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Illinois Local Sponsor Update: September 2021

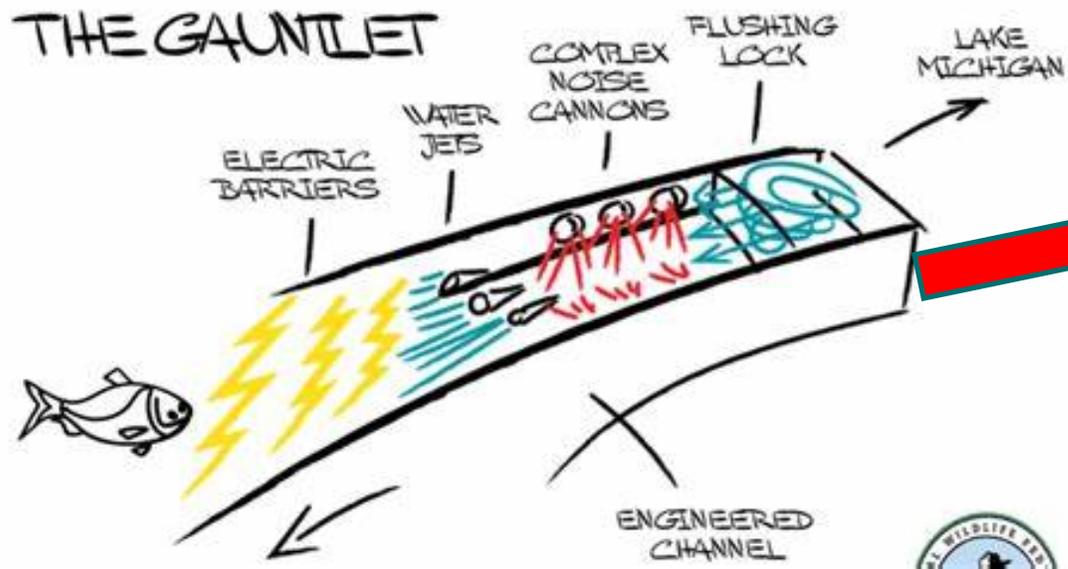


Des Plaines River near Joliet, IL.

Brandon Road is a Tall Dam

Pinch Point = Control of Invasive Carp

Gauntlet of Deterrent Technologies:
Sound, Bubbles, Sterile Channel,
Electricity, Flushing Lock, OTHERS



Brandon Road





US Army Corps
of Engineers.

PED PHASE = 1st of 3 Phases Preconstruction, Engineering Design

65% Federal cost 35% state cost



- Cost ~ \$28,845,000
- 3 Years
- Land Rights & Testing
- Physical modeling
- Design of components
- Initial deterrents
- 30% Design Phases 2&3
- Non-structural efforts

PED: Preconstruction, Engineering Design



Design Meetings & Charrettes

Land Rights Surveying, Testing,
& Negotiations

Deterrent Technology Research
& Physical Modeling (ERDC)

Outreach



PED: Research and Testing

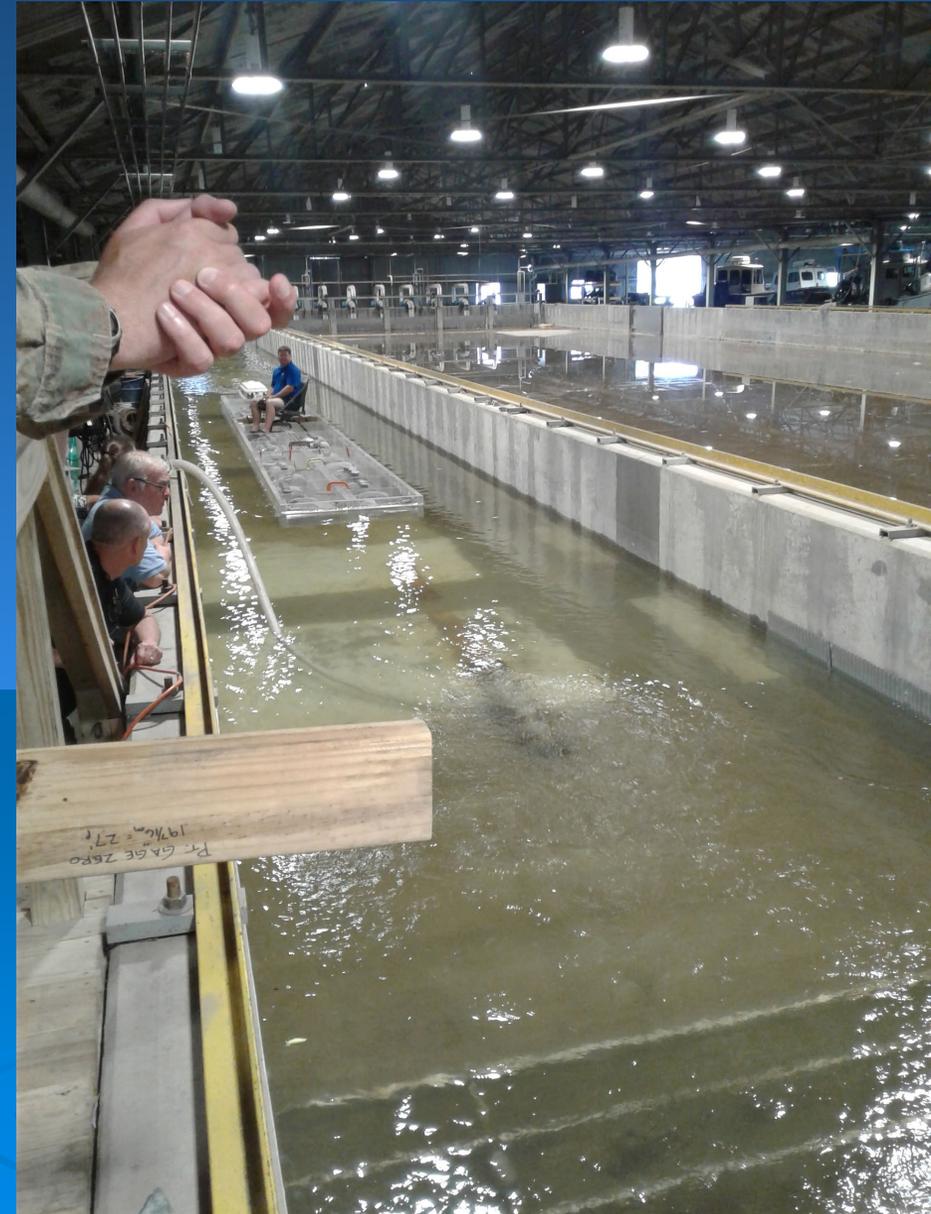


Acoustic Speakers
At Lock & Dam 19
Keokuk, Iowa



Longitudinal
Bubbler at
Peoria Lock &
Dam

ERDC Physical
Model of Bubble
Systems



PED: Communication, Collaboration and Connection

Forums (States & Provinces)

Workshops (Navigation, Fisheries, etc.)

Newsletters (information updates)

Webinars (2-Way Communication)

September 2021

BRANDON INTERBASIN ROAD PROJECT

QUARTERLY UPDATE



The PROJECT

The Brandon Road Interbasin Project is a complex ecosystem protection effort designed to prevent upstream movement of invasive carp and other aquatic nuisance species on the Illinois Waterway.

Brandon Road Lock and Dam near Joliet, Illinois, had been identified as the critical pinch point where layered technologies could be used to prevent movement of invasive carp populations into the Great Lakes.

The PLAN

The recommended plan involves a layered system of structural and non-structural control measures.

Structural measures would include technologies such as a flushing lock, an engineered channel with electric barrier, underwater acoustic deterrent, and air bubble curtain.

Non-structural measures, implemented in conjunction with other federal agencies, would include public education and outreach, monitoring, integrated pest management, pesticides, manual or mechanical removal, and research and development.

Project Status Update

Pre-construction engineering and design of the Brandon Road Interbasin Project initiated Dec. 29, 2020, when the state of Illinois signed a design agreement with the U.S. Army Corps of Engineers, Rock Island District. This phase of the project, known as PED, is estimated to cost \$26.9 million and be cost shared 65 percent federal, 35 percent non-federal. To assist with costs, the state of Michigan contributed \$8 million to the state of Illinois to help with the \$10.1 million non-federal portion.

During the first 60 days, a project management plan was developed by the team and included a governance structure which will be used to make decisions, provide direction, and resolve conflict throughout the life of the project. A facilitated governance meeting was held in mid-May allowing members of the Senior Executive Board, Executive Leadership Team and Project Leadership Team a chance to meet face-to-face to discuss detailed elements of the plan and sign a project charter.

Following development of the higher-level governance structure, sub-committees were created to begin planning and design for the project's various structural and non-structural elements. Specialized meetings, known as design charrettes, were scheduled by these sub-committees to allow the partners to collaborate on the project's conceptual design as well as schedules, budget, cost estimates and resource allocations. Since the beginning of the year, three design charrettes have been held and

several more are planned. A determination of available real estate for project use is also underway.

In addition to design charrettes, the project delivery team also conducted its first navigation workshop in early June. This event provided navigation industry stakeholders with an update on the project and allowed them to provide input on the current modeling and engineering efforts.

Over the next several months, the project leadership team will continue to advance data gathering efforts to aid design of the engineered channel, electric barrier, acoustic deterrent, air bubble deterrent and site plan. Two separate geotechnical/exploration contracts are also being coordinated and will provide a basis for determining if the project should be constructed on the right or

this issue

- Project Status Update
- Design Charrettes Fuel Collaboration
- Acoustic Deterrent Testing at Lock 19



Members of the Brandon Road Interbasin Project's Leadership Team stand in front of the Rock Island District's Clock Tower Building at the Rock Island Arsenal following the team's first face-to-face gathering in April.

US Army Corps of Engineers
Rock Island District

Illinois Public Water Regulations



IDNR called on to *Jealously Guard* and *Vigilantly Protect* the rights, interests, and uses of the public in any public body of water including the natural resources thereof.

Public Water Project impacts must be:

- * Avoided
- * Minimized
- * Mitigated



Illinois Public Water Regulations

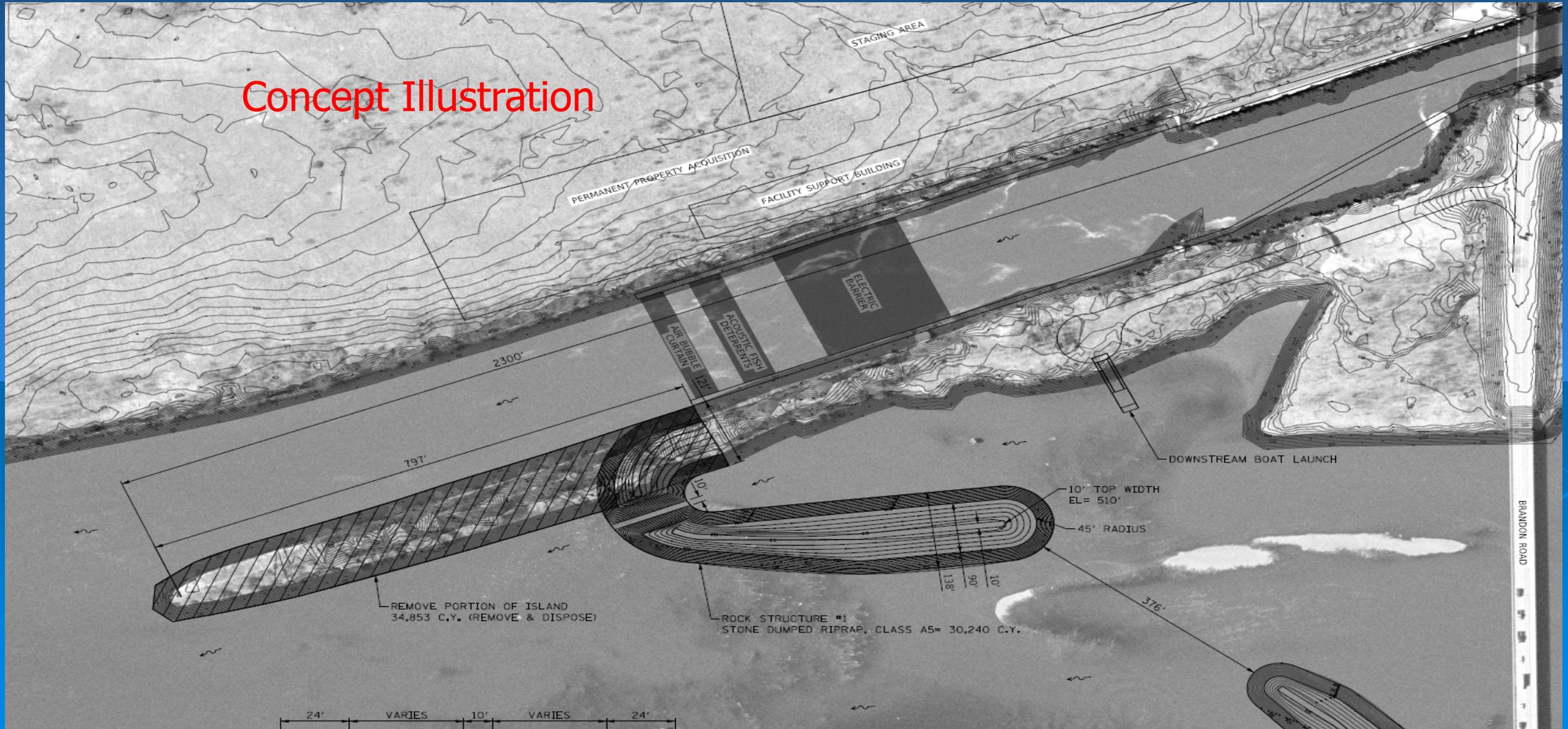
Key Public Water Uses to address at the Brandon Road Project site include:

- * Public Safety
- * Navigation
- * Public Water Access
- * Transportation
- * Recreation
- * Aquatic Species Movement



Opportunities for a better project: (avoid, minimize and/or mitigate)

Concept Illustration



STRATEGIC AND SCIENCE DRIVEN HARVEST/REMOVAL

to protect Great Lakes and Illinois
waters

- Enhanced detection ability with Illinois and federal partners
- Contracted removal in Upper Illinois Waterway
- Enhanced efforts with commercial fishers in lower Illinois Waterway
- Support of business and economic solutions in addition to structural additions



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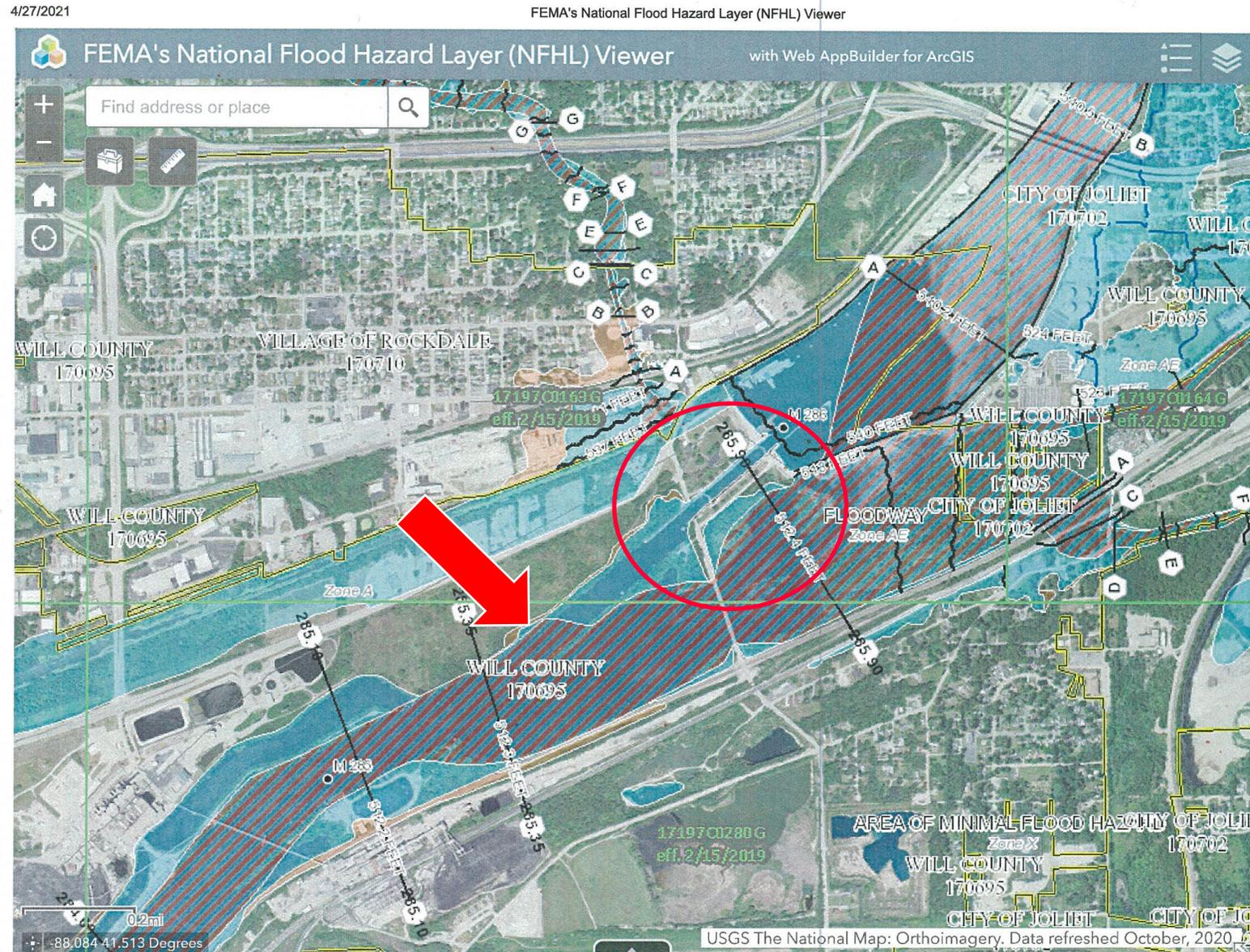
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Part 3708 Appropriate Floodway Use Regulations



Brandon Road Interbasin project major Milestone schedule

- Complete Data Gathering and Modeling FY22
- Initiate Plans & Specifications FY23
- Complete Plans & Specifications Increment I FY24
- Construction Contract Award Increment I FY24
- Initiate Construction Increment I FY25
- Complete Construction Increment I FY26-FY27
- Complete Construction all Increments FY30-FY32

Construction of three increments is expected to take 6 to 8 years to complete and can begin when the following are complete: A Project Partnership Agreement (PPA) is signed, Plans & Specifications to award a contract are complete, construction funds are appropriated by the Government and non-federal sponsor, necessary permits and real estate are acquired.



Quantified
Ventures

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Innovative Approaches to Aquatic Invasive Species: Outcome-Based Financing

*Sarah Rang, Invasive Species Centre,
Quantified Ventures, Great Lakes St.
Lawrence Governors and Premiers, Nature
Conservancy Canada*

October 4, 2021





Invasive Species Centre

The **Invasive Species Centre** is a not-for-profit organization that connects stakeholders, knowledge and technology to prevent the introduction and spread of invasive species that harm Canada's environment, economy and society.





Increasing Damage and Increasing Costs

- Globally, invasive species management costs are on the rise, doubling every decade
- The annual impact of invasive species in Ontario is about \$3.6 billion to the forest sector, recreation, tourism, agriculture
- Municipalities and conservation authorities in Ontario invest about \$50M annually managing invasive species



Need for Sustainable Solutions

- Prevention is more cost-effective and environmentally friendly, yet most actions take place at a later control stage
- Limited financing
- Long term commitment needed: Measures need to be repeated over 1 - 10+ years



Mechanism for Stakeholder Coordination

- Invasive species management is often fragmented, with multiple agencies/government levels/organisations
- There is often a mismatch between entities that benefit from the management of invasive species and those that pay for treatment
- Invasive species occur on public and private land, mixed ownership can limit treatment



The Opportunity: Outcome-Based Financing

- Globally, see growing use of new financing tools: green bonds, green funds etc.
- Compliment/augment existing funding sources
- Allow new funders/partners to come to the table
- Provide a structure for long term financing and partnership



The Project: Outcome-Based Financing for AIS: Phragmites

- Collaboration of partners interested in applying new financing tools to “wicked” AIS challenges
- Of three possible AIS, focused on feasibility assessment for invasive plant, common reed, *Phragmites australis*
- Iterative Process: quantify costs and benefits of *Phragmites* management program, identify partners and potential payors and propose financial structure





Invasive Phragmites at Rondeau Bay, Ontario, Canada October, 2007, credit Janice Gilbert



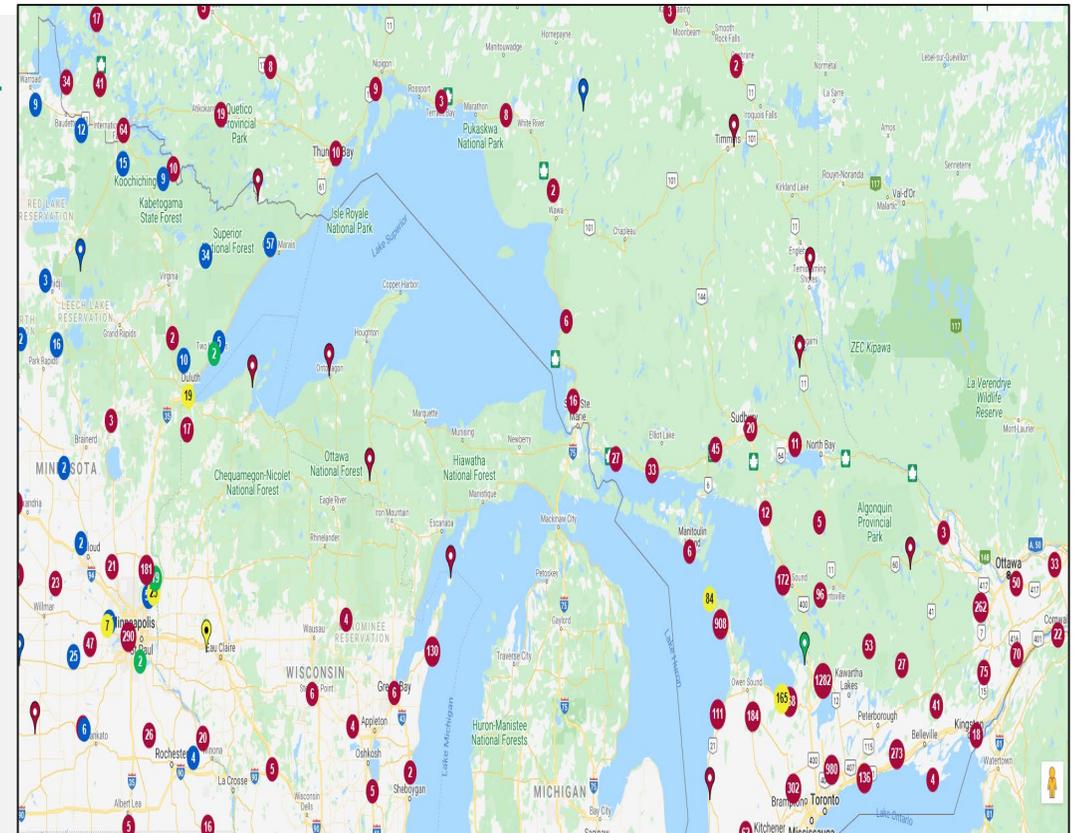
Phragmites is widespread and its impacts are extensive

Phragmites threatens Canadian provinces and US states

Suitable habitat includes waterfronts, wetlands, streams, ditches, and roadsides. Great Lakes states and provinces are widely impacted.

Impacts of Phragmites to Great Lakes Region

- Reduces recreation and tourism
- Impairs wildlife and fish habitat
- Competes with native species, including ~25% of Ontario's species at risk
- Damages infrastructure
- Reduces stormwater storage capacity
- Cuts agricultural productivity
- Impacts Traditional indigenous use
- Obstructs roadway visibility- accidents
- Diminishes property value
- Impedes shoreline access
- Poses a fire hazard
- Degrades aesthetics- vistas



Phragmites Framework and Cost- Benefit Analysis



Key Outcomes:

- Created a comprehensive vision for collaborative action around Phragmites at a provincial scale
- Developed one of first Phrag Cost Benefit Analysis

Project leads: Nature Conservancy Canada and Invasive Phragmites Control Centre, Invasive Species Centre, with many partners

Deliverable- reports available on invasivespeciescentre.ca and Greenshovels.ca



Janice Gilbert, Invasive Phragmites Control Centre

Estimated Benefits of *Phragmites* Control in Ontario

= \$113 M/year + \$357 M one-time benefit



| Category | Description of Impacts | Est. Value of Impact |
|--------------------------------|---|----------------------|
| Agriculture | Reduced yields from delayed planting due to clogging of drains | \$10.2 million/year |
| Tourism and Recreation | Reduced capacity for use of water bodies for recreational activities such as swimming, boating, and fishing; reduced habitat affects birdwatching and hunting | \$42.7 million/year |
| Property Values | Reduced aesthetic appeal for waterfront properties | \$357 million |
| Property Taxes | Lower property taxes will result in reduced property tax revenue | \$4.3 million/year |
| Wetlands | Reduced ecosystem services such as flood control, water supply, and nutrient cycling | \$12.5 million/year |
| Stormwater Management Ponds | Reduced flood storage capacity | \$2.0 million/year |
| Road Safety | Increase risk of traffic collisions due to reduced visibility at rural intersections | \$39.3 million/year |
| Fire Hazards and Power Outages | Increased risk of fire due to dry biomass in transmission corridors, which can cause power outages | \$2.4 million/year |



Vision for Phragmites management via outcomes-based financing

Proposed intervention

Controlling and eradicating Phragmites will require a **multi-year, landscape- and regional-level integrated management approach**

A **robust source of multi-year funding** will promote **longer-term planning** and **enhance the scale** of management efforts

Improved coordination among organizations working to control Phragmites will enable groups to **align strategically** and **share best practices**

Financing the intervention

A collaborative outcomes-based financing structure to support the intervention

Investors provide capital to develop and implement a coordinated multi-year control strategy

Proceeds will be used by many partners to **identify sites where intervention is needed, plan site-specific activities** and **undertake field work**

Collaborative approach

Beneficiaries of Phragmites management efforts **pay for outcomes**

These may include **local, provincial federal governments, private sector, homeowners' and cottagers' associations, and others**

By bringing multiple stakeholders to the table, the **financial burden does not fall on any one entity alone** and facilitates a better coordinated, more efficient, and larger-scale effort



Based on our current understanding of potential stakeholders and the need, we believe a regional-scale revolving fund may present the best approach to finance Phragmites treatment

A regional-scale revolving fund for Phragmites would ensure that:

- **Funding is available over the long-term and into perpetuity**
 - Enable the fund to pay for long-term monitoring and maintenance associated with Phragmites management
- **The fund could cover multiple regions within the province, and potentially expand to others (or to U.S. states) as new stakeholders join**
- **The fund could be capitalized and paid back from multiple sources**
 - Including green bond proceeds, private investments, and other financing, grants, and investments at the federal, provincial, and municipal level
 - Investment in Phragmites management repaid by a multi-party entity based on benefit from Phragmites management



Next Steps

- Outcome-based financing approach is scalable and transferable to other areas and species
- Has potential to address significant AIS challenge
- Phrag- Refine financial analysis
- Discuss with wide range of potential partners
- Looking for partners and your thoughts- please let me know if interested



Thank you Partners and Funders!

Welcome your thoughts:

Sarah Rang, Executive Director Ben Cohen, Director
srang@invasivespeciescentre.ca Cohen@quantifiedventures.com

We greatly appreciate the ongoing support from the CS Mott Foundation, Great Lakes Protection Fund, Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry and many partners.



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Invasive species

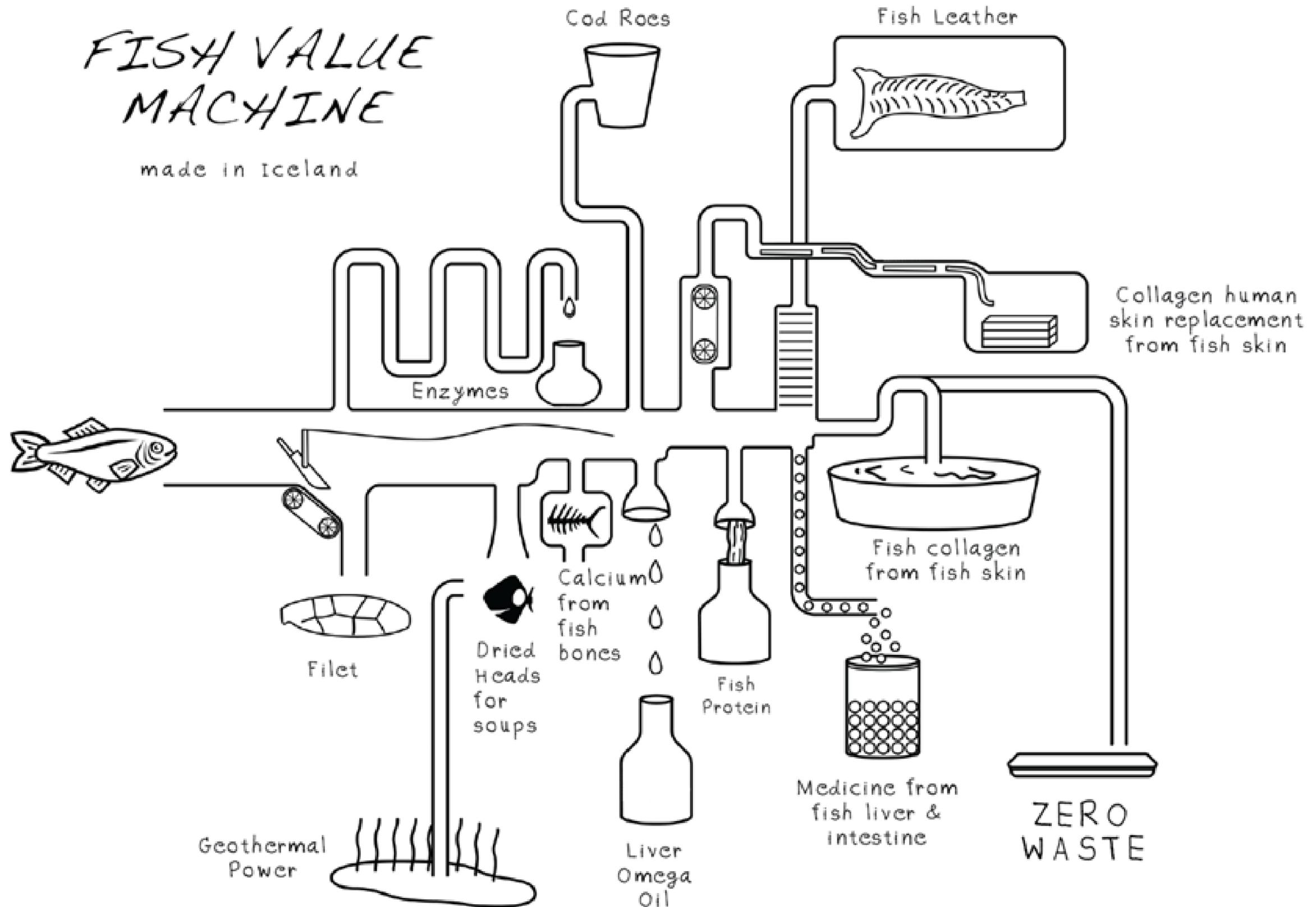
-Can innovation help?

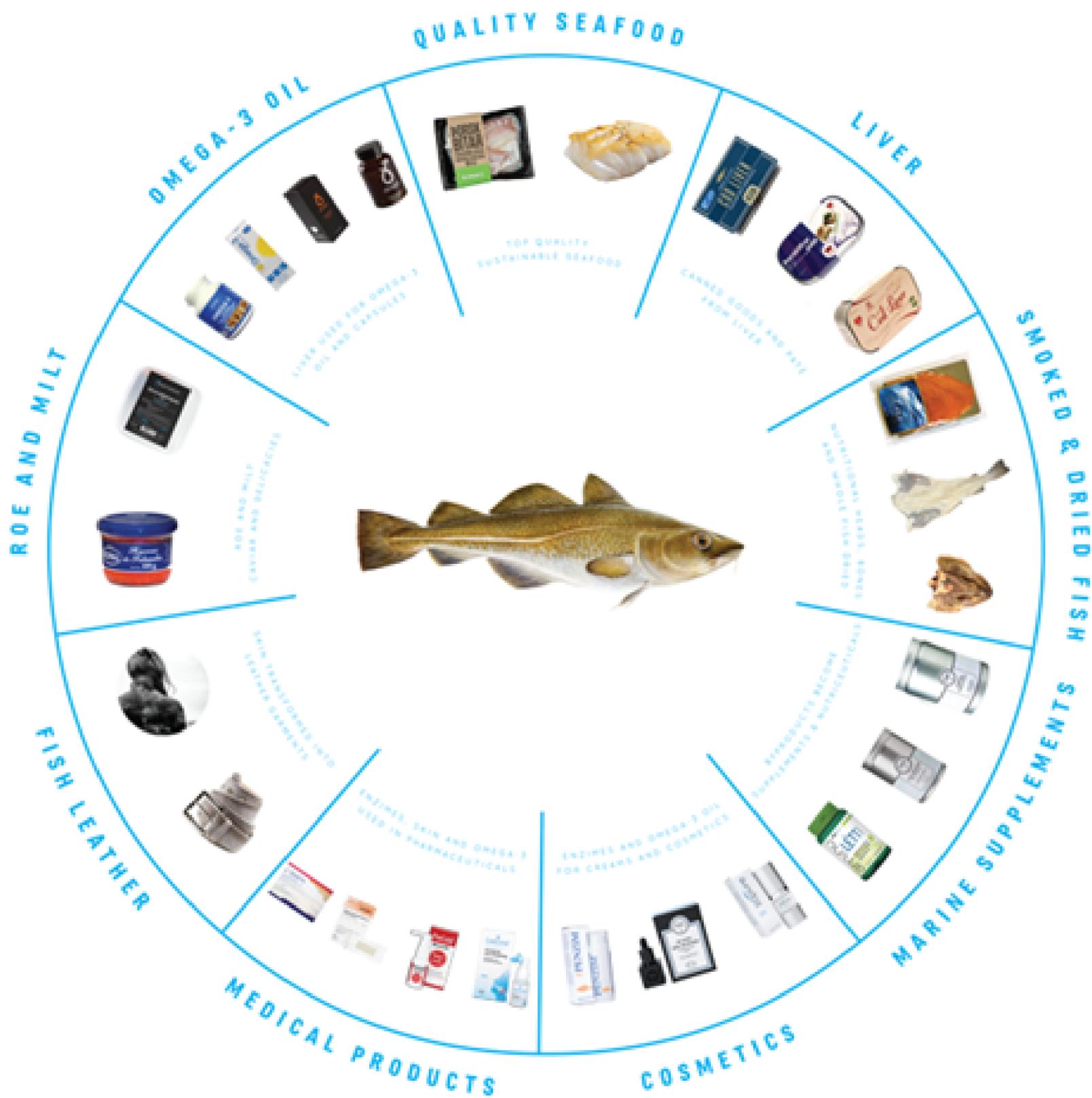
GSGP Leadership Summit Panel
on Invasive Species
Dr. Thor Sigfusson
Founder and chairman
Iceland Ocean Cluster
October 2020



THE
INCREDIBLE
FISH VALUE
MACHINE

made in Iceland





100 %
fish

Icelanders are pioneers in utilizing all parts of whitefish through innovation and industry clustering

The Icelandic model

Extensive collaboration

Investment capability

New technology

Competitive Government funding for research

Mindset!



Testing the Icelandic model on invasive carp



Our task was to develop a strategy with suggested actions to maximize the utilization of the invasive carp in the Great Lakes.



Test results

| Full weight | Head | Spine | Fillet skin on | Fillet skinless | Tail | Head % | Fillet % | Fillet skinless | Comments |
|-------------|------|-------|----------------|-----------------|------|--------|----------|-----------------|--------------------------------|
| 1350 | 435 | 175 | 740 | | | 32% | 55% | | |
| 1350 | 680 | | 670 | | | 50% | 50% | | Not correct support in machine |
| 1405 | 555 | 820 | | | 30 | 40% | 0% | | |
| 1445 | 555 | 890 | | | | 38% | 0% | | |
| 1545 | 565 | 300 | 680 | 530 | | 37% | 44% | 34% | Very nice fillets |
| 1630 | 640 | 365 | 625 | | | 39% | 38% | | Pre-trimmed belly |
| 1775 | 780 | 995 | | | | 44% | 0% | | |
| | | | | | | | | | |
| 1500 | 601 | 591 | 679 | 530 | 30 | | | | |

Dried carp heads for export?



The filleting of the invasive carp



Conclusion

Our study shows huge potentials if further collaboration is developed among fish processors and new technology is introduced to create high quality filets and value from all the byproducts.

Success will only be realized with extensive collaboration within the industry, new investments and government support.

“Thank You” to Our Sponsors!

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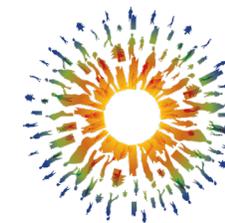


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