Robinson Landing Site (44AX235)
Ship Preservation Updates

January 2019 – January 2021

Note: This information reflects the state of knowledge when this update was written. Information may have changed.

Ship Preservation at the Bus Barn

View a video of the 18th century ships in storage tanks. How much space do three dismantled 18th century ships take up? City archaeologists have recently discovered the answer to this question as they've moved the last of the timbers into tanks of water.

Now that you've seen the ships in storage, here are a few details. The white tags you see in the video on each timber are labels that will help archaeologists piece the ships back together. The labels are archival quality Tyvek and are attached using non-corroding fasteners. You might have also spotted one of our archaeologists in a pool moving timbers. Timbers that are impossible for one person to move on land are a lot easier to move in the water where their buoyancy helps us out!

All the timbers of the three ships excavated at the Robinson Landing site in April, June, and October are now being stored at a City facility in nine tanks of water, including four metal tanks and five above ground swimming pools. The wood, which came from a wet environment, must remain waterlogged to ensure its continued stabilization and long-term preservation. Without this measure, the timbers would desiccate (dry out) and disintegrate, precluding any potential for future study or conservation. City archaeologists are routinely monitoring the tanks and pools, taking water samples, periodically changing water, and conducting routine pool maintenance to prevent biological growth. [Fun fact: archaeology staff now can set up a pool in under an hour.] Our staff has become very proficient at setting up above ground pools and backwashing filters.

Now that the timbers are in a stable environment, archaeologists and other City staff are developing plans for their documentation, interpretation, and long-term storage. Documentation will entail recording the details of each wooden piece which will allow for a better understanding of how the ships were built. Archaeology staff are also exploring new programming possibilities in the ship storage space that will allow the public to see the timbers up close, learn how the ships fit into Alexandria's history, how they were excavated, and the steps being taken to study and preserve them. Stay tuned for exciting event announcements!

Wetlands Studies and Solutions, Inc. took this drone footage of the interior of the warehouse. Thunderbird Archeology, a division of Wetlands, excavated the ships as part of Alexandria's Archaeology Protection Code.

Ship Documentation (part 1)

September 2019

In the spring of 2018, archaeologists finished excavating three historic ship remnants at the Robinson Terminal South Site. City archaeologists have stored the over 1000 timbers in water to prevent their further deterioration, and with the help of volunteers have spent nearly 500 person hours tending to the ongoing preservation needs of these artifacts. The next exciting phase of this project is about to begin with the start of an ambitious documentation project this week.

Researchers from Texas A&M University's Conservation Research Lab (CRL) will digitally reconstruct and model the remnants of the three ships in coordination with a team of City archaeologists and volunteers. The team will work for approximately one week each month through Spring 2020 to document these significant finds. Ultimately, CRL will produce digital and physical models for future preservation and interpretation, like those made for the Hotel Indigo Site ship.

During the first week of the ship documentation project (September 9-13), City staff, volunteers, and researchers from Texas A&M University's Conservation Research Lab (CRL) cleaned and organized nearly 200 timbers from Ship #2 (Feature 155) found at the Robinson Terminal South Site (44AX235). The team removed innumerable wooden and metal fasteners, cleaned iron concretions from timbers, and disarticulated any pieces that were still connected. This allowed us to better pack our tanks and will help us more efficiently and accurately 3D laser scan the timbers. On Monday, September 23, CRL researchers in coordination with a team of City archaeologists and volunteers began scanning these timbers using two coordinate measuring devices with laser line probe attachments. This is the first step in producing digital and physical models of the ships for future preservation an interpretation.

Stay tuned for periodic updates on our progress! If you're interested in helping please submit a volunteer application.

Ship Documentation (part 2)

October 2019

Our ship documentation team had another busy two weeks! Between September 23 and October 4, City archaeologists, volunteers, and researchers from Texas A&M University's Conservation Research Lab (CRL) scanned nearly 200 timbers from Ship #2 (Feature 155) found at the Robinson Terminal South Site (44AX235). Using two coordinate measuring devices with laser line probe attachments, researchers scanned each timber multiple times and Ship #2 is now scanned in its entirety. CRL staff are now back in College Station processing the data and report that the scans look great. They are stitching these scans together to create a point cloud of each timber and processing these into a digital mesh model. Once all the individual timbers are digitally modeled, CRL will use field records to create a digital model of the archaeologically recovered remnant. We're excited to see the results!

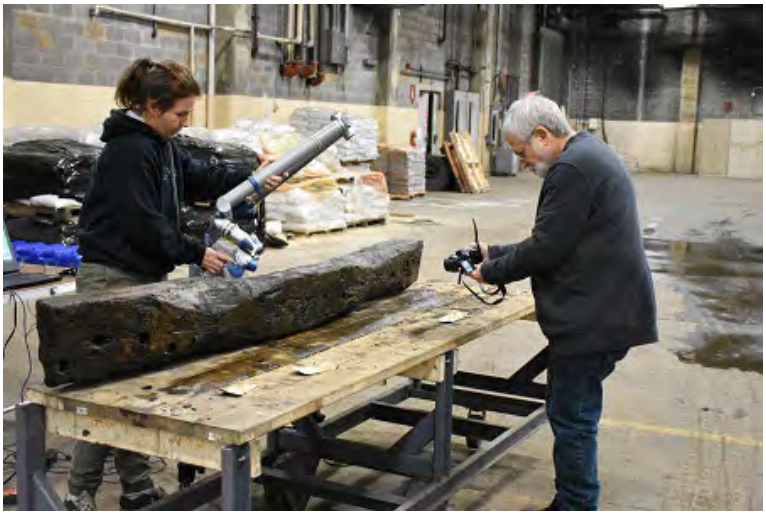
The team also cleaned and organized approximately 380 timbers from the largest vessel remnant recovered at the site, Ship #3 (Feature 159). We continued cleaning iron concretions and cutting wooden and metal fasteners to prepare the timbers for scanning, except this time the iron drift pins holding the keel to the frames and keelson were enormous. Due to the dedicated efforts of our amazing volunteers, we're going into the November work week on target!

Stay tuned for regular updates on our progress! If you're interested in helping, please visit our Volunteer page and submit an application.

Ship Documentation (part 3)

November 2019

We've had another busy couple of weeks! This month our ship documentation team continued scanning, cleaning, and organizing timbers from Ship #3 (Feature 159) found at the Robinson Terminal South Site (44AX235). A big thanks to scholars from the University of Maryland's School of Architecture, Planning and Preservation who helped us scan Ship #3's enormous bow stem using a stationary laser. This piece is too large to efficiently and effectively scan with the Faro arm scanners that the Conservation Research Lab (CRL) uses.



This month, City archaeologists, volunteers, and CRL researchers scanned over 100 timbers from Ship #3. We have now documented over 3 tanks of timbers and remain on schedule to finish documentation in early spring. John Broadwater, the Virginia Department of Historic Resources State Underwater Archaeologist, joined us for several days, assisting with the documentation effort by scanning and photographing timbers. We are grateful for all his help, expertise, and guidance with these ships since their discovery over a year ago.

The team also cleaned and organized timbers from Ships #3 (Feature 159) and #1 (Feature 200). We processed over 200 pieces of ceiling planking and sacrificial planking from Ship #3 and nearly 100 frames from Ship #1. Due to the dedicated efforts of our team, especially our amazing volunteers, we only have one tank left to clean and organize!

Stay tuned for regular updates on our progress!

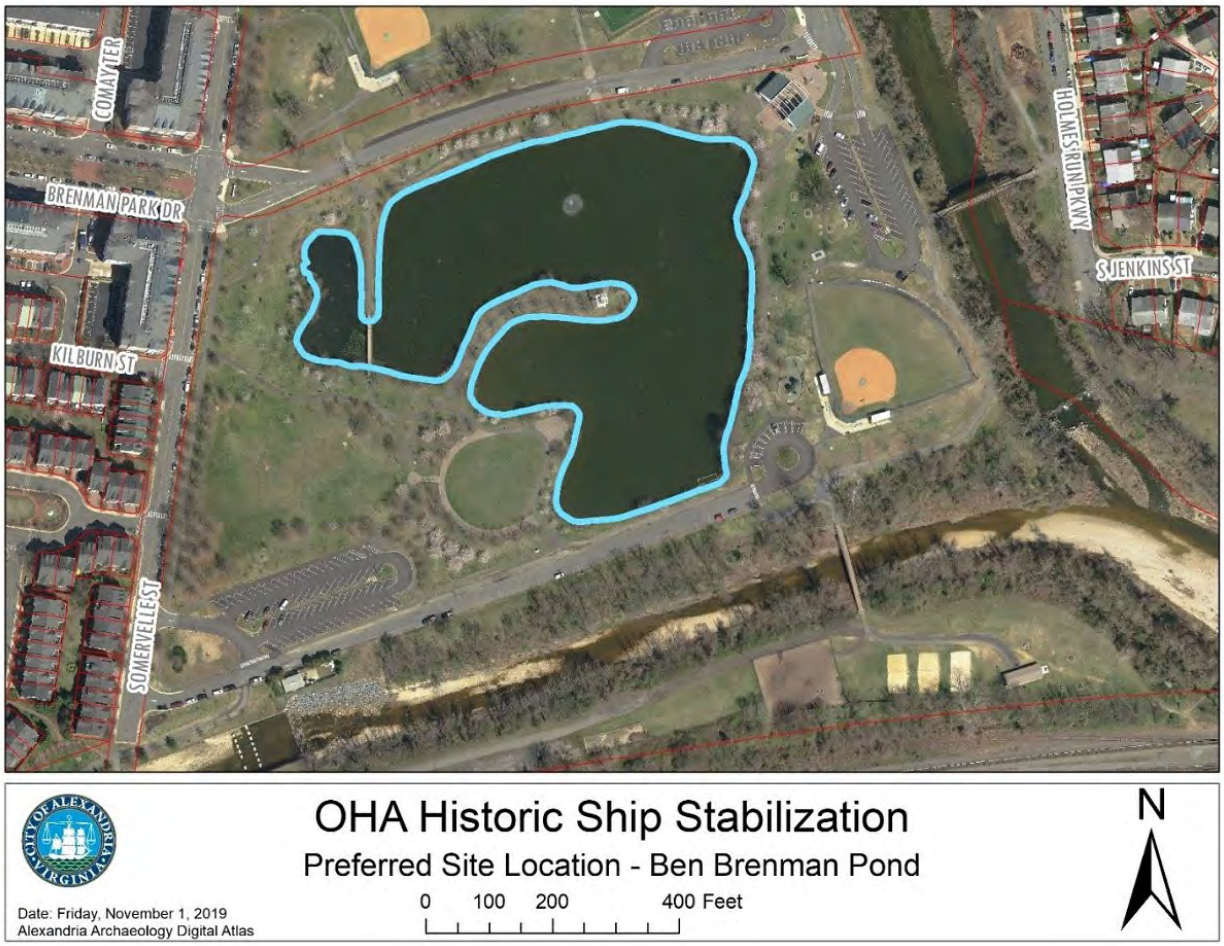
Ship Stabilization Project

December 2019

The City is currently developing a historic ship timbers stabilization plan. The project will safely relocate, store, and preserve the historic ships and a section of wharf found along the City's waterfront at the Robinson Terminal South Site (44AX235) until a more permanent preservation project is feasible. The first ship, from the Hotel Indigo Site (44AX229), is currently undergoing conservation at Texas A&M University. The timbers from the three ship hull remnants from Robinson Terminal South are currently stored in nine pools of water at a City warehouse, which is slated for redevelopment. Archaeologists discovered these ship fragments in 2018 during archaeological excavations of the development site now called Robinson Landing, at the foot of Duke Street. City staff are assisting researchers from Texas A&M University in documenting the timbers through 3D laser scanning, a critical step in collecting information about the historic artifacts that will also serve as the basis for learning more about these ships – their size, shape, type, and potentially where they might have sailed.

In coordination with other departments (including Project Implementation, Transportation and Environmental Services, Parks and Recreation, and General Services), Alexandria Archaeology developed a recommendation for a medium-term storage option that preserves the possibility of future study and/or conservation. Ben Brenman Pond, located in Ben Brenman Park, presents a preferred option to provide medium-term, wet storage for the timbers. Brenman Pond (also referred to as Cameron Station Pond) was constructed in the late 1990s as a stormwater

management facility for Cameron Station and is a popular amenity to the park. Historic interpretation signs would accompany the ships near the storage location, explaining the significance of these resources and how and why they came to be in the pond. The timbers' condition would be regularly monitored. Implementation of this project is pending funding. We are currently reaching out to the community to provide updates and information on our recommendation.



More ship documentation

December 2019

Our ship documentation team had another productive week of work! We continued scanning, cleaning, and organizing ship timbers found at the Robinson Terminal South Site (44AX235).

This month, City archaeologists and CRL researchers scanned over 100 timbers from Ship #3. We have successfully scanned all the structural timbers for this ship-frames, keel, and keelson. These are the most important pieces for determining the vessel's size and shape.

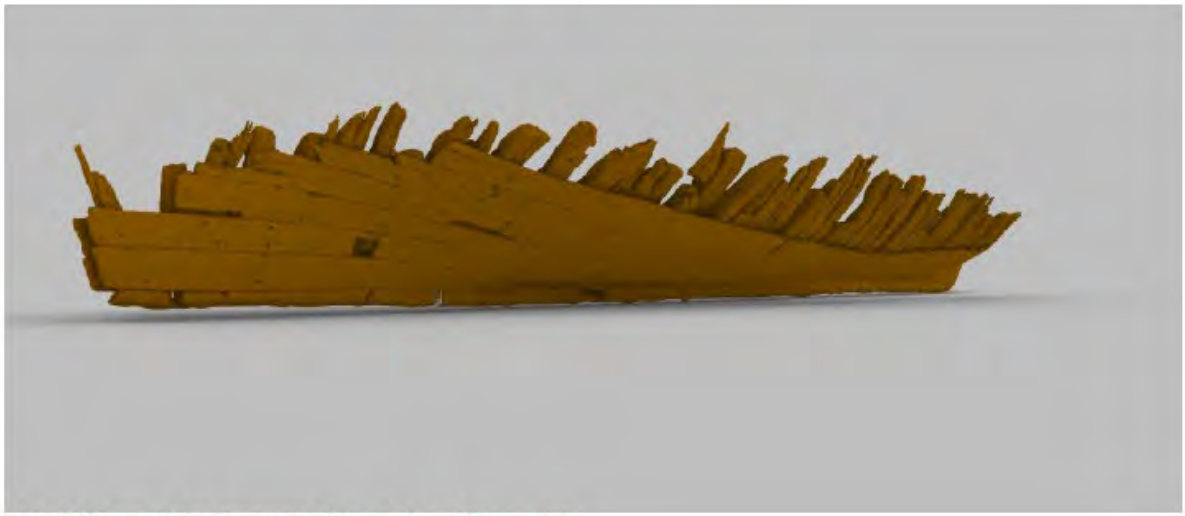
Back in College Station, CRL researchers have been busy stitching together the point clouds for Ship #2's individual timbers into 3D mesh models. They have also 3D printed all of this ship's timbers at 1:12 scale and work has begun on the interpretive model. We are excited to see the results!

Heading into 2020, we have finished preparing all the ship timbers recovered from the site for scanning. That's over 1000 pieces that have had their wooden and metal fasteners cut, their concretions removed, and been organized efficiently into tanks of water. This means that in subsequent trips, the team can focus its efforts solely on scanning. We couldn't have done it without our dedicated volunteers.

Ship Documentation and Model Progress

June 2020

3-D CAD model of remnant #2, show from the bow (left) and the stern.



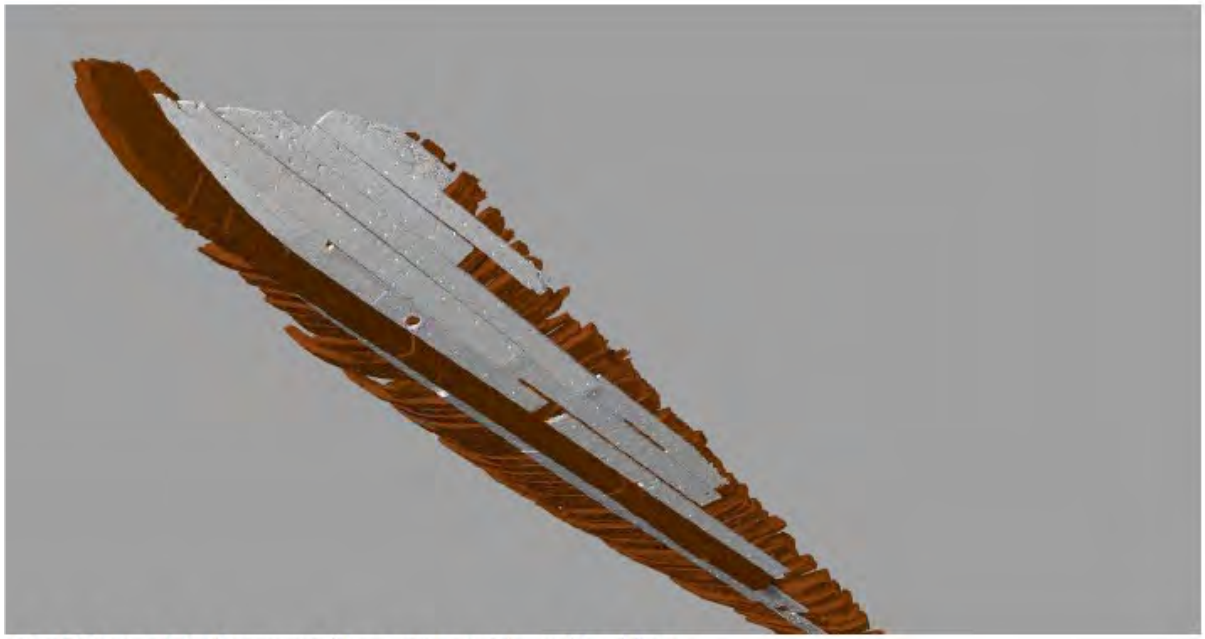
3-D CAD model of remnant #2, starboard isometric

Ship documentation and research has continued over the past few months. Efforts have primarily focused on creating 3D models of the ship hulls found at the Robinson Terminal South Site (44AX235).

On the last scanning trip in late January- early February, City archaeologists and Conservation Research Laboratory (CRL) researchers finished scanning Ship #3 material and scanned nearly all the structural timbers from Ship #1 including the frames, keel, and keelson. These are some of the most important timbers for determining a vessel's size and shape.

Back in College Station, CRL researchers working remotely from home have made huge progress on creating 3D models of the hulls. The digital reconstruction of Ship #2 is almost complete. Researchers only need to add a few more planks to the model. The CRL has also

made significant progress on the Ship #3 model. All the floors and first futtocks have been installed and are now being aligned as the hull planking is added to the model.



3-D CAD model of remnant #3, port isometric and looking up.

The CRL's model maker has assembled all the 3D printed timbers from Ship #2. He has now started laying down a set of hull lines that will be used for creating the metal framing for the model. These lines are based on extensive historic research and the size and shape of the archaeologically recovered portion of the hull.

One more scanning trip is necessary to finish documenting all the ship timbers from this project. The team hopes to schedule this trip as soon as restrictions allow. We are excited to fully document all these timbers so that we can learn more about these vessels!

Stay tuned for regular updates on our progress!

Ship Documentation and 3D Model Progress

October 2020

Recently, the Conservation Research Lab (CRL) returned to Alexandria to wrap up the scanning portion of our ongoing ship documentation project. Since March, CRL researchers have been working remotely on piecing together the hulls of the three ships excavated at the Robinson Terminal South Site (44AX235) from scans collected on previous trips. They have made an amazing amount of progress towards better understanding the size, shape, and construction of these three vessels. However, a few timbers, important pieces in the puzzle, still remained to be scanned back in February. In early October after much careful planning, Alexandria Archaeology and CRL staff (safely) worked together to finish scanning these pieces from ships 1 (Feature 200) and ship 3 (Feature 159). We are so excited to announce that the scanning part of this project is finally complete! CRL researchers will now piece these scans together into virtual models of the ships and physical models of each vessel using 3D printed timbers and a metal frame indicated the extrapolated hull lines.

A big thank you to all the volunteers and interns who have helped us with this project over the last year. We would not have been able to do it without your help! To learn more about the ships project https://www.alexandriava.gov/historic/archaeology/default.aspx?id=107892.

Building Digital and Physical Ship Models

March 2021

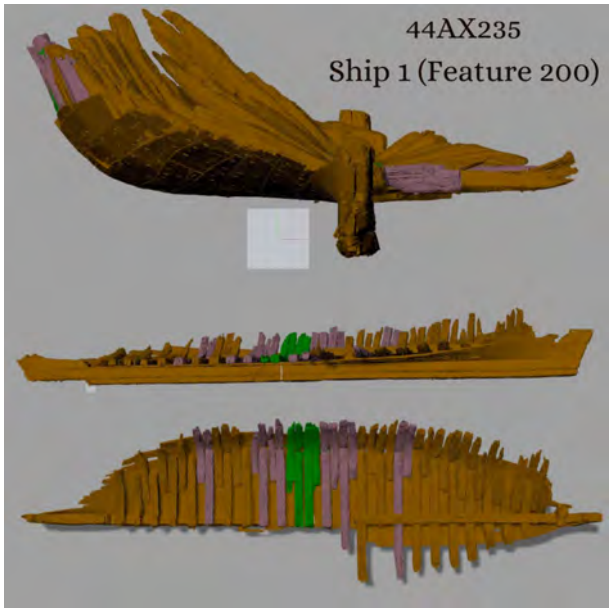
The team at the Conservation Research Lab has been busy this winter! They're working hard to create both digital and physical models of the three ship remnants found at the Robinson Terminal South Site (44AX235).

The team have nearly completed the digital model of Ship #1 (Feature 200) and are working on the model for Ship #3 (Feature 159). They piece individual timber scans together to digitally recreate the ship remnant. It is a time-consuming process to ensure that the timbers align correctly. Researchers do this by aligning the original trunnel holes on the timbers digitally. The stern end on the starboard side of Ship #3 is proving to be a little more difficult to reconstruct because the recovered frames were not clearly connected to the center of the ship. These "floating" timbers lack obvious connections because they come from the portion of the ship that was cut through by the slurry wall. Digitally reconstructing Ship #1 was a more straightforward process. The team is almost done with this task and only has a few more timbers to virtually add to the model and align.

The team's model maker is making a great deal of progress on the physical models. The team has 3D printed all the scanned timbers from all three ships. The model maker is working on Ship 2 (Feature 155) and has installed the metal wires outlining the general shape of the vessel

extrapolated from the archaeological remains. The frames on this ship were very tightly spaced, making installing the wires more difficult. The model maker had to carve channels into the plastic frame timbers to accommodate the wires instead of simply inserting the wires between the frames.

Work continues on the physical and digital models of these three ships. This research will help us better understand the size and shape of the vessels and thus what they may have been used for in the past.



Digital and Physical Ship Model Progress

June 2021

The team at the Conservation Research Lab is continuing their work on the digital and physical models of the three ship remnants found at the Robinson Terminal South Site (44AX235). The digital model of Ship #3 (Feature 159) and the model of Ship #1 (Feature 200) are nearly complete. The process of creating a digital model entails piecing together individual timber scans to recreate the archaeologically recovered ship remnant. It is a time-consuming process to ensure that the timbers align correctly and produce a faithful digital model for future study, interpretation, and education. The digital model of Ship #2 (Feature 155) was completed last summer.

Ship #3 (Feature 159) Model

The team's model maker is making a great deal of progress on the physical models and expects to have them completed by the end of this year. Creating the model for Ship #2 (Feature 155) has exposed an interesting feature associated with the ship's construction. There is a bump in the planking on the starboard side of the vessel. This is because the ship's carpenters accidentally made five floor timbers too flat in this area but noticed their mistake when they started planking the vessel. To compensate for this, the carpenters had to form the hull planking around this bump, creating a "S" shape. This defect probably affected the vessel's sailing ability because the bump would have disrupted the hull's hydrodynamics. This 200-year-old foible is not particularly significant in the larger picture, but it does speak to the human capacity to both make and compensate for mistakes.

Ship #2 (Feature 155) Model showing bump in the hull

Historic Ship Stabilization: Ship Ponding

September 2021

This project includes the stabilization and storage of three historic ship remnants excavated at the Robinson Landing Site (archaeological site 44AX235). The overall goal of the project is to transport and store the timbers in Ben Brenman Pond (4800 Brenman Park Dr.) in a manner

that preserves the possibility of future study and conservation when adequate funding and/or a location for permanent storage or display is available. Planning for the longer-term storage of the historic ship timbers began shortly after the ships were discovered in 2018.

Project Background

In 2018, Thunderbird Archeology, a division on Wetlands Studies and Solutions, Inc., in coordination with the City of Alexandria and the Maryland Archaeological Conservation Laboratory (MAC Lab), excavated three ship hull remnants from EYA's development site called Robinson Landing. The discovery of the massive hull remnants resulted from implementation of the Alexandria Archaeological Protection Code. Passed by City Council in 1989, the code requires developers to hire archaeological consultants to conduct investigations prior to construction on land with the potential to contain buried sites of historical significance. Alexandria Archaeology, a division of the City's Office of Historic Alexandria, oversees the code.

Early Alexandrians used these wooden ship remnants in a ca. late 18th century effort to make new land, extending the shoreline to the deeper channel of the Potomac River and creating a viable international port. These artifacts are tangible pieces of Alexandria's maritime heritage, representing the City's transformation to a bustling post-Revolutionary War harbor. The ships provide an important and unparalleled data source for understanding 18th century ship building and the land-making process.

Archaeologists, conservators, and EYA worked together to record and dismantle the hull remnants from 44AX235 into individual timbers. The City of Alexandria transported those timbers to a warehouse where they have been temporarily stored in large pools of water and kept wet and stable. A team from the Conservation Research Lab (CRL) at Texas A&M University, documented each of the over 1,000 timbers using a 3D laser scanner. From these individual scans they created physical and digital models of the three ship remnants.

A team from several city departments, archaeologists, and a Maryland Archaeological Conservation Lab conservator began developing a medium-term solution for storing the timbers shortly after they were excavated. After carefully considering several alternative solutions and locations, the team decided that Ben Brenman Pond was the most feasible option. The timbers will be wrapped and transported to the pond site. Once there, a contracted archaeological consulting firm with scientific divers will place the timbers in the pond and record their location and site. Three interpretive signs located around Ben Brenman Pond will explain how the ship remnants were excavated, documented, and preserved. A future goal outside the scope of the current project is the selective conservation of some timbers that will not be placed in the pond. These will be retained and kept stable in a large pool of water for ease of access.

Learn more about Archaeology on the Waterfront.

Construction Impacts

This project will impact the south side of Ben Brenman Pond in the third stormwater cell. The relocation process is expected to take about two months and is designed to cause minimal disruption in regular services.

Updates on impacts will be provided here.

Timeline and Project Updates

- Spring-Fall 2018: Excavation of three ship remnants at the Robinson Landing Site. Transfer of timbers to a city facility**.**
- Spring 2018 (April): Alexandria Archaeological Commission (AAC) convenes the Ships' Committee to discuss and develop recommendations for the ships' storage, exhibition, and interpretation within the context of the Waterfront Plan.
- Summer/Fall 2018: Planning begins with help of the Department of Project Implementation (DPI) and Maryland Archaeological Conservation Lab.

- Winter 2019/2020: Community engagement efforts begin
- June/July 2020: Project approved in FY21 CIP budget
- January 2021: Request for Proposals for the Historic Ship Stabilization Project posted
- December 2021: Contract Awarded to AECOM
- TBD: Public event
- Spring 2022: Relocation portion of project completed
- TBD: Three interpretive panels installed at Ben Brenman Pond
- Future Monitoring schedule
    - Part of this project requires that the timbers' condition is regularly monitored.
    - One year after the relocation is complete, divers will visit the site to assess any issues with timber storage including drift and sediment accumulation. They will pull timbers to the surface of the pond and City staff and conservators examine the timbers' state of preservation. Divers will report below water condition of timbers, geotextile, and geogrid to City of Alexandria
    - Monitoring inspections will be carried out every five years following the first annual inspection
- Future: Selective conservation of timbers that are not ponded

Community Meetings

- Regular updates: Alexandria Archaeological Commission (AAC)
- November 2019: Parks and Recreation Commission
- January 2020: Historic Alexandria Resources Commission (HARC)
- February 2020: Cameron Station Civic Association
- November 2020: Waterfront Commission

Ship Model Progress

December 2021

The team at the Conservation Research Lab continues working on the digital and physical models of the three ship remnants found at the Robinson Terminal South Site (44AX235). Work is nearly complete on the digital model of Ship #3 (Feature 159). There are only a few pieces of ceiling planking that still need to be placed on the virtual model.

Work on the physical models is also progressing well. The physical model for Ship #2 (Feature 155) was completed in September. Most of the pieces of Ship #1 (Feature 200) have been 3D printed and the model maker has begun laying these out in preparation for assembly. The team at the CRL has also been busy with the physical model of Ship #3 (Feature 159). Over the summer, the model maker finally found a set of historic ship lines that appear to match the shape of Ship #3, particularly near the stern. The model is enormous (104 inches long) and overshadows the much smaller La Belle model in this photo. Curious why this model is pictured upside down? It is to help the model maker attach and bend the wires that show the extrapolated hull shape of the vessel.