SHIPWRECKS Hive!

January 15, 2014

ANNUAL REPORT TO THE GOVERNOR AND THE LEGISLATURE

AS PER M.S. 3.303, SUBD.10 AND M.S. 129D.17, SUBD.2 (D)





On Behalf of Lake Superior Center Authority:

Pursuant to 2013 Minnesota Session Laws, Chapter 137, Article 4, Section 2, Subdivision 6, clause (e), the Minnesota Legislature provided \$200,000 to Lake Superior Center Authority in the first year (fiscal year 2014) of the FY14/15 biennium for development of an exhibit to examine the effect that aquatic environments have on shipwrecks and to preserve Minnesota's history and cultural heritage.

On behalf of the Lake Superior Center Authority, we are pleased to provide this progress report on the project for which we have been designated to receive Arts and Cultural Heritage Fund funding, a project which we are calling *Shipwrecks Alive!* In entering into the grant agreement, the state entity, Lake Superior Center Authority, has designated its non-profit Lake Superior Center d/b/a Great Lakes Aquarium to serve as its managing agent for development of the project.

Great Lakes Aquarium is uniquely positioned on the shores of Lake Superior, one of the wreck diving meccas of the world, to tell the story waiting under the waves. It is a story that fascinates all ages. The exhibit will be housed in the Sharon and Roger Karon Gallery; a space specifically designed to host special exhibits, and will focus on three unique examples of shipwrecks serving as underwater habitat in three very distinct and different parts of the world: Lake Superior; the South Pacific; and the Mediterranean Sea.

With the execution of the grant agreement on November 8, 2013, work began on preparing the gallery for renovation by removing the previous exhibit, *Masters of Disguise*. Once the room was cleared of infrastructure and a real-size spatial assessment was performed, it became clear that the exhibit configuration originally considered, needed to be modified in order to enhance the visitor's experience.

The new exhibit alignment that resulted from that assessment is the one that is included in this report. It involved moving the *Wreck of Antiquity* to a position along the southern wall of the gallery, and placing the wreck of the *America* in the gallery center. The acquisition and fabrication of two large fish tanks is underway, as is the acquisition and assembly of aquatic animals that will inhabit the exhibit. The research team is also solidifying the content and design of interactive exhibit components.

Included in this report is a complete work plan which includes the revised floor plan, detailed design drawings for the three respective shipwreck displays with an accompanying narrative, plus a detailed timeline and an overall budget for the project including sources and uses of funds. Our goal is to have the project completed and open to the public by July 1, 2014.

We are most grateful to the members of the Minnesota State Legislature for providing funding for this project from the Arts and Cultural Heritage Fund.

Sincerely,

Jack LaVoy

Executive Director

Lake Superior Center d/b/a Great Lakes Aquarium

Elaine Hansen

Chair

Lake Superior Center Authority

EXHIBIT OVERVIEW

A brand new exhibit is being planned, called *Shipwrecks Alive!* It will provide an in-depth look at the fascinating world of sunken ships and the diverse wildlife ecosystems they attract and sustain. The exhibit will focus on three unique examples of shipwrecks serving as underwater habitat in three very distinct and different parts of the world: Lake Superior; the South Pacific; and the Mediterranean Sea.

THE EXHIBIT WILL EXPLORE THE FOLLOWING QUESTIONS:

- a) Why do boats float?
- b) What happens after the ship sinks?
- c) Which animals inhabit a shipwreck first?
- d) How are shipwrecks around the world the same and different?
- e) How does SCUBA diving work?
- f) What can we learn about human culture from shipwrecks?
- g) What is underwater archaeology?
- h) Why are the Great Lakes so great for wreck diving?

DECEMBER SUMMER STREET PRINTED PRINTE

Update Jan. 15, 2014:

Exhibit design required changes to

EXHIBIT ELEMENTS:

These questions will be explored through static signage (text, photographs, graphics), a live animal collection in various aquaria, historic artifacts, hands-on interactives, dramatic play spaces and themed exhibit galleries.

oric artifacts, hands-on interactives, dramatic play spaces and themed exhibit galleries. floor plan. A larger plan is located on page 9.

EXHIBIT CONTENT:

Each section describes the text, graphics and content of interactives to be included in the exhibit piece by piece. Letter codes provide organization for the pieces and correlate with the exhibit map and elevations.

A. ENTRYWAY SIGNAGE AND WAYFINDING

The entrance to the exhibit will be themed to serve as an enticing invitation to explore the themes presented. Ideas for the exhibit look include lighting features that mimic light underwater (ripples, blues, and greens); water sounds; as well as signage artwork and fonts that are inspired by the three unique shipwreck stories.

B. INTRODUCTORY SHIP CONCEPTS

Visitors will be introduced to concepts and content that will provide context for the remainder of the exhibit components. Models, text, graphics and digital projections will engage visitors with nautical terminology (e.g. starboard=right side of the boat), the physics of floating, the history of boat building in human culture, and introductory SCUBA concepts. These elements will set the stage for the exploration of three very different wreck environments.

EXHIBIT ELEMENTS:

- Three ship models demonstrating the science behind floating vs. sinking
- Historical timeline relative to boat building
- Interactive component that addresses the basics of SCUBA diving, submersibles and technology as means for exploring shipwrecks
- Interpretive program: build a boat



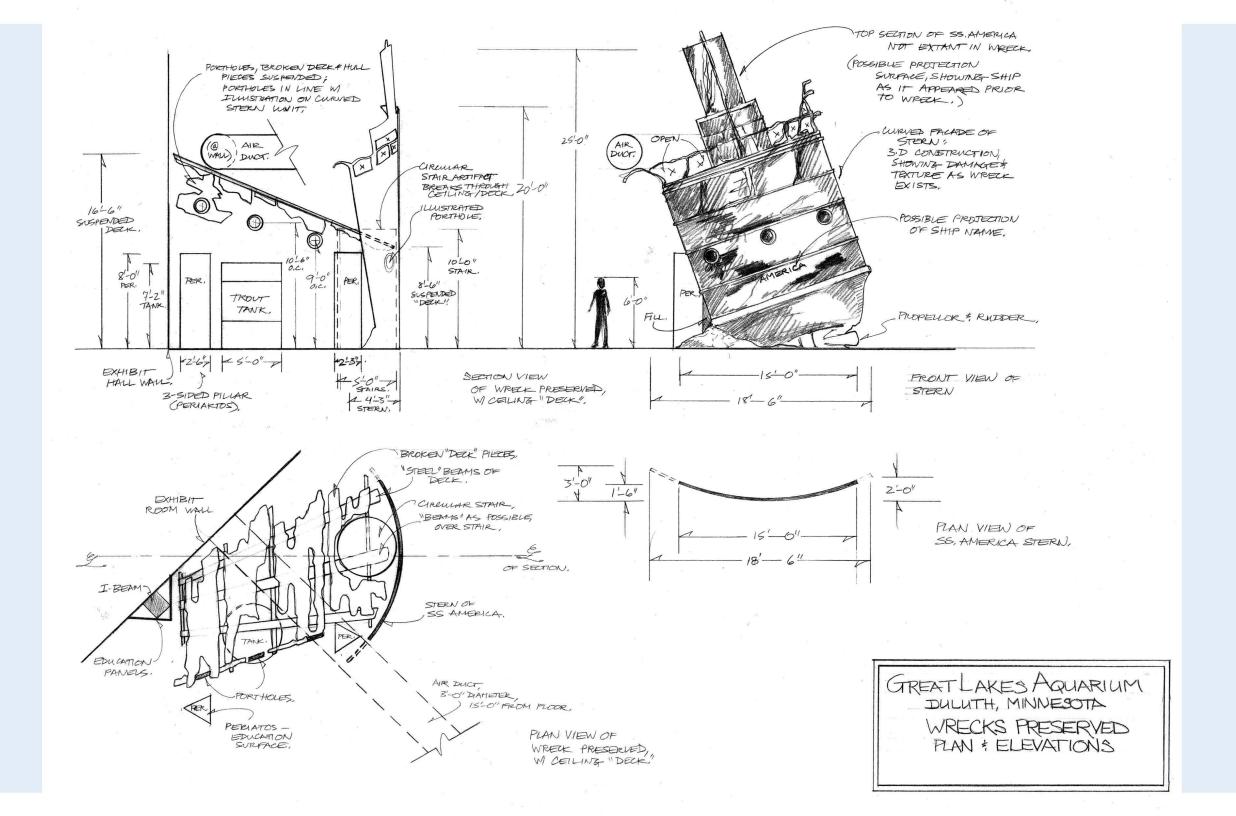
C. WRECKS PRESERVED

Visitors will explore the well preserved wrecks found throughout the Great Lakes with a particular focus on the S.S. America that rests within Isle Royale National Park, Lake Superior. A maritime culture and economy has been strong on the Great Lakes for centuries. High volumes of boat traffic and the formidable storms that can arise quickly on these inland seas have resulted in the sinking of hundreds of ships. Merchant, cargo and pleasure crafts alike have found their way to the bottom of the lakes. The cold nutrient-poor freshwater ecosystems have preserved the structure of these shipwrecks well. People have also been working hard to preserve these moments in our region's history through active preservation and research. Changes in water temperature and the increased presence of invasive species such as zebra mussels may change what happens to Great Lakes shipwrecks in the future.

EXHIBIT ELEMENTS:

- A nearly full scale stern section of the S.S. America
- Historical artifacts from the S.S. America including one of the original staircases
- Live animals: Aquaria and photographs will showcase species found on Lake Superior wrecks including juvenile fish alongside benthic species such as sculpin and invertebrates
- Text and graphic panels illustrating a comparison between physical properties of Lake Superior and marine environments
- Multi-media presentation showcasing wreck diving and the preservation work underway in the Great Lakes alongside current threats to shipwreck preservation
- Interpretive/Educational program: Aquarium educators will develop an Interactive Video Conferencing program that aligns with exhibit goals for the 2014-2015 school year.





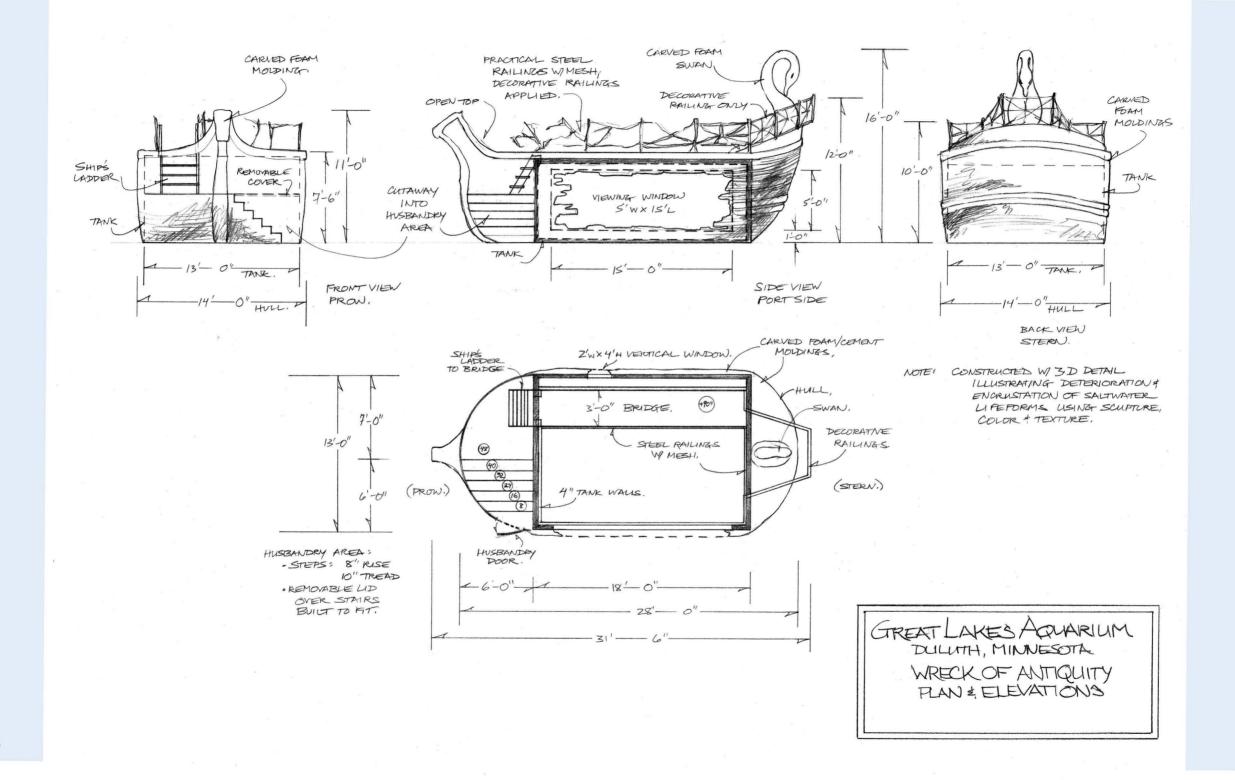
D. WRECK OF ANTIQUITY

People have used boats for trade, war and travel for thousands of years. Many of these first vessels sailed in and around the Mediterranean Sea. Underwater archaeologists piece together the history of ship building from imagery in murals, pottery, stories, and by diving to shipwreck debris fields. Visitors will encounter a large scale model of a Roman merchant vessel from the first century CE. The warm salt water of the Mediterranean, people and invertebrates have worn away at both the wreck and cargo over the years. Little remains for archaeologists to examine. The smallest of details can be valuable clues to understanding both the regional culture and environment. Visitors will explore this wreck's debris field through large and small viewing windows. They will discover the history of SCUBA diving through interpretive panels and artifacts. Large temperate saltwater fish such as sharks, rays and grouper will animate this underwater scene.

EXHIBIT ELEMENTS:

- Scale model of ancient wreck in various stages of degradation will serve as the frame for an 18 ft long x 13 ft wide x 7 ft deep salt water tank.
- Interpretive panels describing the process of discovery and recovery from a marine archaeology perspective; case studies of several ancient wrecks; history of SCUBA diving; a creature focus on the shipworm, an invertebrate eating its way through wrecks throughout the region; and other regional wildlife.
- Interactive discovery center that encourages visitors to try their hand at piecing together several wrecks of antiquity based on debris field clues.
- Live animal exhibit: sharks, rays, grouper, spiny lobster
- Interpretive program: shark target feeding

Hlive!



E. WRECKS AS HABITAT

There are several locations around the globe that are the resting place for a large concentration of shipwrecks. Truk or Chukk Lagoon is one such place. The site of a large scale sinking of Japanese ships and planes during a three day battle in 1944, hundreds of vessels and their crews now rest on the bottom of this protected Lagoon. The San Francisco Maru is one of the cargo ships that accompanied the Japanese fleet. Nicknamed the "million dollar wreck" because of its still full cargo holds, this ship has become part of the regional ecosystem. Corals have now encrusted both instruments of war and everyday maritime objects. Fish and crustaceans weave in and out of steel infrastructure. And divers from around the world visit the depths to marvel at it all. The environmental impacts of shipwrecks and artificial reef deployment will also be explored. Visitors will explore the wildlife that calls wrecks in the Truk Lagoon home, through a large reef display, interpretive panels, historical photographs and multi-media interactives.

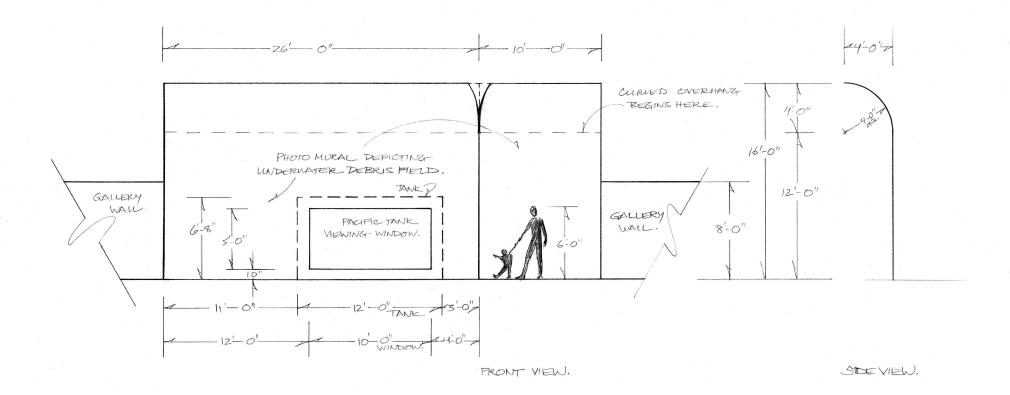
EXHIBIT ELEMENTS:

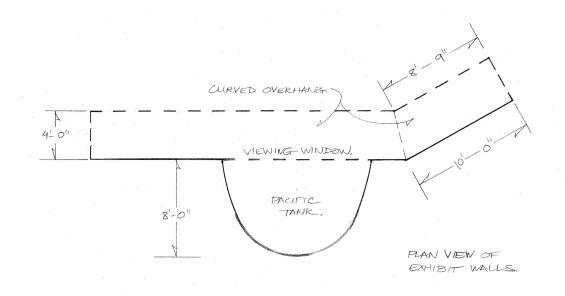
- Coral encrusted ship structures will theme the tank interiors
- Interpretive panels will highlight the process and stages of wildlife colonization and reef building that occurs in temperate marine ecosystems
- A multi-media exploration of the environmental impacts of shipwrecks
- Live animal exhibit: a colorful diversity of reef fish

E IN MEMORIUM

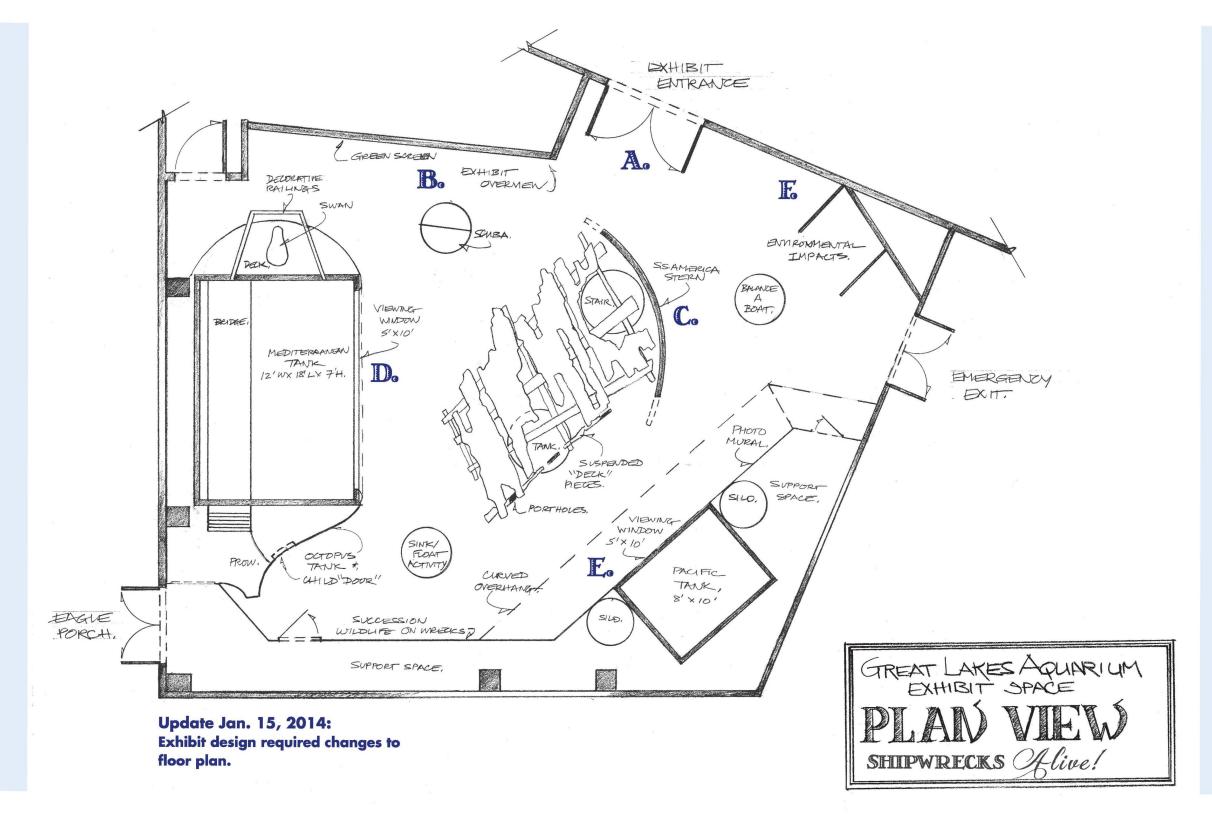
This exhibit recognizes the loss of lives at sea. To honor and respect families and individuals, the exhibit will feature a memorial plaque dedicated to those lost at sea.







GREAT LAKES AQUARIUM DULUTH, MINNESOTA WRECKS AS HABITAT PLAN & ELEVATIONS



SHIPWRECKS Alive!

EXHIBIT WORKPLAN

START DATE	END DATE	MEASURABLE OUTCOMES	ASSESSMENT METHOD	STATUS AS OF 1/15/14	FTE POSITIONS
8/14/13	8/15/13	Gallery measurements and specs confirmed and submitted to exhibit team	Completion of task	Completed	0.002
8/14/13	8/20/13	Potential design partners	Confirmation of completion communicated to project team	Completed	0.001
8/14/13	8/28/13	Advisory group (GLSPS and select board members) confirmed	Confirmation of completion communicated to project team; verbal agreement received from	Completed	0.001
			advisory members	Completed	
8/14/13	9/28/13	\$50,000 match support confirmed and documented	Written confirmation received by Executive Director (ED)		0.004
8/14/13	9/6/13	Draft work plan and itemized draft budget completed for review	Draft emailed to the team	Completed	0.019
8/14/13	9/30/13	Grant paperwork including work plan, budget, board resolution, and \$50,000 match confirmation sent via email to state office	ED communicates completion to exhibit team	In-progress	0
8/14/13	10/4/13	Plan for the rehoming of Masters of Disguise (MOD) animals finalized	Curator confirms relocation/rehoming plan to Assistant Director (AD)	In-progress	0.01
8/14/13	10/16/13	Plan for storage of MOD exhibit components finalized	Communicate written plan to team	Incomplete	0.005
9/1/13	9/20/13	Seek and obtain bids for carpet replacement in gallery	AD will share bid information with exhibit team	Completed	0.001
9/3/13	9/3/13	Process check meeting with exhibit team	Meeting minutes and next steps emailed to team	Completed	0.004
9/7/13	9/17/13	Draft work plan and budget reviewed, edits compiled, sent to Education Director (Ed.D) and incorporated for second review	Ed.D confirms receipt of edits and sends the second draft via email to the team for review	Completed	0.019
9/13/13	9/18/13	Final draft of work plan and budget reviewed by necessary/interested parties	Final draft designated as such by ED	Completed	0.01
9/17/13	9/17/13	Process check meeting with exhibit team	Meeting minutes and next steps emailed to team	Completed	0.005

START DATE	END DATE	MEASURABLE OUTCOMES	ASSESSMENT METHOD	STATUS	FTE POSITIONS
10/1/13	10/1/13	Process check meeting with exhibit team	Meeting minutes and next steps emailed to team	Completed	0.005
10/1/13	10/28/13	Research and write RFPS for beginning stages of construction, interactives and other exhibit components that will be done by out of the house firms	Firms selected for sending RFPs to; Final RFPs completed and ready to send	Completed	0.01
10/1/13	11/1/13	Solidify plan for PR/customer relations when MOD closes	Next steps outlined in an email	Completed	0.002
10/4/13	10/4/13	Announcement made via social media/web site about last month of MOD show	Communications Coordinator confirms posting	Completed	0.002
10/15/13	10/15/13	Process check meeting with exhibit team	Meeting minutes and next steps emailed to team	Completed	0.005
		BEGIN GRANT FUNDED ACTIVITIES UP	PON RECEIPT OF SIGNED GRANT AGREEMENT		
11/12/13	11/12/13	Send RFPS upon final approval and signing of grant agreement with the state.	ED/AD confirm receipt of documents	Completed	0.002
11/1/13	11/1/13	Send out press release about grant agreement	Confirmation of press release sent by communications coordinator	Completed	0
11/2/13	6/30/14	MEDIA OPP: Set up and begin Exhibit Vlog	Print, web or TV media outlet runs story	Completed	0.002
10/28/13	11/11/13	Proposals for projects due to Lake Superior Center (GLA) staff.	Proposals received by AD via mail or email	Completed	0.001
10/29/13	10/29/13	Process check meeting with exhibit team.	Meeting minutes and next steps emailed to team	Completed	0.005
11/1/13	11/7/13	Masters of Disguise (changeable gallery) closed for deconstruction.	Exhibit door closed	Completed	0.001
11/4/13	12/1/13	Deconstruction and preconstruction gallery prep	AD confirms completion of gallery preparation	Completed	0.239
11/7/13	11/7/13	MEDIA OPP: Press release about diving/and or receiving funding	Print, web or TV media outlet runs story	Completed	0.002
11/5/13	11/16/13	Order Truck Lagoon and Mediterranean fiberglass aquariums.	AD confirms completion of order and preperation for recieving	Completed	0

EXHIBIT WORKPLAN CONTINUED 2013 - 2014

START DATE	END DATE	MEASURABLE OUTCOMES	ASSESSMENT METHOD	STATUS	FTE POSITIONS
11/5/13	11/16/13	Order life support systems for Truk Lagoon and Mediterranean, and saltwater makeup system.	AD confirms completion of order	Completed	0.005
11/11/13	11/15/13	Exhibit fabrication, design and/or construction contractors selected from submitted proposals.	AD confirms selection of contractors for all identified pieces	Completed	0.01
11/12/13	11/12/13	Process check meeting with exhibit team	Meeting minutes and next steps emailed to team	Completed	0.005
11/26/13	11/26/13	Process check meeting with exhibit team	Meeting minutes and next steps emailed to team	Completed	0.005
12/1/13	6/30/14	Exhibit construction and installation	Exhibit completed and opening event held	In Progress	1.197
12/1/13	12/2/13	Remove air compressor from life support to make room for shipwreck life support	AD confirms compressor has been moved	In Progress	0.01
12/3/13	12/5/13	Install concrete risers for shipwrecks life support.	Building Engineer confirms work is done	In Progress	0.001
12/10/13	3/3/13	Life support installed for lagoon and Mediterranean wreck	AD confirms work is complete	In Progress	0
12/10/13	12/10/13	Process check meeting with exhibit team	Meeting minutes and next steps emailed to team	In Progress	0.005
12/11/13	12/11/13	Exhibit marketing plan finalized	Action steps emailed to relevant team members; timeline for graphics and ad designs confirmed	In Progress	0.014
12/17/13	12/17/13	Process check meeting with exhibit team	Meeting minutes and next steps emailed to team	Completed	0.005

START DATE	END DATE	MEASURABLE OUTCOMES	ASSESSMENT METHOD	STATUS	FTE POSITIONS
1/7/14	1/7/14	Process check meeting with exhibit team.	Meeting minutes and next steps emailed to team	Completed	0.005
1/2/14	1/15/14	Compile and submit annual report to state	ED confirms submission of report	In Progress	0.01
1/21/14	1/21/14	Process check meeting with exhibit team.	Meeting minutes and next steps emailed to team	Incomplete	0.005
1/31/14	1/31/14	50% content Text, Graphics and Artifacts (TGA) completed; 100% interactives plan; RFP sent for any additional interactive components	Ed.D submits TGA and interactives plan to exhibit team and advisory group; RFPs completed and submitted for additional interactives as needed	Incomplete	0.479
1/28/14	1/28/14	MEDIA OPP: Press release about aquariums arrival	Print, web or TV media outlet runs story	Incomplete	0.002
1/31/14	2/10/14	Tanks arrive on site	AD ensures that Fork Lift is available and reports once aquariums are in the gallary	Incomplete	0.011
1/31/14	2/11/14	Proposals for interactive fabrication due to Lake Superior Center (GLA) staff	AD confirms receipt of proposals	Incomplete	0.005
2/1/14	4/1/14	Aquascaping of Truk Lagoon, Mediterranean and Lake Trout	AD communicates with Fabricators as to when each project is completed and reports when all aquascping is complete	Incomplete	0.144
2/1/14	3/30/14	Shark and ray's collected from Japan. Reef fish collected from various suppliers	Curator confirms Shark's and Rays have been collected and are in quarantine	In Progress	0
2/4/14	2/4/14	Process check meeting with exhibit team	Meeting minutes and next steps emailed to team	Incomplete	0.005
2/11/14	2/15/14	Truk Lagoon and Mediterranean aquarium's are placed in the correct place in the gallery. Aquariums are assembled and seams are water sealed	AD confirms the aquariums are placed and seaming is complete	Incomplete	0.027
2/18/14	2/18/14	Process check meeting with exhibit team	Meeting minutes and next steps emailed to team	Incomplete	0.005
2/28/14	2/28/14	100% content TGA completed.	Completed TGA submitted to exhibit team and advisory group	Incomplete	0.144
3/1/14	3/1/14	Complete TGA handed off to graphic designer for layout.	Education Director submits complete TGA to graphic designer	Incomplete	0.005

START DATE	END DATE	MEASURABLE OUTCOMES	ASSESSMENT METHOD	STATUS	FTE POSITIONS
3/1/14	4/1/14	Exhibit team and graphic designer collaborate on signage layout edits and image sourcing	Education Director reports to exhibit team on progress of signage layout completion.	Incomplete	0.019
12/1/13	3/1/14	Exhibit walls installed	AD communicates with Contractors and reports to the team progress of construction and completion.	Incomplete	0.019
3/1/14	3/6/14	Effects lighting, LED exhibit lights for Lagoon and Mediterranean, and interpretive lights ordered	Building engineer confirms lights are ordered.	Incomplete	0.019
3/4/14	3/4/14	Process check meeting with exhibit team	Meeting minutes and next steps emailed to team.	Incomplete	0.005
3/5/14	6/1/14	Facade for ancient shipwreck and America completed	AD communicates with Fabricators and Contractors and reports to the team progress of construction and completion	Incomplete	0.048
3/18/14	3/18/14	Process check meeting with exhibit team	Meeting minutes and next steps emailed to team.	Incomplete	0.005
3/15/14	3/20/14	Electrical installed for life support	Building engineer confirms work is complete	Incomplete	0.019
4/1/14	4/1/14	All signage and "to print"files to printer	Graphic designer confirms completed upload of files.	Incomplete	0.005
4/1/14	4/1/14	Aquariums leak tested and running	Curator confirms Aquariums work is complete	Incomplete	0.002
4/10/14	4/20/14	Electrical installed for exhibit interactives	Building engineer confirms work is complete	Incomplete	0.019
4/15/14	4/15/14	Process check meeting with exhibit team	Meeting minutes and next steps emailed to team.	Incomplete	0.005
4/29/14	4/29/14	Process check meeting with exhibit team	Meeting minutes and next steps emailed to team.	Incomplete	0.005
5/13/14	5/13/14	Process check meeting with exhibit team	Meeting minutes and next steps emailed to team.	Incomplete	0.005
5/13/14	5/27/14	Exhibit Lighting Installed	Building engineer confirms work is done	Incomplete	0.014
5/27/14	5/27/14	Process check meeting with exhibit team	Meeting minutes and next steps emailed to team.	Incomplete	0.005
6/1/04	6/1/14	Fish stocked into exhibits	Curator confirms animals are in displays.	Incomplete	0.013

START DATE	END DATE	MEASURABLE OUTCOMES	ASSESSMENT METHOD	STATUS	FTE POSITIONS
6/2/14	6/2/14	MEDIA OPP: Press release about fish stocked	Print, web or TV media outlet runs story	Incomplete	0.002
6/4/14	6/4/14	Process check meeting with exhibit team	Meeting minutes and next steps emailed to team	Incomplete	0.005
6/5/14	6/8/14	Carpet installed	Carpet company installs. AD confirms work is complete	Incomplete	0.004
6/10/14	6/10/14	Process check meeting with exhibit team	Meeting minutes and next steps emailed to team	Incomplete	0.005
6/15/14	6/15/14	MEDIA OPP: Interview on Northland Voices about shipwreck exhibit	Print, web or TV media outlet runs story.	Incomplete	0.002
6/17/14	6/17/14	Process check meeting with exhibit team	Meeting minutes and next steps emailed to team	Incomplete	0.005
6/24/14	6/24/14	Hang exterior exhibit banner	Sign company hangs banners AD confirms work is complete	Incomplete	0
6/24/14	6/24/14	Process check meeting with exhibit team	Meeting minutes and next steps emailed to team	Incomplete	0.005
7/1/14	7/1/14	Member sneak-peak	People attend the event	Incomplete	0
7/2/14	7/2/14	Grand opening of exhibit			

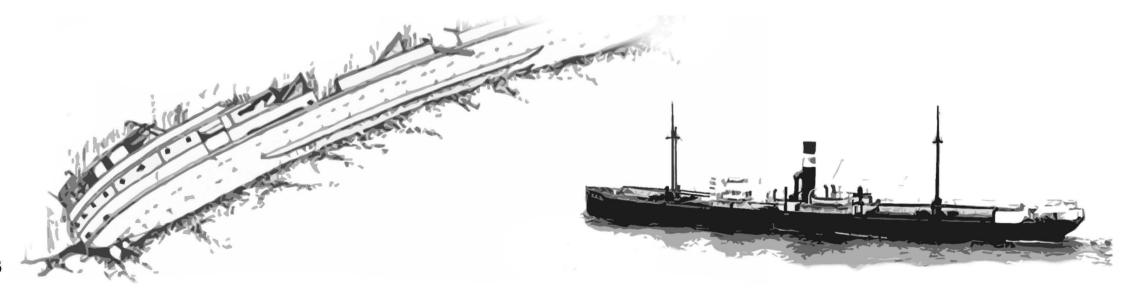




EXHIBIT BUDGET

2013 - 2014

Lake Superior Center dba Great Lakes Aquarium, Duluth, MN

NOTE: Money appropriated in this article may not be spent on activities unless they are directly related to and necessary for a specific appropriation. Money appropriated in this article may not be spent on indirect costs or other institutional overhead charges that are not directly related to and necesary for a specific appropriation.

**Per Minnesota Laws 2013, Chapter 137, Article 4, Section 2, Subd. 6, clause (e), grant recipient must provide a nonstate cash match of at least 25% of the total eligible project costs.

1. SALARIES & BENEFITS	GRANT	MATCH	BUDGET
1a. PERSONNEL: Lake Superior Center staff time - 5,635 hours at \$20/hr average hourly rate	\$0	\$112, <i>7</i> 00	\$112, 7 00
1b. FRINGE BENEFITS: 20% of budget hours for full time employees	\$0	\$23,000	\$23,000
2. CONTRACTED SERVICES	GRANT	MATCH	BUDGET
2a. CONSTRUCTION: Exhibit walls and infrastructure	\$12,000	\$1,500	\$13,500
2b. DESIGN & ARTWORK: Graphic design or signage and marketing	\$4,000	\$0	\$4,000
2c. FABRICATION: Exhibit props and facades	\$11,030.00	\$14,770	\$28,800
3. SUPPLIES	GRANT	MATCH	BUDGET
3a. CONSTRUCTION & THEMING: Tanks, tank surrounds, plumbing	\$151,970	\$13,500	\$165,470
3b. ANIMAL CARE & AQUISITION: Live animals and shipping	\$1,000	\$50,000	\$51,000
3c. INTERACTIVES: Digital and manual manipulative exhibit pieces	\$15,000	\$0	\$15,000
3d. SIGNAGE: Interpretive signage throughout gallery	\$3,000	\$0	\$3,000
4. ADVERTISING	GRANT	MATCH	BUDGET
Building banners, print advertising, tv/radio advertising	\$0	\$10,000	\$10,000

TOTAL PROJECT:	GRANT	MATCH	BUDGET
Legacy Funds	\$198,000	\$0	\$198,000
City of Duluth	\$0	\$50,000	\$50,000
LSC dba GLA	\$0	\$1 75,470	\$175 <i>,</i> 470
GRAND TOTAL:	\$198,000	\$225,470	\$423,470











Lake Superior Center Authority Board:

Elaine Hansen, Chair

Dennis Lamkin, Vice Chair

Betty Ramsland, Secretary

Bob Meier, Deputy Commissioner MN DNR

For more information visit:

www.glaquarium.org
www.glaquarium.org/shipwrecks-alive

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