

**FULL RECOVERY PLAN FOR NORTH CAROLINA
ARCHAEOLOGICAL SHIPWRECK SITE 31CR314
AUGUST 2007 UPDATE**

Chris Southerly, *QAR* Chief Archaeologist/Field Director
Sarah Watkins-Kenney, *QAR* Chief Conservator
Mark Wilde-Ramsing, *QAR* Project Director

“...because of the potential historic significance of this site and the threats from nature, I recommend total and complete excavation.” (Hamilton 2005)

Management Summary

Discovered in November 1996, the wreck site believed to be *Queen Anne's Revenge (QAR)* and designated archaeological site 31CR314, has remained relatively undisturbed since the vessel ran around in 1718. Although the site represents the oldest shipwreck yet located in North Carolina waters, site integrity and artifact preservation are good. Archaeologists have already identified and recovered ship parts and equipment, arms, scientific, navigational and medical instruments, personal effects, and food preparation and storage items from the shipwreck. As a former French privateer and slaver and later as the flagship of the pirate Blackbeard, the shipwreck offers researchers potential insight into early eighteenth-century maritime life, colonial commerce in British North America, piracy, privateering, and the trans-Atlantic slave trade.

The renown of Blackbeard has generated considerable public interest and provides a unique opportunity to promote public education and tourism beyond the site's historical and archaeological importance. The project has received, and continues to receive, national and international attention. The Discovery Channel, BBC, National Geographic Channel, Good Morning America, CNN, and a host of local and regional television stations have all covered the *QAR* project. Articles and reports have been published in scientific journals and popular magazines worldwide. In both Fall 2000 and Fall 2001, an interactive educational program “DiveLive” was broadcast from the wreck site to the Internet. Discoveries continue to be reported, most recently on ABC World News Tonight and in a National Geographic Magazine article (July 2006).

This invaluable resource is in danger of being lost because of steady sand depletion in the site area, since nearby channel stabilization began in the 1930s. Interdisciplinary research indicates sand loss and erosion will eventually expose all the artifacts buried under protective sand. The greater threat is the catastrophic scour and erosion caused by tropical storm events, especially during this period of heightened activity. One significant hurricane could effectively destroy the archaeological context of the site and cause the loss of countless artifacts.

Since 1999, state archaeologists have been calling for full recovery as the only real preservation option to mitigate potential loss at the site contingent on adequate funding

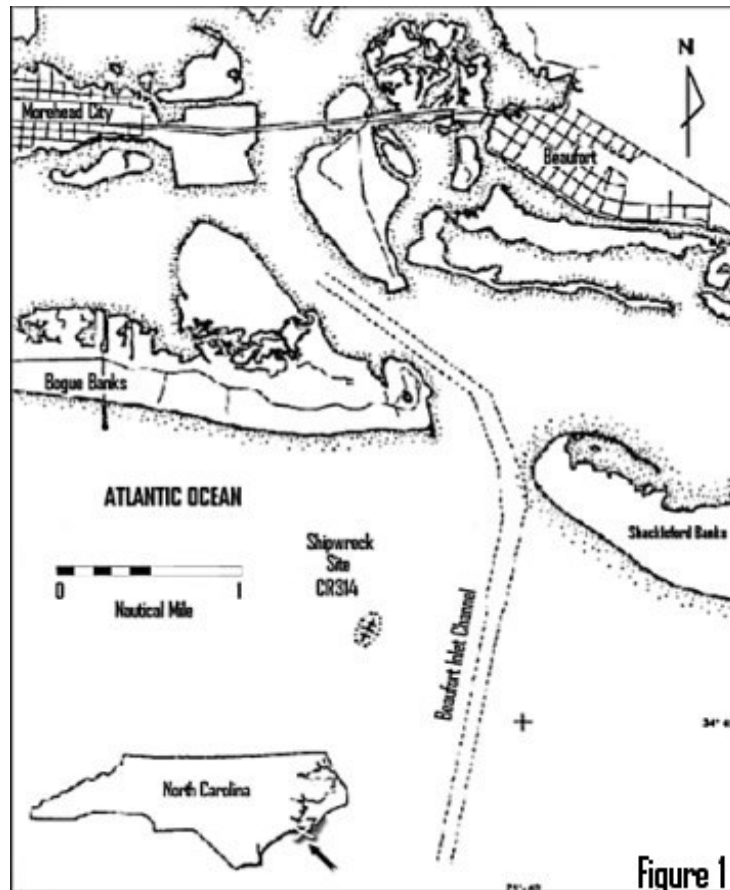
and resources (Wilde-Ramsing and Lusardi 1999). The findings and analysis obtained during the exploratory and emergency recovery phases of archaeological investigations (1996-2004), including artifact analysis and conservation, have provided the basis for developing a research strategy for site mitigation, from field recovery through exhibit and final storage. An important factor that was emphasized in the 1999 management plan and that now permits site investigations to move forward is the development of a permanent, professionally staffed, state archaeological conservation facility in partnership with East Carolina University and a commitment from the North Carolina Maritime Museum to provide long-term artifact curation and collection oversight.

This recovery plan calls for the complete removal of artifacts from the seabed and transfer of those remains to wet storage at the *QAR* conservation laboratory in Greenville. Beginning with a six-week field season in Fall 2006 the work will continue in 2007 and subsequent years with major expeditions primarily in the fall of the year until excavation is complete. Methods and techniques established in the operations field and conservation plans are continuing to be modified as needed. Observations have shown that the margins of the site, estimated to cover 7,500 square feet of seabed, are best defined offshore because of environmental conditions. Seabed currents and scouring have been shown to occur mostly during catastrophic storms and in the past have influenced artifact distribution shoreward. The primary excavation units will be 5' x 5' units, which will be begin in the south and extend east and west until to culturally sterile units are encountered. This will be presumed to be the extent of the site.

This recovery plan will meet managerial objectives by documenting in place and recovering artifacts associated with shipwreck 31CR314. Artifacts and accompanying data will effectively be removed from the seabed and transported to safe storage at the state's *Queen Annes' Revenge* Archaeological Conservation Laboratory (*QAR* Lab) on the campus of East Carolina University. At that location artifacts will be catalogued and placed in wet storage. Preliminary analysis and identification of artifacts, especially those encased in concretions, will be facilitated by the use of X-radiography. Subsequent cleaning, analysis, conservation, long-term storage and display of recovered artifacts will be undertaken as a partnership between the state and university, to further research and practical education.

Previous Fieldwork

On November 21, 1996, divers from the private research firm Intersal, Inc. located several cannon and anchors exposed on the seabed in North Carolina coastal waters near Beaufort, North Carolina. Believing it to be *Queen Anne's Revenge* and realizing the historical and archaeological importance of this internationally recognized cultural heritage site, Intersal gave up all salvage rights to the wreck site. The North Carolina Underwater Archaeology Branch initiated an intensive investigation to assess the nature, origin, and significance of this underwater site, designated archaeological site 31CR314.



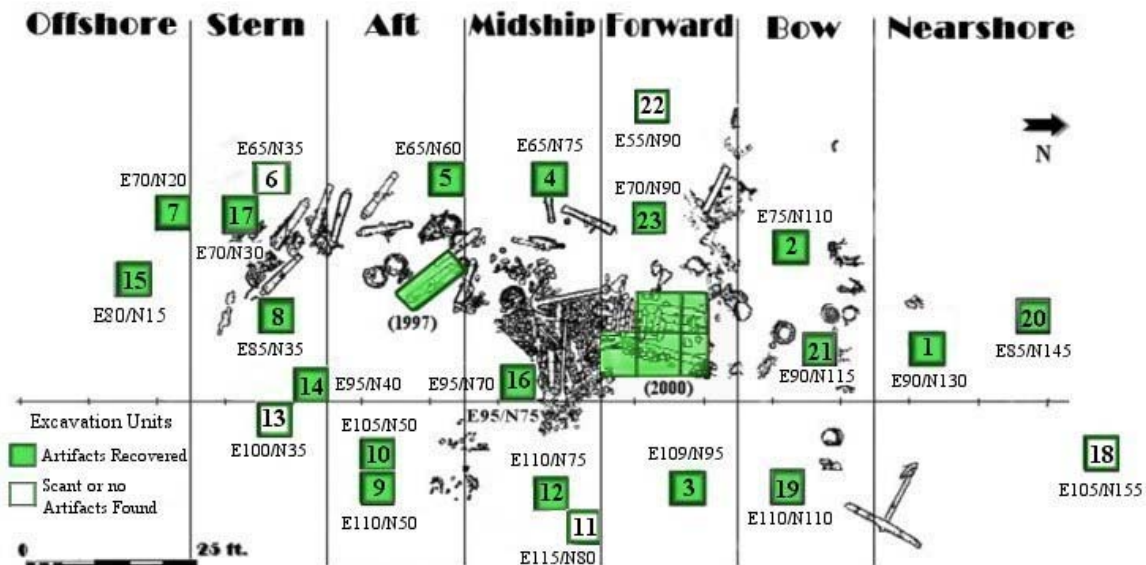
Initial field investigations began in fall 1997 with a four-week expedition to the site. Preliminary assessments of the site were made and mapping of visible remains was completed. A five-week field season in the fall of 1998 employed test excavations to examine the nature and extent of buried remains, to recover sample artifacts for examination, and to initiate mapping of hull structure remains recently exposed by Hurricane Bonnie.

There were two short expeditions in 1999, one in the spring and one in the fall. These focused on the collection of magnetic gradiometer readings. Over two thousand readings were recorded which provided a subsurface magnetic map revealing the extent of the debris field and the position of large buried ferrous objects, likely to represent additional

cannon. The management plan for the site was complete in 1999, but because of the storms of the 1999 hurricane season, previously protected portions of the site were exposed. In spring and fall of 2000, emergency recovery efforts were initiated to document the vessel's hull structure and recover associated artifacts in the newly exposed and scoured portions.

Beginning in 2001, primarily because of a lack of funding for the project, researchers curtailed fieldwork to site monitoring dives and remote sensing. No exploration, excavation or recovery was accomplished on-site from October 2000 until October 2004. Researchers were also reluctant to do any more fieldwork or recovery until an operational conservation lab was established that could handle the artifacts being recovered. In 2003, the *QAR* Lab on the West Research Campus of East Carolina University began development and is now operational and professionally staffed. In October 2004, researchers conducted exploratory excavations to test remote sensing magnetic data in a previously undisturbed area. While cannon 23, a kettle, large wood fragments, rigging elements, chain, and miscellaneous other artifacts were uncovered and identified, minimal recovery took place.

In [May 2005](#) and [May 2006](#) fieldwork focused on collecting a representative stratified sampling of artifacts across the site by employing a series of 5' x 5' excavation units. This enabled investigators to better define the peripheral limits of the wreck site and understand relative artifact distribution across the site. During these excavations the ship's sternpost and the site's 24th cannon were located and identified. Detailed documentation of diving operations was also kept to provide estimates for total mitigation and recovery.



Full recovery began in 2006 from October 2nd through November 9th and consisted of 20 workable field days (18 full and 4 half), 7 shore-work/weather days, and 2 complete down days. Eight divers worked the entire six-week project, with 4 additional staff

divers rotating in and out for 3-weeks each, and 4 visiting/volunteer divers working one week each.

The goal was to reach the N50 line, completing sixty (60) 5'x5' units, covering 1500 square feet of bottom, and recovering up to four cannon. The fall fieldwork only reached a diagonal from N40 along the west to N50 along the east. The site area was larger than expected and a total of seventy-six (76) 5'x5' units were completed, 68 new units and 8 re-excavated units from the stratified sampling done in May 2005 and May 2006.

Archaeologists documented 338 features within the excavation units that were recovered. The majority of these were unidentifiable concretions (circa 60%) or lead shot and lead objects (circa 10%). The remainder included ceramics, glass, lithics, other metals (copper, gold, iron, pewter, and alloys), wood, other organics (bone, animal and plant products), and some modern synthetic intrusive material. Upon closer examination these recovered features represent around 700 identifiable components, totaling approximately 1800 individual pieces, excluding lead shot. The quantity of lead shot recovered was extensive totaling more than 100,000 individual shot. One 5'x5' unit alone contained over 29,000.

Field investigators and site managers continue to emphasize that the sooner archaeological materials resting at the site can be properly recorded and recovered using the highest scientific standards, the more likely it is that the maximum information will be available for study, interpretation, and display. Therefore, the excavation (large-scale recovery) option of the management plan is recommended. It is understood, however, that a substantial commitment in funding and resources will be required to fully excavate, conserve, and eventually exhibit the shipwreck's remains.

Significance

Given the large volume of circumstantial generated through multiple lines historical and scientific inquiry, it is likely that the shipwreck discovered near present day Beaufort Inlet, North Carolina is *Queen Anne's Revenge* (formerly *La Concorde*). Assuming this to be true, prior to its loss, the vessel operated as the flagship of Edward Teach, alias "Blackbeard," during the period many call the Golden Age of Piracy. Blackbeard has become a significant cultural icon for anti-authoritarian behavior and a recognized figure of the piracy and privateering that were important factors in maritime trade and commerce from the sixteenth through the eighteenth centuries.

The vessel's archaeological remains represent a self-sufficient, micro-society of eighteenth-century mariners in general and piratical society specifically. Research indicates *Queen Anne's Revenge* began as *La Concorde*, owned by French merchant Rene Montaudoin. It operated out of Nantes, France, making at least one privateer voyage to the Americas before becoming a slaver and transporting slaves from Africa to French colonies in the Caribbean. While researchers have been studying the slave trade for decades, detailed examination of the remains of vessels engaged in the venture could yield important insights into the activity not recorded historically. The Americas are just

beginning to fully appreciate the history of the transatlantic slave trade, the Creole culture along the entire Atlantic seacoast, and the role mariners of African descent played in establishing the trade routes of the Atlantic. While historic accounts vary, about half of the dozen or so members of Blackbeard's crew, executed for piracy at Hampton Roads, Virginia, after his defeat were of African descent.

On the off chance the vessel proves to be another well-preserved, heavily armed merchantman from the first quarter of the 18th century, the site remains the oldest shipwreck discovered in North Carolina waters and one of the oldest discovered in United States' waters. Archaeological examination will give substantial insight into early eighteenth-century maritime activities in the New World. The shipwreck and artifacts can shed light on shipboard life, the period's shipboard ordnance, vessel construction and repair, and colonial provisioning. With many of the New World's early shipwrecks disturbed by treasure hunting activities, excavations at this classic colonial site have and continue to be conducted using precise archaeological methods and standards. The archaeological record often represents not America's elite who wrote our history, but the layman, as well as the society's outsiders, who left only these traces of their story behind.

Environment & Danger

The wreck site lies at a depth of approximately 23 feet on what until recently was thought to be a generally flat featureless sandy bottom. It is located on the southwestern flank of the Beaufort Inlet's historic ebb tidal delta, 1¼ mile offshore of Fort Macon State Park, Carteret County, North Carolina in a shallow and dynamic coastal environment. Influenced by the inlet and less than ¾ of a mile from the shipping channel to Morehead City, North Carolina the site experiences current flow as a result of the change of the tides, evidenced by the constant movement of sand northward on the incoming tide and southward on the outgoing tide.

Until the 1980s, sand covered the shipwreck remains for the majority of time since *Queen Anne's Revenge* ran aground in 1718. Geological examinations indicate the site's artifacts rest on a scour resistant layer that causes them to remain exposed once the protective sand overburden is eroded or scoured away. Once it began the exposure process accelerated. Today the site's observable portions consist of a ballast and concreted artifact pile approximately 20 feet by 25 feet in area and extending nearly 5 feet above the surrounding sediment. During quiescent periods, the pile is the only feature above the seabed. However, observations after recent hurricanes have recorded previously undisturbed portions of the site newly exposed because of storm-generated waves and currents. Even hurricanes situated hundreds of miles off the coast that generate large waves, long period swells, and subsequent sediment movement, are causing detrimental impacts.

Monitoring of sand levels at the shipwreck site reveals that an average loss of one foot of sand per decade is occurring. Even more sand loss is occurring in some localized areas because of increased scouring around large exposed artifacts. Plotting the site location on a series of historic Beaufort Inlet navigation charts show a net loss of 16 feet of protective sand beginning with the U.S. Army Corps of Engineers' (USACE) stabilization of the

inlet channel in 1936. Channel dredging has altered the inlet's system by creating sediment loss that exceeds the new materials available to the littoral system. This has resulted in significant erosion at the shoulder of the ebb tidal delta where the shipwreck site is located. Loss of protective overburden exposes the site to intense and degrading currents, particularly when tropical storms pass off the coast of North Carolina. A recent multi-beam sonar reconnaissance of the area shows the site sitting at the bottom of a north-south oriented scour trough.

To date, site degradation from scouring has been caused by Category 1 hurricanes passing through the area or larger ones well out to sea. Hurricanes Bertha and Fran (1996) likely accentuated the modern exposure of the shipwreck just weeks before its discovery. Hurricane Bonnie (1998) and hurricanes Dennis, Floyd and Irene (1999) uncovered and undercut hull structure to the north of the main ballast pile, requiring emergency recovery measures. Fabian and Isabel (2003) exposed areas adjacent to the east side of the main ballast pile. Charley (2004) scoured all around the periphery of the ballast pile, especially to the east and south. Ophelia (2005) scoured and exposed the west and south areas of the site. The presence of only robust artifacts like cannon balls and bar-shot, several lead bilge strainers, and larger concretions, in the scour areas leads to concern over what "less robust" and potentially significant artifacts are being lost and scattered because of these storm events. Artifacts lie as little as 6 inches under the protective layer of sand in many areas of the site.

While the loss of sand from the inlet's ebb tidal delta continues because of maintenance dredging of the shipping channel, the imminent danger is from a major tropical event. A direct hit, or even near miss, from a major hurricane during the present cycle of heightened activity could effectively destroy the integrity of the site. Smaller artifacts would be lost entirely and larger artifacts that may remain would be disturbed spatially and damaged. A brass apothecary mortar recovered after Hurricane Ophelia shows evidence of tumbling and surface damage to its corrosion layer that offered the object some protection from its environment. The physical loss of this natural coating can take the original surface layer of the artifact with it, often removing identifying and distinctive features or marks. The continued removal of sand from the inlet environment required by channel maintenance precludes efforts for *in situ* stabilization. The increasing likelihood of catastrophic erosive scour from a major tropical storm event requires prompt intervention before the archaeological integrity of this historic site is compromised or lost entirely.

Management and Mitigation

From the beginning, basic cultural resource management (CRM) survey and standard information-gathering procedures and techniques have been employed at this shipwreck site (Wilde-Ramsing and Lawrence 1984; Neuman and Sanford 2001). Initial data collection resulted in the designation of the shipwreck site by North Carolina Department of Cultural Resources' Secretary Betty Ray McCain to be a state protected area "of primary scientific, archeological, or historical value." On the national level, the site 31CR314 was determined to be eligible for inclusion on the National Register of Historic Places by the State Historic Preservation Officer and officially listed in March 2004. A management plan (Wilde-Ramsing and Lusardi 1999) was produced to guide resource

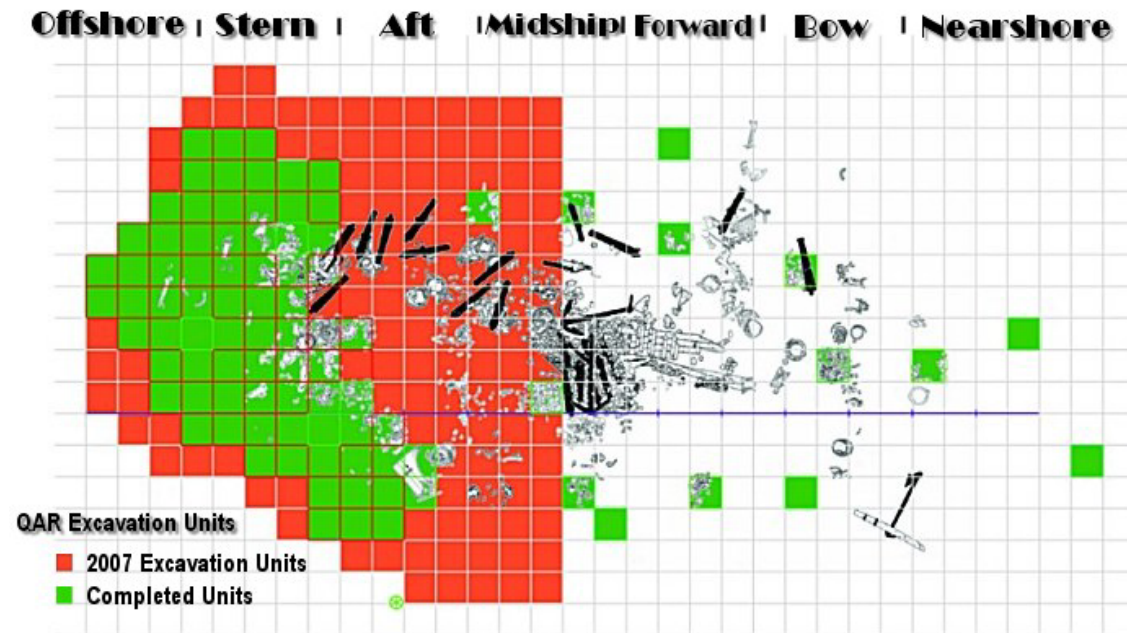
development and preservation with recommendations to strive toward full recovery based on the shipwreck's significance and threats to its preservation from natural impacts. During a review of project findings held on the campus of East Carolina University in April 2005, a panel of professional marine archaeologists reiterated this managerial position with a greater sense of urgency, noting effects from past hurricanes and the potential for more damage from impending storms in the foreseeable future (Wilde-Ramsing 2007).

Beyond managerial utility, full recovery will provide data that can address a network of research questions. The initial development of multiple lines of inquiry is laid out in the stratified sampling plan (Wilde-Ramsing 2006). As data from that project is processed and initial hypotheses tested, research questions can be further refined and in turn help guide analysis and interpretation of the bulk of artifactual data resulting from full recovery. Little comparative archaeological data is available related to 31CR314, an armed merchantman plying the Atlantic seaboard of colonial America. The most extensively reported is the *Whydah*, lost in 1717 (Hamilton *et al* 1992), which may indeed prove invaluable to the study of QAR remains, and the equally well-reported *Betsy*, a British transport scuttled in the York River in 1783 (Broadwater *et al* 1996). At the same time, sites from the proprietary period of colonial Carolina (1663-1729) have seen little archaeological activity. The primary comparative collections are from two sites, Eden House and the Joseph Scott House located in the upper Albemarle region of the state (Lautsenheizer *et al* 1998; Bandy 2000). This means that collecting reliable archaeological data of a site-specific nature to help interpret and describe activities involving this shipwreck would, in itself, be the basis for investigations at this site. Intra-site analysis will continue to test hypotheses regarding the site's identity and mission, crew behavior, circumstances of loss, and subsequent natural site formation processes. Marine geologists have interpreted a sequence of natural environmental impacts that have contributed to the site's location and condition today. Recovery methods have been developed based on the nature of the site, the questions proposed and the need to move expeditiously given the threats of loss through impending storms.

Recovery Methods

Based on recent fieldwork, personnel requirements and an operations tempo have been calculated for full site excavation, documentation and recovery. The estimated size of the wreck site yields approximately 450 excavation units [5'x5'] to complete for total coverage. Using the detailed information collected during the May 2005 and May 2006 stratified sampling expeditions and the Fall 2006 recovery expedition the artifact density and excavation/documentation/recovery (EDR) time has been estimated for the remaining site area. Rank 1 units are those anticipated to be empty of artifacts. Given a full operations tempo as many of eight (8) can be completed in a full working day. By comparison only one Rank 7 unit (anticipated to contain over forty (40) concreted objects) is expected to be completed in a single day's time. Beyond standard unit EDR, there are at least sixteen (16) cannon, four (4) large anchors, and one (1) small anchor that require rigging, staging, and recovery. Researchers plan one field day per cannon and while no anchors have yet been recovered, two field days per large anchor and one per

small. Past fieldwork in the area shows only 75-80% of planned days are workable because of weather limitations. Current estimates are that it will take 35 weeks in the field to completely recover the shipwreck remains at 31CR314. Although the local diving season extends from April through November, the most productive period for excavation of a shipwreck lying in the near shore, coastal waters is late August through November when waters become cold and thus restrict diving and safety.



Overall the plans are to begin at the offshore end of the site and proceed toward the main part of the shipwreck. The logic for starting in this location is based on previous field observations that show a distinct margin in artifact distribution, therefore providing the best line of departure for full recovery. This will put researchers outside of the stern of the vessel and proceed into the stern where many of the scientific instruments, pewter plates, lead shot, and gold have been found in the past. Project goals are to move systematically from the stern and then around the exposed mound, which, due to its complexity, will be left intact until the final days of recovery. Recovery of large artifacts may be delayed until laboratory storage area is available. In these cases, specifically for cannons, the objects will be excavated and moved to a previously excavated area on the site where it will be reburied. This will allow excavation to continue and smaller artifacts within each unit to be mapped and recovered.

Detailed operations plans have been developed to guide specific field and conservation procedures related to full recovery of shipwreck site 31CR314. These plans are [the *Queen Anne's Revenge* 2007 Field Operations \(Southerly\)](#) and the [2007 QAR Artifact Conservation & Documentation \(Watkins-Kenney and Welsh 2007\)](#)

Expected Outcome and Evaluation

This expedition includes *in situ* artifact documentation, recovery and transport to the *QAR* archaeological conservation laboratory where they will be catalogued and stored. At the completion of the 2007 fall expedition an additional 25 percent of the site will be completely excavated bringing the total site recovery to approximately 45 percent. This will entail the recovery of an estimated 1,000-1,500 concreted objects, based on previous artifact recovery. When concretions are broken down, the eventual total is likely to be ten-fold resulting in 10,000 artifact groups of some 100,000 individual pieces (e.g. where each single piece of lead shot is counted). Following the field season it will be possible to fully assess methods and techniques necessary to complete full recovery and in turn make necessary adjustments prior to resuming excavation the next fall.

Avenues of social and scientific inquiry generated during excavation and analysis will focus on specific questions including: site layout, identifying shipboard activity areas, continue refining the nature, origin and identity of the lost ship, and data collecting with regard to natural and cultural factors that have influenced the formation of the archaeological record. In broader terms data will build providing a body of information for comparison with archaeological assemblages recovered from contemporary shipwrecks along the Atlantic seaboard, the Caribbean, Europe, and terrestrial sites within the Carolinas and Virginia.

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