be correct
iii. Everyone comes with different perspectives so we all have different priorities, but the goal is to agree on a set of principles for how we can manage the sand along the shoreline and ultimately, come up with a set of shared solutions.
iv. Important to raise our level of information about what is going on along the shoreline.
v. We hope that everyone leaves today with an agreement that your municipality is committed to working together on this issue and will collaborate across municipal boundaries

b. **Jennifer Browning**

Jen reviewed the meeting goals, agenda and discussion guidelines and invited everyone to introduce themselves, after which she started the first discussion.

IV. Discussion 1: Community Visions and Priorities

Jen Browning facilitated a discussion about communities' vision and priorities for the shoreline. To kick off the discussion, Jen asked people to envision their shoreline and then share what that vision looks like. Below are the notes from the participants:

a. Mayor Motley
   i. Waukegan has a master plan to redevelop the shoreline (1400 acres) but the challenge has always been the remediation of parcels with various owners:
      1. North State Bank
      2. City of Waukegan owns the former Coke and OMC site
      3. O'Leary (?)
   ii. The vision is to clean up these parcels and redevelop into businesses, recreation, and housing.
b. Steve Mandel, Lake County Board Member
   i. Integrate people into the lakefront through new housing (multi-family), recreation opportunities, and restaurants/businesses so that people understand the value of the lake
   ii. Open up the lakefront to engage the population
   iii. "It is a blue gem – anyone that walks along the lake feels it."
c. Sarah Shadnia (State Senator Melinda Bush)
   i. Zion has the former nuclear power plant site that needs to be cleaned and redeveloped
   ii. Opportunity for housing, restaurants and businesses
d. Karen McCormick (State Representative Robyn Gabel)

        i. Constituents talk a lot about environmental concerns related to stormwater management, pollution and flooding
        ii. Specifically, in Winnetka there are a lot of concerns about flooding – how is this related to sand management?
        iii. There are currently beach redevelopment projects taking place which includes cleaning up, removing old structures and sand nourishment projects
e. Jim Lakeman, Lake Bluff Park District
    i. Sustainability of structures: there are outdate structures and some concrete in the lake that needs to be removed.
    ii. Sand nourishment: how to maintain without losing
f. Kathleen O'Hara, President, Village of Lake Bluff
    i. Lake Michigan is our premier asset
        1. Important to maintain the characteristics that make it so (user-friendly, open to the public, clean, safe)
        2. Important to continue to provide various uses – recreation, dog-beach,
    ii. Lake Bluff has a long range plan developed in conjunction with the park district that addresses these visions/priorities.
    iii. Challenge is stormwater management
    iv. Currently, North Shore Sanitary District is adding a "bathtub" there so cannot do anything until that is in place
g. Audrey Nixon (represents North Chicago and Waukegan)
    i. Important to have businesses along the shoreline to bring citizens to the lakefront
    ii. Encourage citizens from Waukegan and North Chicago to use Foss Park
h. Representative Dold
    i. The vision has many aspects:
        1. Economic
            a. shipping industry at Waukegan Harbor is vital to the city and region--it needs to stay open and functioning
            b. Opportunities for redevelopment (Winthrop Harbor)
        2. Recreation: open space for people to access
        3. Environmental:
            a. Zion power plan has to be cleaned up (remove spent nuclear fuel rods)
            b. Minimize runoff
            c. Ravine protection
i. Pat DiPersio, Winthrop Harbor
    i. Value the open space – preserving and restoring open space for use and having amenities
    ii. Regional plan to interconnect bikeways and bring people to the community
j. Rick Stumpf, Park District of Highland Park
    i. Important to make it attainable for people west of Greenbay Road
k. Alison Leipseiger, State Senator Biss
    i. Safety
    ii. Environmental cleanliness
l. Recreational Uses
   In response to several people mentioning recreation as a priority, Jen asked people to list the types of recreation. It was noted that this section of the Great Lakes shoreline has the highest percentage of recreational use – the Coast Guard is most active in this region.
    i. Swimming
    ii. Boating (kayaking, motor, canoe)

iii. Fishing
iv. Walking/Running
v. Bird watching
vi. Passive use (enjoying the views)

To conclude this discussion, Jen briefly reviewed the list and asked people to talk about common themes.

a. Lakefront Redevelopment
    i. Residential with open space for the public
    ii. Accessible to all
    iii. Environmentally-sensitive
b. Safety: pollution and other issues
c. Ravine and bluff restoration
d. Environmental benefits: important to preserve the characteristics that make it valuable
e. Harbors are important to maintain/develop for economic and recreational uses
    i. Waukegan Harbor
        i. refuge harbor: provides safety for boats/ships
        ii. deep dredge allows for large scale shipping (economic benefits)
    ii. Winthrop Harbor: economic, housing, recreation
    iii. Wilmette Harbor: recreation
f. Aesthetic: Exciting to have a beautiful shoreline from Chicago to state border

V. **Presentation: Past, Present and Future Shoreline Conditions**

David Bucaro, US Army Corps of Engineers, outlined the historical and current conditions of the Illinois North Shore.

VI. Discussion 2: Regional Visions, Challenges and Opportunities

Jen facilitated a discussion to get people to think about how these current and future conditions might impact the vision for their shoreline and what are some of the challenges to reaching your vision?

a. Park District of Highland Park: cannot safely construct anything without a stable shoreline. There is a lot of risk involved with the "temporary" structures.
b. Mayor Motley: There is shoaling along the harbor is a big challenge. The City of Waukegan dredges the sand and places elsewhere along the shoreline. This costs about $1 million/year.
c. Diane Tecic, IDNR: Illinois Beach State Park loses sand due to natural shifting of sand (and storms like the October 2014 event), so IDNR has to pay for sand nourishment; this also causes problems for people down the shore.
    i. Important to note that what we do individually impacts our neighbors
    ii. Joel noted that it is important to think about how the neighboring communities could benefit from IBSP (tourism, business) if it was well-maintained. Not only attract people from the surrounding communities but from other parts of the state (think about it as a tourist destination)
d. Pat DiPersio: We need to encourage private investment at Winthrop Harbor because it seems unlikely that the state can provide a continual source of funding. Also noted that it is important to implement engineered methods to amend the shoreline and then follow up with other solutions.
e. Karen McCormick: There have been many ideas about what would theoretically be a great shoreline, but it would be helpful to know some of the actual solutions.
    i. Jen responded that there are some solutions, but the important part of this project and meeting is to come up with alternative solutions that have a

regional approach. And, these solutions aren't necessarily working and are expensive so we should start to think about new ideas.

ii. Joel responded that one municipality can take action to construct a beach or build a groin, but it might be at the expense of your residents and/or neighboring communities. If you bring together ten different communities it has much more impact.

VII. Questions/Comments

a. Andy Morang: Who owns the Zion Power Plant? This seems to be a big issue.
   i. Ownership remains in the hands of ComEd and the plant has been decommissioned for decades
   ii. Should ComEd be part of the conversation?
   iii. This is a critical project for getting residents to the region

b. Rep. Dold:
   i. Property values are funding our communities' services so important to maintain the cleanliness, safety, aesthetic value of our lakefront
   ii. Recognized USACE for being very responsive during the storm events and working so hard to stabilize and clean up the shoreline
   iii. Emphasized the importance of keeping Waukegan Harbor open and active because if it did shut down, the rail and train use would increase, thereby increasing emissions and impacting our communities in other ways

VIII. **Closing Remarks**

Diane Tecic, IDNR Coastal Management Program, emphasized the IDNR CMP commitment to work with communities on this project. Noted their role as a partner, stakeholder and regulatory agency.

Illinois North Shore Sand Management Working Group (SMWG)
May 20, 2015, 10:00 am to 12:00 pm
Heller Nature Center, Highland Park
Meeting Notes

Attendees

Sand Management Working Group Members

1. Jim Ferrera, Recreation Supervisor – Evanston
2. Kari Cowart, Executive Director - Foss Park District (North Chicago)
3. Costa Kutulas, Superintendent of Parks – Winnetka Park District
4. Steve Mandel, Board Member - Lake County Board (District 13)
5. Donald White, Acting General Manager - Lake County Public Water District
6. Rick Stumpf, Director of Planning and Projects - Park District of Highland Park
7. George Russell, Engineer - Lake Bluff
8. Jim Lakeman, Superintendent of Recreation, Safety, and Outreach Services, Lake Bluff
9. Pat DiPersio, Community Development Director - Winthrop Harbor
10. Mayor Al Hill, Zion
11. Mayor Wayne Motley, Waukegan
12. Steve Wilson, Executive Director, Wilmette Park District
13. Steve Byers, Illinois Nature Preserves Commission
14. Jim Anderson, Director, Natural Resource Department – Lake County Forest Preserves
15. Brian Dorn, Executive Director – North Shore Water Reclamation District
16. Linda Masters, Restoration Ecologist – Openlands
17. Ryan London, Land Protection Specialist and Restoration Ecologist – Lake Forest Open Lands Association
18. Eileen Openbrier, Director of Environmental Compliance and Sustainability, Abbvie
19. Rich Romanek, Plant Manager - National Gypsum Company
20. Fred Veenbaas, Senior Env. Compliance Specialist – Midwest Generation/NRG (Waukegan)
21. Karen McCormick, Chief of Staff - State Representative Robyn Gabel
22. Alison Leipsiger, Legislative Assistant - State Senator Daniel Biss
23. Philippe Melin, District Director - US Representative Robert Dold
24. Beth Koch, Legislative Assistant – State Representative Sheri Jesiel
25. Sabine Herber, Harbor Executive Director - Wilmette Harbor Association
26. Brad Semel, Heritage Biologist – Illinois Depart of Natural Resources
27. Jon Shabica – Shabica & Associates

Partners

1. Diane Tecic, Coastal Program Director – IDNR
2. Ania Ruszaj, Coastal Program – IDNR
3. Angela Larsen, Community Resilience Manager – Alliance for the Great Lakes
4. Ethan Brown, Resilience Coordinator – Alliance for the Great Lakes
5. Jennifer Browning, Executive Director – Bluestem Communications

6. Laura Brown, Program Manager – Bluestem Communications
7. Dan Swick, Project Manager – Delta Institute

Activity 1: Review and Confirm Shared Principles
J. Browning facilitated a group discussion about the draft shared principles. These were developed based on the input/feedback from elected officials, community leaders at the March 9 meeting.

The purpose of these shared principles is to provide the group a set of guidelines about what we really want to achieve and what it most important. The shared principles represent the conditions that are important to communities. The recommended strategies should create, protect and improve these conditions.

Overall, the SMWG members agreed with the principles with comments listed below. In particular, it was noted to incorporate *public health and safety* into the shared principles. Partners will revise the shared principles for the subsequent meeting.

Broad and fair access to shoreline recreation activities for all communities is a priority

- John Sentell: Important for everyone [living along the North Shore] to recognize what kind of shoreline we have; recognize how unique it is

Sand is an important natural resource that impacts our economy, the environment and our quality of life – new management practices should reflect this

- **S. Herber:** After seeing the aerial photos it is hard not to understand how important sand is as a resource, especially taxpayers whose money goes toward paying for sand which then disappears
- **Mayor Motley**: Waukegan's problem is too much sand. The City owns the entire lakefront and moves sand from the harbor to cap some of the contaminated land. While it is beneficial to "re-use" it, moving it less than a quarter mile is beneficial but the cost is an economic burden
- **Mayor Hill**: Looks at sand as a health and safety issue rather than a quality of life issue. The water intake pipe is failing (the sand that covers it has eroded) and it is approximately $9 million to replace/repair
- **D. Tecic:** Impact on the environment – loss of high quality habitat at IBSP
- **S. Byers:** Some of the natural resources (dunes, wetlands, IBSP, foredunes) aren't just regional assets but globally significant

Sustainable shoreline practices will protect the economic, social and environmental assets in our communities

- **P. Melin:** It is important to consider the transaction process/opportunity costs of not having to spend the money on sand and instead spending on other benefits for their community – recreation, etc.
- **P. DiPersio**: Identifying important assets along the shoreline is important

Local and regional economic development is strongly connected to shoreline health

- Identifying shoreline as a unique asset – tied to some sort of aspect of communities whether it is economic, social, environmental

Our shoreline is home to unique assets that can increase tourism and improve the quality of life of our residents

- **R. Stumpf:** Lack of sand on the shoreline leads to a lack of enjoyment; less sand means less people means less business—impact on economy
- **P. DiPersio:** The public beach on the north end is closed for contamination reasons and the south end has washed away. Winthrop Harbor recently hosted a clean-up day and several residents expressed interest in utilizing the beaches

Other comments:

- **P. Melin:** Recognize the educational opportunities for children and adults. How can we use the lake to share this educational resource?
- **P. DiPersio**: Recognizing the unique natural value of these assets and do everything possible to use sensibly to provide value in all of these categories.
- Mayor Al Hill: Need to stabilize the shoreline – old structures are a threat
- **J. Shabica**: Regulatory requirements may be outdated from the standpoint of dredging. If we are putting sand off shore it is never coming back into the system.
- **P. Melin**: Everyone believes we need to work together to find synergies so that we can achieve these regional strategies. We need to make clear that this is a regional problem that needs regional solutions and people in the region need to develop these solutions.
- **S. Mandel:** There is the inherent conflict or tension between stabilizing the shoreline with structures while protecting the natural cycle of sand processes. How can we come to terms with both? We need to stabilize the shoreline for recreation, economy but need to protect the environmental assets from impacts of these structures.
- **A. Larsen:** There may be certain geographies where the shoreline practices are different from another place along the shoreline.

Activity 2: Identifying Local and Regional Assets

Description

In breakout groups SMWG identified local and regional assets on maps with three categories: Recreation, Economy and Environment. The group identified infrastructure (water plants, intake pipes, etc.) on the economy and environment maps. Each group reported out assets listed below (attached is a full list).

Recreation

North Point Marina
Boat launches
Fishing piers
Navy base
Bike trails
Yacht clubs
Beaches/boat launches

Environment
Watersheds coming into the region
Nature preserves
Streams
Illinois Natural History Sites
Water quality
Liabilities: water quality, infrastructure, beach contamination, superfund sites, treatment facilities, wetlands, MWRD lock

Economy
Industry: Waukegan harbor, National Gypsum, NRG, Abbott
Municipality infrastructure – water intake/cooling/sewage
Northwestern University

Comments
The conversation focused on categorizing the assets and whether it is beneficial to look at assets regionally vs locally.

- J. Sentell: Look at sliding scale of who is benefitting from the asset to determine whether or not it is a priority
- S. Herber: Prioritize infrastructure that are tax based, public-based entities, private properties
- J. Anderson: Need to think broader geographically – north to Wisconsin and south to Chicago. How to incorporate this into the conversation and what data do we need.
- P. DiPersio: Categorize as public or private use across the categories
- S. Herber: The economic, recreation, environment are quantifiable (takes out who it impacts) as opposed to regional and local
- P. DiPersio: Private property and tax base that generates – public land not generating money to protect the land

Activity 3: Identifying Challenges

Description
In the same groups, SMWG members discussed challenges and threats to these assets using the questions as guidelines. The tables represent notes written by members and additional comments are included below.

- Question A: What are the sand management challenges related to our assets?
- Question B: Describe each sand management challenge in more detail
    - When does it happen and how often?
    - What is the severity?
    - What solutions have been tried?
- Question C: What is needed to be able to help develop a solution to this challenge?

RECREATION

Asset	Challenge	Description
Marinas	Excess Sand Environmental Impact Funds	Regulatory excess Need better use of sand – keep in the littoral system Annual need
Boat Launches	Excess sand Environmental Impact	
Public Beaches	Too little sand/migration Sand quality Safety/profile Pollution	Long-term need • sustainable shoreline plan • stabilize
Parks/Open Space Preserves	Access Erosion Interconnectivity (shore to shore) Habitat/Environment Access & safety Habitat loss due to sand depletion	Same as above Low funding priority (state and local)
Fishing	Access & safety Habitat loss due to sand depletion	

ECONOMY

Asset	Challenge	Description
Infrastructure and public beaches	Too much sand – dredging needed	Permitting issues → Need policy changes to prioritize maintenance of sand given littoral drift
Intake Pipeline • All lakefront • Zion (failing)	Policy change Funding Changing state policy	USACE – sand by passing IDNR – sand placement prioritize maintenance Shipping sand to Zion annually and once it is there, need strategies to keep it there
Waukegan Lakefront Property	Remediation	Clean up
Waukegan Harbor Economy • National Gypsum • Marina • Midwest/NRG	Continual dredging	
Tourism	Communication	High non-resident fees
Spent Fuel Rods (Zion)	Protection	

Private Property Protection • tax base		

Ideas for Potential Solutions

- Stabilization to decrease annual costs
- Homeowner pre-purchase education across all North Shore communities re: riparian property, realities of lake cycles, regulatory requirements for property owners
- Regional tourism/PR to promote the shoreline

ENVIRONMENT (AND INFRASTRUCTURE)

Asset	Challenge	Description
Ecosystem services – water quality	Maintaining, sedimentation	
Lake Michigan Fisheries	Habitat degradation	
Native habitats – flora and fauna	Dune stability, shoreline erosion Invasive species increases erosion	Clean up
Near shore habitat and stability	Lake bottom erosion	
In-water structures (groins and sheet pile)	Unstable – old and new building	Minimize damage – big picture plan
Lakeshore Morphology (alluvial)		Big picture plan
Hard points are the issue: • above sand collects • below significant loss • No new extreme hard points	Security of storm events Financial limits Ice cover Lake levels Critical areas IEPA regulations Asbestos contamination Loss of littoral drift	Annual processes Climate change Comprehensive assessment of health issues Containments for sand management

Other Notes:

- Lakeshore geomorphology: need to establish a clearer understanding of what is going on; holistic picture about treating the movement of sand
- Are the current in-water water structures effective? Can we come up with a generalized method to reduce/minimize damage to morphology?
- Dune stability, control invasive species, new habitat formed by collection of sand that need to be protected

- Ecosystem services of water quality – need to maintain and improve those coming from the shoreline
- Challenges
    - Various storm events
    - Ice covered lake levels related to climate change
    - Loss of littoral drift by taking sand out
    - IEPA regulations→are they too stringent as to what is in sand

Closing Remarks/Questions

The meeting concluded with a brief discussion about what worked at the meeting and what information attendees would find helpful at subsequent meetings. Overall, attendees appeared very engaged and enthusiastic about the meeting content and opportunity to have these discussions with stakeholders along the North Shore.

What worked well at this meeting?

- Structure was good; it encouraged discussion and discouraged complaints
- Strong mix of stakeholders and interests represented
- Great physical space
- Opportunity to share information between municipalities and other entities
- Some of the ideas are relatively simple and could be implemented with a policy changes (i.e. Waukegan sand problem)

What other type of information would be helpful to have in general and at the next meeting (June 17)?

- Regulatory agencies attendance at the meeting; important to have their perspective before developing strategies
- US Army Corps provide summary of draft Regional Sediment Budget
- Estimate costs: how much are we spending on status quo strategies, what is currently going on?
    - Partners and municipalities agreed to provide cost information if we sent out a survey
- Historical data
    - S. Mandel: What were the past solutions and why did they work or not work? (rocks, sand, etc.)
    - B. Semel: Illinois Geological Survey has technical information from prior meetings/studies about the shoreline
    - Army Corps to provide an overview/draft of the sediment budget
    - J. Anderson: USGS conducted a study of the lakeshore in 1994. Can they revisit this study or be invited as a partner/member?
- Case Studies
    - J. Sentell: other place where they've addressed similar issues – examples of regional strategies
    - Creative funding – think outside the box; leverage the collective
- Proposed Next Step: SMWG members draft and sign a letter to invite all regulatory agencies

Illinois North Shore Sand Management Working Group
June 17, 10:00 am to 12:00 pm • North Point Marina
Meeting Notes

Attendees

1. Mayor Motley, City of Waukegan
2. Fred Veenbaas, Midwest Gen/NRG
3. Joe Seidelmann, Waukegan Port Authority
4. Pat DiPersio, Village of Winthrop Harbor
5. Saki Villalobos, IDNR Illinois Beach State Park
6. Linda Masters, Openlands
7. Steve Byers, IDNR Illinois Natural History Survey
8. Steven Wilson, Wilmette Park District
9. Angela Smith, Foss Park District
10. Kari Cowart, Foss Park District
11. Jim Lakeman, Lake Bluff Park District
12. Sabine Herber, Wilmette Harbor Association
13. Philippe Melin, US Representative Robert Dold
14. Donald White, Lake County Public Water District
15. Rich Romanek, National Gypsum
16. Ryan London, Lake Forest Open Lands Association
17. Sheri Jesiel, State Representative (61st District)
18. Eileen Openbrier, Abbvie
19. Jim Anderson, Lake County Forest Preserves

Partners

1. Diane Tecic, IDNR Coastal Management Program
2. Ania Ruszaj, IDNR Coastal Management Program
3. Angela Larsen, Alliance for the Great Lakes
4. Dan Swick, Delta Institute
5. Jen Browning, Bluestem Communications
6. Laura Brown, Bluestem Communications

Agenda

- Welcome and Project Overview
- Information & Resources
- Assets & Challenges
- Potential Strategies
- Questions, Next Steps & Closing Remarks

Information & Resources

D.Swick provided an overview of the resources mentioned at the May 20 meeting and gave a status update, noting that the partners were collecting the these resources and would provide more technical information at the July 17 meeting.

D.Swick presented three case studies on sand management projects. For more information, please click on the case study title to access the full report.

1. **Galveston Island**
    a. Multiple issues being addressed with one solution
    b. Keeping the sand in the system as much as possible
2. **San Diego Coastal Regional Sediment Plan**
    a. Many stakeholders involved (municipalities, counties, companies, organizations, state agencies, etc.)
    b. Challenges impacting potential strategies → land use choices made by govts and other landowners restrict the types of strategies/practices
3. **Army Corps Study (Luddington to Michigan City)**

Questions/Comments

1. The Army Corps of Engineers is a partner in a lot of these case studies. Is there interest from Army Corps to partner with this Sand Management Group?
    - Diane responded that there is interest from the Corps and they are going to present the draft Regional Sediment Budget
    - Angela commented that before the Army Corps can begin to plan or develop any projects and ask to share costs, they want and need to know what the communities want

Assets & Challenges

The purpose of this discussion was to narrow the list of assets (2-3 per category) that was developed at the May 20 meeting (see attachment A) to discuss in detail the challenges to protecting, improving these assets.

Review Shared Principles

The first part of the discussion focused on defining criteria for narrowing the list of assets. J.Browning reviewed the Shared Principles explaining that the key assets should address these agreed upon principles (attachment B). Below are some comments on the Shared Principles.

1. **J.Anderson:** Shared principles should reflect the ecosystem services provided by the sustainable shoreline approaches
    a. Ecosystem services: placing an economic value on the future benefits that are provided by an ecological asset (ex: stabilized dune system

saves money in the future because it prevents sand being washed away and having to be replaced, provides habitat protection, etc.)

b. Ecological assets that function correctly leads to long-term sustainability and economic benefits

2. **S.Herber:** Important to note that the strategies cannot negatively impact or cause any harm to other assets

Refine Assets

The purpose of the discussion was to decide on 2-3 assets for each category that are most threatened. The criteria for selecting assets focused on how each represented the shared principles. To begin, the group reviewed the assets developed at the May 20 meeting. J.Browning asked people to propose an asset and discuss how it represented the principles. The example was Illinois Beach State Park.

While the group did develop a list of six assets (listed below), this agenda item resulted in an extensive conversation about the process of refining assets and approaches to developing strategies. Comments are listed below.

1. Illinois Beach State Park
2. Waukegan Harbor
3. Beaches
4. Water Intake System
5. Nature Preserves/INAI sites
6. Nuclear waster/power plant/superfund sites

P.DiPersio: Erosion at all public beaches is a challenge for a lot of communities so we should have a public beaches asset to capture all community beaches.

P.Melin: How are we actually applying "broad and fair access" principle – actual numbers or idealistic/vision approach?

- Communities that have beaches with individual boat launches, recreation activities have enhanced property values b/c people like to live near water
- Don't agree with the bias against fees on beaches [thereby not being accessible] because the fees help pay for the restoration, maintenance and increase visitorship, etc.

J.Lakeman: Lake Bluff recently lost a lot of sand in a storm. Beach was voted number one asset by resident so impacts to beach impact economy, quality of life, etc. Lake Bluff charges a fee to residents and non-residents to help provide recreational activities, maintain the beach. Want to make sure that if we are protecting the big/regional assets need to make sure that the "small" assets are not negatively impacted.

S.Herber: The key to all of this is a larger plan and to do no harm as you go downstream. While the larger plan may not directly fix a problem at Lake Bluff or another community, it benefits the entire system and should not exacerbate a problem at another area. We know it is too expensive to fix the whole system with one solution so we should phase in projects/solutions by sections.

J.Seidelmann: The problems don't stop at the border – the problems continue north in Wisconsin.

J.Anderson: Recommended that the group should identify what is wrong with the system to start to develop commonalities. We need to know about all the issues that are causing degradation of the system (natural and infrastructure) and where this is happening.

- A.Larsen: Noted that coordinating with Wisconsin is very important to the Alliance for the Great Lakes and that we have noted J.Anderson's comment about the system approach
- D.Tecic: the Army Corps is researching the sand/sediment impacts from Wisconsin in the Regional Sediment Budget

L.Masters: Get rid of the community names [on the list of assets]. Doesn't matter spatially where they are located.

S.Herber: Geography is important because what happens at one might impact other assets.

S. Jesiel: This is a good process and it doesn't necessarily mean it is territorial or that by highlighting what is important doesn't exclude anything on the full list of assets.

S.Jesiel: Suggested a key asset is water intake pipes. These are critical to all communities because provide fresh water. It is critical that they are protected. In particular, she noted that the Zion intake pipe is threatened by sand erosion.

J.Anderson: Suggested that we need to look at the Lake Michigan coastline as a whole to get a baseline of data and information. First, we need a solution for the whole lake and then we come develop specific solutions for smaller areas/regions.

P.DiPersio: This is a process question—we are all trying to get the same answers but have conflicting views on how to reach those answers.

J.Lakeman: Redefine how we are labeling this process and move away from assets because we will keep going in circles. Understand the regional importance, but we also have to represent our communities.

S.Jesiel: What are the biggest issues? What areas are big problems for each community? Want to hear about these so that we can see if strategies address the problems?

A.Larsen: Clarified that we are going through this process to help identify specific places that are experiencing specific challenges that need more research.

P.DiPersio: Noted that this process helps us to find the commonality of issues that we are dealing with.

It was noted that it would be helpful to see where the challenges are along the North Shore.

R.London: Private beaches need to be addressed

J.Anderson: Should include private beaches because they property owners can put in a structure that impacts the public beach

Challenges
J.Browning presented a list of challenges that were generated at the May 20 meeting. The group went through the list of key assets to indicate the challenges that each asset is facing. The numbers refer to the challenges listed below.

Illinois Beach State Park: 2, 3, 5, 6, 7, 11, 12
Waukegan Harbor: 1, 2, 3,4, 7, 8, 10
Beaches: 6, 1, 2, 3 7, 10, 11
Water Intake Systems: 1, 6 (depends on community), 3, 12, 11
Nature Preserves/INAI sites: 6, 7, 1, 3, 13
Nuclear waster/power plant/decommissioned/superfund sites: 5, 3, 6, 7, 8 (safety), 2

1. Excess Sand
2. Policies/Regulations
3. Funding
4. Dredging
5. Communication
6. Sand Migration/Too Little Sand
7. Sand Quality/Contamination/Pollution
8. Access & Safety
9. N/A
10. Unstable/Outdated Structures
11. Loss of littoral drift
12. Lake bottom erosion
13. Fragmented ownership

Comments

A.Smith: Foss Park District specifically faces lake bottom erosion and unstable, outdated structures. The park also needs sand.

J.Anderson: I have worked with the Army Corps a lot and want to make sure that we really think about the impact analysis. Might want to consider finding another group to conduct the analysis, to look at the issues that are impacting these assets.

Closing Remarks

J.Browning thanked everyone for attending the meeting and participating in the discussion. She recognized that this may have been a frustrating meeting for some, but it was important to talk through the process and hear about the different perspectives.

D.Tecic:

- Highlighted IDNR work and support of this project. IBSP and North Point Marina are big issues for IDNR and having this input helps inform IDNR's strategies. IDNR wants to make sure their efforts are compatible with other communities/don't negatively impact other communities
- Second phase of this project will include additional research/data collection and resources:
    - NOAA Grant: IDNR is working with ISGS to address data needs and impact analysis.
    - IDNR Coastal Management Program has some funding to continue moving the project along after this grant is over.
    - IDNR is hiring a coastal geologist and coastal engineer in partnership with ISGS to work on this and other coastal projects
    - Plan to engage CMAP to help with regional planning
- In follow up to this meeting, the partners would like to send a survey to collect additional information.

Next Meeting: Wednesday, July 15, 10:00 am to 1:00 pm at Gillson Park, Wilmette, IL.

Illinois North Shore Sand Management Working Group
July 15, 10:00 am – 1:00 pm
Lakeview Center, Gillson Park - 800 Gillson Park Drive, Wilmette

Meeting Notes

Sand Management Working Group Members:

1. John Sentell, Lake Forest Open Lands Association
2. Ryan London, Lake Forest Open Lands Association
3. Linda Masters, Openlands
4. Dave Miller, North Shore Water Reclamation District
5. Donald White, Lake County Public Water District
6. Ron Salski, Lake Bluff Park District
7. Kari Cowart, Foss Park District
8. Leslie Combs, US Representative Schakowsky
9. Frederick Veenbaas, NRG
10. Alan Lulloff, ASFPM (Madison, WI)
11. Rich Romanek, National Gypsum
12. Costa Kutulas, Winnetka Park District
13. Rick Stumpf, Park District of Highland Park
14. Steven Byers, Illinois Natural History Commission
15. Jon Shabica, Shabica & Associates
16. Joe Seidelmann, Waukegan Port District
17. Brandon Stanick, Village of Lake Bluff
18. Sabine Herber, Wilmette Harbor Association
19. Chuck Myers, Village of Lake Forest
20. Pat DiPersio, Village of Winthrop Harbor
21. Philippe Melin, US Representative Robert Dold
22. Brad Semel, IDNR
23. Karen McCormick, State Representative Robyn Gabel
24. Edward Wilmes, City of North Chicago
25. Steve Wilson, Wilmette Park District
26. _____, Lake County Forest Preserve District

Partners:

1. Diane Tecic, IDNR Coastal Management Program
2. Ania Ruszaj, IDNR Coastal Management Program
3. Angela Larsen, Alliance for the Great Lakes
4. Jennifer Browning, Bluestem Communications
5. Laura Brown, Bluestem Communications
6. David Bucaro, USACE
7. Andy Morang, USACE
8. Linda Lillycroft, USACE (on phone)

I. **Welcome, Introductions & Project Overview**
   a. Attendees introduced themselves (see above)
   b. J.Browning presented an overview of the project: partners, purpose, final deliverable, process and next steps
   c. J.Browning reviewed the Shared Principles, highlighting changes based on the June 17 meeting. No additional comments/changes from the SMWG members.

II. **Draft Management Goals for Shoreline Assets**
   a. Presented and reviewed the asset map handouts to use as a reference throughout the meeting and asked attendees to make any changes to the maps
   b. Group discussion about management goals for the assets. The partners drafted goals that J.Browning reviewed and asked members for feedback/changes (outlined below). A.Larsen made also edited the goals during the discussion.
      i. **Illinois Beach State Park**
         IL Beach State Park is managed as a natural dune ecosystem, will be publically accessible, and will have enough sand to support recreational activities.
            1. Should be dune AND swale and enough sand to prevent further shoreline erosion.
      ii. **Waukegan Harbor**
         Waukegan Harbor will be dredged in order to support commercial and recreational boating activity. Dredged material will be placed in the nearshore to nourish recreational beaches and dune ecosystems. Infrastructure will as much as possible support littoral drift.
            1. Needs clarification – too technical sounding
            2. Dredged material will be placed in nearshore, should that be to the south? Need clarification on where.
            3. Dredging is implying that we are waiting for it to get into the harbor. Could we implement a management plan to reduce the amount going into the harbor? Also would help to reduce costs.
            4. Management goal is that Waukegan Harbor will be able to support recreational and economic activities
            5. Are we referring to the natural ecosystem or just the economy? We should include the dune and swale system/natural ecosystem, too.
            6. Is the goal to have a natural bypass system and is so, what is the infrastructure? This is a question for the group but may depend on the community and where the sand has the impact.
               a. A.Larsen noted that we will be discussing physical strategies next.
      iii. **Beaches**
         Beaches will be publically accessible, and will have enough sand to support recreational activities.
            1. No comments; fine as is.
      iv. **Harbors/Marinas**
         Marinas & Harbors will be dredged in order to support commercial and recreational boating activity. Dredged material will be placed in the nearshore to

nourish recreational beaches and dune ecosystems. Infrastructure will as much as possible support littoral drift.

1. Similar comments/edits as Waukegan Harbor, but note that the harbor depths are different.

v. **Nature Preserves/INAI/Open Space**
Natural sites will be functioning and dynamic ecosystems. Parks and open spaces will be publically accessible for recreation activities.

vi. **Industry Sites**
Industry sites will be managed to contain contaminants for public safety, and stability and predictability are priorities. And as appropriate, these sites will be restored for publically accessible recreational use.

vii. **Water Intake Structures**
Water intake structure in Zion will be managed to continuously provide drinking water the residents. Stability and structural integrity of the pipe is a priority.

1. Noted that this should include all water intake structures

c. **Next Step: Partners will revise the management goals and SMWG members will have an opportunity to review/revise management goals in the draft report.**

III. US Army Corps of Engineers Update

a. Andy Morang presented a summary of the Regional Sediment Budget Study, highlighting key accretion/erosion areas along the North Shore. Below are questions/comments.

i. S.Herber: Water level question – how does that impact the data analysis?

1. Andy has not incorporated that into this draft report.

ii. B.Semel: IDNR has different number for IBSP – within single year lost 60 yards of shoreline

1. Andy responded that he has to refine the data

iii. D.Tecic takeaways from the presentation

1. Significant amount of sediment coming in from WI. We need to focus on the IBSP area because it is a critical point in the entire system. Are there two different cells in IBSP – north and south?
2. Drastic changes in Waukegan area, both a loss of sand near harbor and accretion of sand at Waukegan beach. If we know where the sand is building up south of Waukegan, we could potentially use it as a source for other beaches and communities down drift. Interested in learning about the needs and how to do this.

iv. D.Bucaro: The benefit of this analysis for this group is an understanding of how much sediment is needed (removed or added) to achieve the goals of each community and a background and scale for the management measures.

v. What about the offshore topographic features (natural reefs) that impact sand transport/movement?

1. Andy does not have the off shore data and NOAA data is deep water

vi. Sand is accumulating south of Waukegan because it is moving around the jetties. vii. Are major storms part of the equation?

1. Yes, but need to be further refined.

viii. S.Byers: Presuming that there is a certain amount of sand coming from WI, to what extent is that regulated by the Corps and to what extent can we assume that this amount of sand will continue to come into the system?

1. D.Bucaro: Corps does not regulate the sand coming down the coast but based on sediment study they think it is fairly stable coming down the coast from Kenosha to the state line. We can assume that at whatever rate it is (which Andy presented) it will remain the same for some time/not too much change going on.
    a. S.Byers: Related, any concern about commercial movement of sand from WI impacting sand in Illinois?
        i. D.Bucaro: Most states don't allow sand mining and we would have to look at state regulations.

b. **Linda Lillycroft, USACE presented examples of management strategies (see attached Powerpoint presentation)**

IV. Present and Discuss Regional Strategies

a. A.Larsen presented the physical and administrative/support strategies (see attached presentation/handout). Below are comments and questions.

i. R.Stumpf: Is a bypass even possible considering our shared principles of not impacting our neighbors?

ii. S.Byers: Rate of shoreline erosion is too much for some of these structures iii. Engineering with offshore breakwater (Rosewood Beach) – add this physical strategy to the suite of strategies

1. F.Veenbaas: Is USACE working on a model of where sand accumulates and the impacts if a structure is put in place?
    a. Not yet, but that would eventually take place.
    b. A.Morang: The Great Lakes region and specifically the North Shore has a small volume of sand sitting on a cohesive (clay) base and experiences significant water level changes. A lot of the USACE models were built for environments with a lot of sand and minimal water level changes (i.e. ocean shoreline) so the models are not applicable to this region.
    c. R.London: Is there a minimum distance that the artificial reefs have to be from the shoreline?
        i. Not sure about the specifics.
        ii. Offshore reef is like a speed bump for the waves, it will help prevent some of the erosion.
        iii. A lot of these strategies could be done in combination with other strategies…offshore reef and sand nourishment.
    d. D.Bucaro: Add nearshore armoring as a strategy. It is the use of gravel or larger particles in the nearshore area.

b. J.Browning facilitated a discussion of which strategies should/could be applied to which assets and what the pros/cons and next steps might be for each strategy. A.Larsen and A.Ruszaj took notes on the flip chart paper (see attached chart) and below are some comments about some of the strategies.
    1. Engineering – offshore reef
        a. Should be applied at any beach at which the goal is to reduce wave energy
        b. Do they impact the littoral drift? A.Morang explained the process
        c. D.Bucaro noted that these are difficult to implement due to water level changes
    2. Can a community/municipality initiate the removal of a condemned/unstable structure on a private property?
        a. No, if it's private property it has to be initiated by property owner and the owner needs a permit to remove.
        b. J.Shabica: The hardest part about removing structures is the permits because need to take care of it on the water as most structures are not accessible via the beach (land). This makes it cost-prohibitive
        c. A.Lulloff: One idea is that when new groins are being planned/installed, make sure that the designs aren't as obstructive
            i. Action item: Agree to a new design standard for the groins
            ii. J.Shabica: Illinois is unique in that if you are building a structure that might impact the littoral system you have to add sand to balance the impact (mitigation policy)
            iii. S.Herber: Lakefront property/riparian right owners need to understand rights, responsibilities and potential occurrences that might take place (i.e. pre-purchase handout). Important b/c a lot of people bought properties when beaches were big and then they change
            iv. Communication is key.
        d. D.Miller: One idea is to use the North Shore Water Reclamation District treated water to flush out the harbor(s). NSWRD currently transfers 15-20 million gallons per day of effluent to Des Plaines and spends a lot of money ($10 million) maintaining the pipe. Other states pump water into Lake Michigan per treaty, but there is an exception for Illinois.

V. Needs & Next Steps

Diane Tecic led a discussion with the group to hear from the group about what they felt were the immediate next steps and/or needs of the Sand Management Working Group. D.Tecic noted that the partners would be following up with everyone via questionnaires, one-one meetings in the month to make sure we are on the right track.

a. **What are the next steps needed as a group and as a process?**

i. D.Tecic: ICMP has been working with ISGS on modeling and coastal resilience grant. Will follow up with a draft letter of support for the grant.
ii. D.Miller: Additional research (policy) into the idea of using NSWRD water to flush the harbor
iii. J. Seidelmann: Additional data about wave action along the lakefront
iv. P.Melin: Clarify the policy about moving sand from one part of the lake to another part of the lake
    1. D.Bucaro: Good point – as Andy illustrated there is a massive mound and it can't be returned to the system due to policies
    2. A.Larsen: Wrote a memo to Diane about the policies compared to Indiana. She will get the final from Diane and send to the group
    3. S.Herber: IEPA should update regulations because there is some stuff that hasn't been found in the system in years and is costly to get all the tests
v. Who would be interested in being a part of a policy/regulation working group that will also include IEPA/USEPA?
    - Rick Stumpf
    - Philippe Melin
    - Fred Veenbaas
    - Steve Wilson
    - Sabine Herber
    - John Shabica
    - Ron Saluski
vi. Understand the full dredging process and cycle
vii. J. Sentell: Lake levels are important to consider in this process
    - D.Tecic: NOAA connection – IDNR CMP has lots of resources from larger NOAA organization to provide information; bring NOAA into the process
viii. P.Melin: Need creative and cooperative solutions; best practices/research on funding examples
ix. R.London: System to evaluate strategies that people are currently implementing (i.e. Park District of Highland Park new beach)
x. D.Tecic: IDNR needs to coordinate about IBSP. One example is to send this final report to IDNR with stakeholder support to take to demonstrate that this is an important/pressing issue
xi. Create a working group with communities with private landowners
xii. Involve Evanston – they have a sand abundance issue

Summary of Immediate Next Steps (from Flip Chart)

i. IDNR/USACE/ISGS – grant request for funding to fill in data gaps
ii. Investigate flushing effluent (North Shore Metropolitan Water District)
iii. Gathering data re wave action
iv. Explore issue about how san can be moved (permit – update regulations)

1. Small group to work on the issue with IEPA/EPA regulators: Rick Stumpf, Philippe Melin, Sabine Herber, Ron Saluski, Joe Seidelmann, John Shabica

(send a follow up email to the entire group to recruit and confirm participants)

v. Connect with NOAA re lake issues (water level)
vi. Funding task force to identify opportunities – innovative ways to fund projects
vii. Track success of strategies that are being implemented (Highland Park example)
viii. IDNR coordination on Illinois Beach State Park (ways to reduce costs by jointly purchasing services)
ix. Explore IDNR dredging opportunities
x. Expand sediment budget boundaries (to include Evanston)

Appendix 3

Spreadsheet of Sand Management Working Group Members

Last	First	Position	Organization	March 9	May 20	June 17	July 15
Abbott	Matt	District Representative	Senator Mark Kirk	Y	N	N	N
Anderson	Jim	Director, Natural Resources	Lake County Forest Preserve District	N	Y	Y	N
Byers	Steven		Illinois Nature Preserves Commission	N	Y	Y	Y
Clamp	Emily	Policy Advisor	Illinois IEPA	N	N	N	N
Cole	Maggie	Natural Heritage Regional Administrator	IDNR	N	N	N	N
Combs	Leslie	On behalf of Jan Schakowsky	US Representative Jan Schakowsky	N	N	N	Y
Cowart	Kari	Executive Director	Foss Park District (North Chicago)	N	Y	Y	Y
DiPersio	Pat	Community Development Director	Winthrop Harbor	Y	Y	Y	Y
Dorn	Brian	Executive Director	North Shore Water Reclamation District	N	Y	N	N
Ferrara	Jim	Lakefront Supervisor	Evanston	N	Y	N	N
Hart	Sandy	Board Member	Lake County Board (District 13)	Y	N	N	N
Herber	Sabine	Harbor Executive Director	Wilmette Harbor Association	N	Y	Y	Y
Hill	Al	Mayor	Zion	N	Y	N	N
Klick	Ken	Restoration Ecologist	Lake County Forest Preserve District	N	N	N	Y
Koch	Beth	Legislative Assistant	State Representative Sheri Jesiel	Y	Y	Y	N
Kutulas	Costa	Superintendent of Parks	Winnetka Park District	N	Y	N	Y
Lakeman	Jim	Superintendent of Recreation, Safety, and Outreach Services	Lake Bluff Park District	N	Y	Y	N
Leipsiger	Alison	On behalf of Daniel Biss	State Senator Daniel Biss	Y	Y	N	N
London	Ryan	Preservation Programs Director	Lake Forest Open Lands Association	N	Y	Y	Y
Lulloff	Alan	Science Services Program Director	Association of State Floodplain Managers	N	N	N	Y
Mandel	Steve	Board Member	Lake County Board (District 11)	Y	Y	N	N
Masters	Linda	Restoration Ecologist	Openlands	N	Y	Y	Y
McCormick	Karen	Chief of Staff	State Representative Robyn Gabel	Y	Y	N	Y
Melin	Philippe	On behalf of Robert Dold	US Representative Robert Dold	Y	Y	Y	Y

Last	First	Position	Organization	March 9	May 20	June 17	July 15
Miller	David	Deputy Director	North Shore Water Reclamation District	N	N	N	Y
Myers	Chuck	Superintendent of Parks & Forestry	City of Lake Forest	N	N	N	Y
Openbrier	Eileen	Director Environmental Compliance & Sustainability	Abbvie	N	Y	Y	N
Romanek	Rich	Plant Manager	National Gypsum Company	N	Y	Y	Y
Russell	George	Engineer	Village of Lake Bluff	N	Y	N	N
Salski	Ron	Executive Director	Lake Bluff Park District	N	N	N	Y
Sanchez	Ruben	On behalf of Rita Mayfield	State Representative Rita Mayfield	Y	N	N	N
Seidelmann	Joe	Maintenance Supervisor	Waukegan Port District	N	N	Y	Y
Semel	Brad	Heritage Biologist	IDNR	N	Y	N	Y
Sentell	John	President	Lake Forest Open Lands Association	N	Y	N	Y
Shabica	Jon	President	Shabica & Associates	N	Y	N	Y
Shadnia	Sarah	Outreach Director	State Senator Melinda Bush	Y	N	N	N
Stanick	Brandon	Assistant to the Village Administrator	Village of Lake Bluff	N	N	N	Y
Stumpf	Rick	Director of Planning and Projects	Park District of Highland Park	Y	Y	N	Y
Suthard	David	General Manager	North Point Marina	N	N	N	N
Veenbaas	Fred	Senior Environmental Compliance Specialist	NRG, Inc. Waukegan Station	N	Y	Y	Y
Villalobos	Saki	Supervisor	Illinois Beach State Park	N	N	Y	N
White	Donald	Acting General Manager	Lake County Public Water District	N	Y	Y	Y
Wilmes	Edward	Director of Public Works	City of North Chicago	N	N	N	Y
Wilson	Steven	Director	Wilmette Park District	N	Y	Y	Y
Yoo	James	Grant Coordinator, Constituent Advocate	US Representative Jan Schakowsky	Y	N	N	N

Appendix 4

Pros and Cons of Implementation of BMPs to Protect Regional Assets

Sand Management Working Group Meeting
Date: July 15, 2015
RE: Pros and Cons of Management Strategies Activity; notes from the flip chart

Strategy	Asset(s) – Where to Implement?	Pros	Cons	"Partner" strategy *(Which strategies might work together?)*	Needs/Next Steps/Resources
Engineering – Offshore Reef	Nature preserves/INAI IBSP Beaches	Reduces area's participation in littoral system Retains most sand but does not add	Difficult to implement in this area due to changes in lake level Potential swimming hazard Beach may still require nourishment		
Engineering – Sand Trap Fencing or other temporary structures placed nearshore to catch sand	Beaches IBSP Waukegan Harbor	- Quick - No regulations - Less expensive - Good for: dunes, wide beaches, to prevent sand from entering channel	Temporary, not long-term?		
Nourishment and Engineering Bypass	Waukegan Harbor Nature Preserves/INAI Beaches IBSP	- Adds sand to the beach - Supports a natural littoral cell system	- Subject to storm & weather - Temporary solution - Requires ongoing management		Where currently being implemented &what are costs? Conduct survey?

Engineering – Bypass	Waukegan Harbor Harbors/Marinas Industry Intakes	- Accrues sand on one side of structures	- Creates hyperlocal littoral cell - Creates rip-tide swimming hazard		
Nearshore Armoring		- Keeps the lake bed from downcutting - Example: south of St. Joseph, MI	- Need potentially a lot of material - Expensive		
Engineering – Shoreline Hardening/Stabilization Perpendicular Shoreline/Revetment	Beaches – off-shore breakwater Intake – revetments Industry – revetments Nature Preserve/INAI – revetments		- Disrupts natural littoral cell system - Causes downcutting erosion - Changing water levels ineffective strategy - Creates swimming & beach hazards		

Natural Engineering – Wetlands/Living Shoreline	IBSP Public Beaches Nature Preserves/INAI Waukegan Harbor	- Prevent runoff from impacting beaches - Reduce avian population – plantings make it less attractive to birds which help with water quality beach closings - Possible in upland zones (up from dunes) - Stabilize bluffs - Good to implement on windward side	- Not the best option for this region because of steep slopes and not a lot of existing wetlands, estuaries - Cannot be exposed to wave action		Follow up with R.Stumpf re data on Highland Park project S.Herber: Harbor channel dig out and place next to breakwater Use native vegetation to be proactive but has to be in breakwater location
Restoring Littoral Drift - Removing old structures - Design/engineer smaller structures that aren't as obstructive	Intake (Zion)	Allows more natural littoral drift Smaller Structures	Construction can be expensive (especially because have to construct on water – adds costs)		Are new private structures going in? Can private structures be removed? -permit/regulations -need to be initiated by private owner -know municipality regulations
Funding User fees to pay for projects Cooperative funding	Beaches Waukegan Harbor IBSP Harbors/Marinas Intake Nature Preserves/Open Space Industry	Cost-sharing Shared "ownership"	Not popular politically – residents/visitors don't want to pay user fees		CMAP/MPC – How to pool resources study Cooperative Funding example: Regional Emergency Dispatch (R.E.D) for multiple municipalities

Regional Cooperation & Management Partnership: Zion, Waukegan, IBSP	Waukegan Harbor IBSP Intake Harbors/Marinas, Beaches Industry Nature Preserves/INAI/Open Space	Coordinate dredging & nourishment across municipalities Fund large scale projects Collaborate on regional plans Collectively advocate			Make sure everyone is around the table including the regulatory agencies (IEPA, USEPA) Better understanding of the state laws
Communication Create an "Understanding Your Shoreline" document to have at real estate closings so private owners know risks, responsibilities and how to maintain shoreline	Private homeowners and other landowners	Provide back ground on sand management Prepare lakefront homeowners for changes on the shore			Clarify state and municipality laws/regulations – what is allowed, not allowed, required, etc. Recognize that bluff collapse adds source of sand
North Shore MWD Effluent Flushing Use high quality water that could be returned to the lake to flush harbor	Harbor/Marina – dredging	Potential to redirect funding (from maintenance of the pipe that currently takes water to Des Plaines) $15-20 million annually			Understand how compact and diversion

Appendix 5

Recent Studies

The Illinois North Shore of Lake Michigan has been extensively studied over the past century. The effects of coastal erosion and accretion in this area were first recognized in the late 1800s as part of the construction of Waukegan Harbor's breakwater jetties. Two comprehensive studies of shore erosion along the entire Illinois coast were completed first by the U.S. Army Corps of Engineers (USACE), Chicago District in 1953 and then by the State of Illinois Division of Waterways in 1958. These two studies utilized shore position and nearshore bathymetry data from 1872/73, 1909/11, 1937/38, 1946/47 and 1955 to map coastal change along the Illinois lakeshore. These two studies provided a benchmark for further study by the State of Illinois in the late 1970s and again by the USACE, Chicago District in 1989. The Illinois State Geological Survey conducted a series of coastal studies along the Illinois North Shore in the 1990s and early 2000s in conjunction with the construction of North Point Marina near the border with Wisconsin. These studies provide the most recent documentation of coastal erosion and accretion trends and associated littoral transport rates. As part of the USACE Regional Sediment Management (RSM) Program, a comprehensive sediment budget of the Illinois North Shore of Lake Michigan is currently under development. This study will utilize newly collected shore position and nearshore bathymetry data in developing a contemporary analysis of erosion, accretion and transport rates along the coast. That study is scheduled for completion in 2016.

Appendix 6

Case Studies of Regional Collaboration

In order to learn about other stakeholders' regional approach to sand management, case studies were presented to the Sand Management Working Group (SMWG) by Delta Institute on June 17, 2015 and by the U.S. Army Corps of Engineers on July 15, 2015. The SMWG was presented with examples of how other regional sand management (RSM) groups have approached the challenges inherent in coordinated action and their results. These case studies highlighted different shoreline challenges, approaches, collaborative structures, and sand management best management practices implemented.

Table 1: Case Studies of Regional Collaboration

Regional Sand Management	Challenges, Approaches, RSM Structure, & BMPs Implemented
Galveston Island, TX	Coastal erosion was causing problems for a sea wall and recreation beach in Galveston Island, and accretion at Big Reef would need to be dredged. The Galveston Park Board of Trustees and USACE evaluated several solutions and decided to create a large new beach out of the Big Reef's dredged sand. It protects the sea wall from erosion while providing recreation opportunities. Sand Management BMPs Implemented: • Coordinated Big Reef dredging and shoreline sand nourishment
Presented by: Delta Institute *Link: http://tinyurl.com/qb4hus5*	
San Diego Coastal Regional Sediment Plan	The San Diego region faced a similar issue as the IL SMWG with many public beaches, habitat areas of concern, and a government (Marine Corps) base interrupting continuous municipal coordination. With a similar group of stakeholders (the San Diego Association of Governments and California Sand Management Working Group) they developed a regional plan to: • Identify sand accretion sites (i.e.: wetlands, off man-made structures) • Identify sediment receiver sites • Bypass system for the large man-made accretion site • Restore Wetlands to keep sand in place
Presented by: Delta Institute *Link: http://tinyurl.com/nl74srb*	
USACE Regional Sediment Management	USACE, lakefront communities, and landowners sought to manage the erosion threatening unprotected fragile clay bluffs along the Southeastern Lake Michigan shoreline. Lessons learned included a need to focus on the region instead of a specific harbor and that

Regional Sand Management	Challenges, Approaches, RSM Structure, & BMPs Implemented
Demonstration Program: Luddington, MI to Michigan City, IN	private landowners can limit opportunities for community-based projects. Sand Management BMPs Proposed: • Formal RSM cooperation, management, and funding • Sand Bypass system • Monitor regional dredging efforts
Presented by: Delta Institute *Link: http://tinyurl.com/nhy72jk*	
Northeast Florida: Nassau and Duval Counties	USACE coordinated an RSM group for Florida's Nassau and Duval counties to keep sediment within the shoreline littoral system. They dredged sediment from harbors and a waterway, and removed sand from a jetty to nourish local recreation beaches. This led to saving $31 million in shoreline restoration. Sand Management BMPs Implemented: • Coordinated dredging of 3 harbors and 1 waterway • 3 shoreline projects received sand nourishment from dredged sand • Incorporate RSM principles into future shoreline projects
Presented by: U.S. ACE *Link: http://tinyurl.com/op8w9f8*	
NAP Post-Sandy RSM & EWN O&M – Marsh Enhancement	Prior to Hurricane Sandy, New Jersey managed their shoreline using confinement approaches, but after the storm, the hardened system was inundated with far too much sand. Post-Sandy, USACE worked with local NJ shoreline communities to use natural engineering (wetlands and marshes) to keep sediment in the system. A key lesson learned was that regulations can get in the way of a restoration approach to shoreline sand management. Sand Management BMPs Implemented: • Natural Engineering – Wetlands and Living Shoreline
Presented by: U.S. ACE *Link: http://tinyurl.com/oy6w9gy*	
Mobile Bay Habitat Creation	After years of wetlands habitat loss in Mobile Bay, an RSM approach was needed to restore critical habitat. Through this approach, 1,000 acres of wetlands were created to manage shoreline sediment while other areas of the bay contributed sediment to the littoral cell through assisted erosion. Sand Management BMPs Implemented: • Monitor and coordinate dredging • Natural Engineering – Wetlands • Restore Littoral Drift (assisted shoreline erosion)
Presented by: U.S. ACE *Link: http://tinyurl.com/nkt34rf*	

Appendix 7

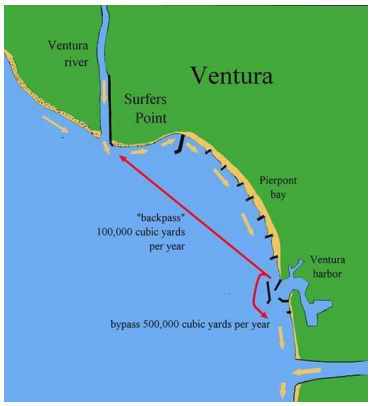
Examples of Shoreline Management Practices

The SMWG was informed of some shoreline management practices to deepen their discussion regarding possible strategies that could be applied to address sand management challenges facing their regional assets. Visual examples and short descriptions of some shoreline management practices were provided at the July 15 meeting. After the presentation on shoreline management practices, the group discussed the pros and cons of applying certain management practices to achieve the *Shoreline Principles* for the identified *Regional Public Assets* (Figure 5). Again, the point of this discussion was to inform the Sand Management Working Group about possible shoreline management practices so they had some information on which to base their subsequent discussion related to action strategies. The few examples of shoreline management practices provided to the SMWG were in no way comprehensive and were intended as only a starting point to the conversation. Future conversations will expand on additional shoreline management practices, and
will include examples such as: http://sagecoast.org/index.html

Table 2: Examples of some Shoreline Management Practices

Nourishment	Engineering - Bypass
Physically moving, re-locating, or re-distributing sand from within or outside of the Illinois' northern coast littoral cell system. Operations include using trucking, barges, bulldozers, etc...	*When structures perpendicular to the shore break up the littoral cell, permanent pumping infrastructure, i.e.: a Sand Bypass system, can be used to redistribute the sand that accrues on one side of the structure to the side where sand loss has occurred.*

Engineering - Backpass *Like sand nourishment, backpassing reverses the direction of the natural drive by re-circulating sand from the accretion occurring downdrift on the shoreline to updrift where the sand originated.*

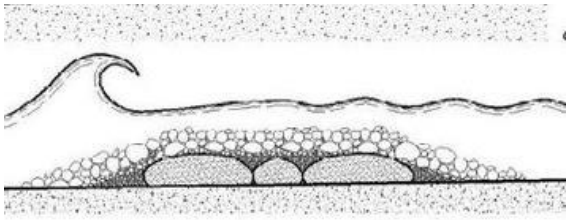


Engineering – Shoreline Hardening/Stabilization

Permanent structures like groins or riprap halt erosion directly along the shoreline where they are installed, but interrupt littoral drift to create hazards and erosion/sand loss problems for adjacent landowners.

Engineering – Offshore Reef

Artificial reefs are structures parallel to the shoreline but submerged away from the beach. Wave energy is disrupted by the "bump" in the lake bed and crest before they reach the beach. This reduces erosion due to waves and some storm events.



Engineering – Sand Trap

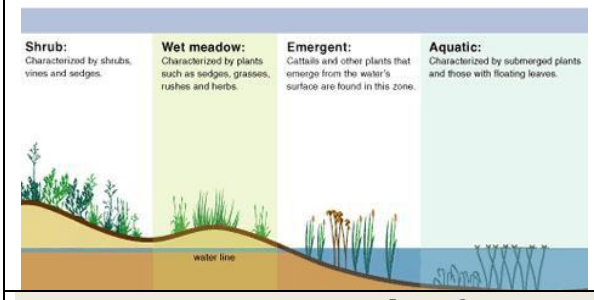
Fencing or other temporary structures are placed in nearshore sand to catch sand blowing down the beach and trap it in place. Sand traps can be a step toward the restoration of a dunal shoreline using vegetation to stabilize the sand.

Natural Engineering – Wetlands

Wetlands are nearshore depressions where water is retained and vegetation grows. Wetlands can exist seasonally or year-round throughout the entire near shore geography. Wetland vegetation stabilizes existing sand.

Natural Engineering – Living Shoreline

Living Shorelines embrace natural ecosystems from under the water to the dune high above. Living Shorelines stabilize sand across the system using vegetation appropriate for each habitat.



Restoring Littoral Drift

Through strategically removing old shoreline structures in locations where they are no longer needed or desired, larger littoral cells can be created. Thus longer section of the beach participates in sand accretion and erosion.

Funding

User Fees *can pay for local sand management projects. Beach goers pay for use of the site.*

Cooperative Funding *agreements among neighboring municipalities can lead to cooperative efforts that do not undermine each other's goals.*

Regional Cooperative Management

Formal Cooperation & Management *includes legally binding agreements among two or more municipalities to collaborate on sand management through funding and implementing solutions to benefit all communities involved.*

Informal Cooperation & Management *includes no- legally binding agreements among neighboring municipalities to collaborate together to address sand management across their geography without mutually funding projects.*

Appendix 8

Brainstormed List of Potential Action Strategies

Developed based on SMWG July 2015 Meeting Notes. *Designates actions that the group thought might be ripe for immediate action

Data / Information Needs

- ***Equip the SMWG with the data it needs: identify data gaps, establish data sharing partnerships, and fund data gathering efforts**
  - *Need: Hold initial meeting with regulators and government agencies to identify data gaps and data sources to fill those gaps*
- ***Track successful strategies that are already being implemented**
  - *Need: SMWG members will fill out a survey on their sand management activities and will be updated annually*
- **Create a new design standard for groynes on Illinois' Lake Michigan coast**
  - *Need: Obtain data on current and projected lake levels, existing local groyne features, and review modern best practices for the structures.*
- **Understand full dredging and sand nourishment processes and cycles for member communities**
  - *Need: Obtain dredging information from harbor and recreation beach managers*
- **Explore sand distribution partnership models**
  - *Need: Draft a comprehensive list of existing sand distribution partnership models*

Dredging and Sand Nourishment

- ***Explore Illinois State Beach Park and Waukegan Harbor partnership for cost-effective and localized sand management**
  - *Need: Hold initial meetings internally at IDNR and then with Waukegan Harbor representatives*
- ***Explore how IDNR can support coordinated dredging activities**
  - *Need: Hold initial meetings with USACE and IEPA along with Waukegan and Wilmette Harbor representatives*
- ***Evaluate the strategy of using effluent water from NRG and North Shore Metropolitan Water District to flush out Waukegan Harbor**
  - *Need: Obtain data from NSMWD and NRG. Hold initial meetings with USACE modeling the flushing process.*

Policy

- ***Convene a policy and regulation working group**
  - *Need: Invite and affirm SMWG members to participate. Develop comprehensive list of current policies and regulations governing sand management along the North Shore and identify potential policy changes.*

Funding

- ***Convene a funding taskforce to investigate innovative ways to fund projects of regional significance for sand management**
  - *Need: Evaluate other regional sand management strategies to identify potential funding sources.*

Outreach

- ***Ensure all coastal communities in Illinois North Shore have additional opportunities to join the Sand Management Working Group**
  - *Need: Outreach to coastal communities not currently engaging in the process*
- **Create a suite of products for beach-front property owners to educate on beach management and establish pre-purchase guidelines for future buyers**
  - *Need: Hold initial meetings with local HOA's and real estate groups to review current beach-front purchasing process. Hold focus groups with Lake Michigan residential property owners.*

Appendix 9

SMWG Phone Interview Questions

1. Is ongoing participation in the Sand Management Working Group - or any ongoing dialogue focused on developing a regional approach to sand management - valuable to you, your organization, and/ or your community? Why or why not?

2. If you answered yes and you see value in continuing to participate in an ongoing dialogue focused on developing a regional approach to sand management, do you also see value in exploring joint funding agreements to advance regional sand management activities? Why or why not?

3. Scan through the "action strategies" that were brainstormed by the Sand Management Working Group - *see list below*. As you look through this list, please consider your answers to these questions:

   - Are the strategies clear?

   - Is there anything major missing from the strategies, or any strategy that does not belong in the list below?

   - Do you want to participate in future meetings to advance any of the strategies?

   - If you do want to participate in future meetings, are there any strategies you are the most interested in helping advance?

4. Any additional comments or feedback?

REFERENCE: Draft Action Strategies identified by the SMWG

**Denotes action strategies that members of the Sand Management Working Group identified for immediate advancement.*

I. ***Equip the SMWG with the data it needs: identify data gaps, establish data sharing partnerships, and fund data gathering efforts**
   - *Need: Hold initial meeting with regulators and government agencies to identify data gaps and data sources to fill those gaps*

II. **Understand full dredging and sand nourishment processes and cycles for member communities**
   - *Need: Obtain dredging information from harbor and recreation beach managers*

III. ***Explore Illinois State Beach Park and Waukegan Harbor partnership for cost-effective and localized sand management**

- *Need: Hold initial meetings internally at IDNR and then with Waukegan Harbor representatives*

IV. *Explore how IDNR can support coordinated dredging activities

- *Need: Hold initial meetings with USACE and IEPA along with Waukegan and Wilmette Harbor representatives*

V. *Evaluate the strategy of using effluent water from NRG and North Shore Metropolitan Water District to flush out Waukegan Harbor

- *Need: Obtain data from NSMWD and NRG. Hold initial meetings with USACE modeling the flushing process.*

VI. Explore sand distribution partnership models

- *Need: Draft a comprehensive list of existing sand distribution partnership models*

VII. *Track successful strategies that are already being implemented

- *Need: SMWG members will fill out a survey on their sand management activities and will be updated annually*

VIII. Create a new design standard for groynes on Illinois' Lake Michigan coast

- *Need: Obtain data on current and projected lake levels, existing local groyne features, and review modern best practices for the structures.*

IX. Create a suite of products for beach-front property owners to educate on beach management and establish pre-purchase guidelines for future buyers

- *Need: Hold initial meetings with local HOA's and real estate groups to review current beach-front purchasing process. Hold focus groups with Lake Michigan residential property owners.*

X. *Convene a policy and regulation working group

- *Need: Invite and affirm SMWG members to participate. Develop comprehensive list of current policies and regulations governing sand management along the North Shore and identify potential policy changes.*

XI. *Convene a funding taskforce to investigate innovative ways to fund projects of regional significance for sand management

- *Need: Evaluate other regional sand management strategies to identify potential funding sources.*

XII. *Ensure all coastal communities in Illinois North Shore have additional opportunities to join the Sand Management Working Group

- *Need: Outreach to coastal communities not currently engaging in the process*

XIII. Convene a working group composed of communities, businesses, and private landowners with shoreline properties

- *Need: Agree to scope and purpose of the group. Coordinate outreach through participating municipalities to identify and invite shoreline landowners to initial meetings.*

Appendix 10

Sand Management Working Group Survey

Q1) Which do you have responsibility over? [choose all that apply]

Possible Answer Categories:

- Recreational Beaches
- Conservation Shoreline
- Harbor / Marina
- Water Intake Pipe
- Brownfield / Former Industry Sites
- Other (please specify)

Q2) Which Sand Management Strategies have you implemented? (for each category answer a-d)

a) How much money did you spend in past 12 months?
b) Did it work?
c) Do storms and lake levels pose challenges to this currently?
d) How do you expect storms and lake levels will challenge this strategy in the future?

Possible Answer Categories:

- Dredging
- Sand Nourishment
- Vegetative Erosion Control
- Shoreline Protection
- Other

Q3) Would you like to reach out to your community members to solicit broader community feedback on sand management issues?

- Q3 - A) If you would like to reach out to your community members to solicit broader feedback, what would you want to achieve through that outreach?
- Q3 - B) If you would like to reach out to your community members to solicit broader feedback, would you like help with that outreach, and if so what type of assistance would provide the most value to you?

Q4) Is there anyone you think should be included in future conversations about sand management, either as a member of the Sand Management Working Group or as part of a broader community conversation?