

**Archaeological Diver Identification and
Evaluation of a Potentially Significant Anomaly
Located in the Harbor at Ponce, Puerto Rico**



Submitted to:

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18 November 2003

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Abstract

During a remote sensing survey associated with the proposed construction of port facilities for the Port of Americas project (Puerto de Las Américas) in the harbor at Ponce, Puerto Rico one potentially significant anomaly was located. Preliminary diver examination of the anomaly identified a concentration of ballast and a collection of late 19th and early 20th century artifacts. In order to determine the proposed project's effect on potentially significant submerged cultural resources, the Puerto Rico Historic Preservation Officer determined that a Phase II investigation of the anomaly was necessary to identify and assess the nature and scope of cultural material at the site. That investigation was carried out by Richard Fontánez Aldea, project underwater archaeologist, and was supported by Tidewater Atlantic Research, Inc. [TAR] of Washington, North Carolina between 22 to 29 March 2003. Investigation of the target site revealed no evidence of shipwreck remains. Material on the bottom surface proved to be a combination of debris associated with the normal activities of a port. The site does not appear to meet any of the criteria for nomination to the National Register of Historic Places. As a consequence no additional on-site investigation is recommended in conjunction with the proposed project. However, monitoring of the material dredged from the site should be considered to recover any small artifacts that could be used in type collections or exhibits interpreting the history of Ponce for the public.

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Introduction

During a remote sensing survey associated with the proposed construction of port facilities for the Port of Americas project (Puerto de Las Américas) in the harbor at Ponce, Puerto Rico one potentially significant anomaly was located. Diver examination of the anomaly identified a concentration of ballast and a collection of late 19th and early 20th century artifacts. In order to determine the proposed project's effect on potentially significant submerged cultural resources, the Puerto Rico Historic Preservation Officer determined that a Phase II investigation of the anomaly was necessary to identify and assess the nature and scope of cultural material at the site.

In order to evaluate the significance of the anomaly and to assess the potential impacts from the proposed project, Richard Fontánez Aldea, project underwater archaeologist, requested that Tidewater Atlantic Research, Inc. [TAR] of Washington, North Carolina conduct a target relocation and diver investigation of the material generating the anomaly. The resulting investigation was designed to provide accurate and reliable Phase II identification, assessment and documentation of the potentially significant submerged cultural resource in the project area in terms of the criteria established in compliance with the National Historic Preservation Act of 1966, as amended (PL 89-665), the Archaeological and Historic Preservation Act of 1979, as amended, the Archaeological and Historic Preservation Act, as amended (PL 93-291), the Abandoned Shipwreck Act of 1987 and the Advisory Council on Historic Preservation revised 36 CFR Part 800 Regulations. National Register of Historic Places assessment was conducted in accordance with National Register Bulletin No. 16 and Bulletin No. 20. The results of the proposed investigation furnished the Puerto Rico Historic Preservation Officer, with the archaeological data essential for complying with submerged cultural resource legislation and regulations.

Prior to fieldwork, a program of historical and documentary research was conducted to provide a proper framework for submerged cultural resource assessment in the Ponce area. Field research was conducted between 22 to 29 March 2003. Assessment of the target site revealed no evidence of shipwreck remains. Material on the bottom surface proved to be a combination of debris associated with the normal activities of a port. The site does not appear to meet any of the criteria for nomination to the National Register of Historic Places. No additional investigation is recommended in conjunction with the proposed project. However, monitoring of the material dredged from the site should be considered to recover any small artifacts that could be used in type collections or exhibits interpreting the history of Ponce for the public.

Project personnel included Gordon P. Watts, Principal Investigator; Raymond Tubby, Mark Padover, Mike Hughes and David Whall, Archaeologists. The report was prepared by Gordon Watts and Raymond Tubby, and the illustrations were developed by Raymond Tubby and Mark Padover.

Project Location

The proposed Port of Americas project area is located at Playa de Ponce on the southern coast of Puerto Rico (Figure 1). The target site lies along the southwestern edge of the project area approximately 710 meters west southwest of Pier No. 8 (Figure 2). Water depth in the vicinity of the site ranged between 7.5 and 9 meters at low water. Puerto Rico State Plane Coordinates (meters), NAD 27 for the main baseline across the site:

Point	Easting	Northing
A1	132040	15576
B1	132035	15554

Research Methodology

Site Assessment

The site of the potentially significant anomaly identified during previous Phase I investigation was relocated using a WAAS corrected global positioning system. That location was buoyed and SCUBA-equipped archaeologists verified that material exposed on the bottom surface was the same as that previously identified. After confirming the site location, archaeologists conducted a systematic visual survey of the bottom surface to identify additional cultural material in the vicinity of the anomaly. Additional clusters of ballast stone, rubble and artifacts were tied to the buoyed cluster by light line.

Once those additional concentrations of material had been identified and connected by tie lines, a primary baseline of 0.6-cm-diameter line was positioned between a pipe at the original target site and a coil of wire 51.65 meters to the southwest. From that primary baseline a triangulation web was established to connect the additional material located to the north-west of that line. The length of each leg of the complex of triangles that made up the web were measured and each corner of the triangles was determined using trilateration. The primary baseline and survey web was replicated to scale in AutoCAD and served as the base map for plotting material on the surface.

Using the web as a control, each concentration of exposed material was mapped using trilateration and underwater video. The position of objects was recorded on mylar sheets along with a description and location coordinates. Significant diagnostic artifacts were documented *in-situ* using underwater video. Unidentifiable concreted objects were superficially cleaned *in-situ* to facilitate dating and establishing a cultural affiliation. A limited number of artifacts were recovered for examination and dating. Those were measured, photographed and later reburied on the site. Ceramic objects recovered for identification included

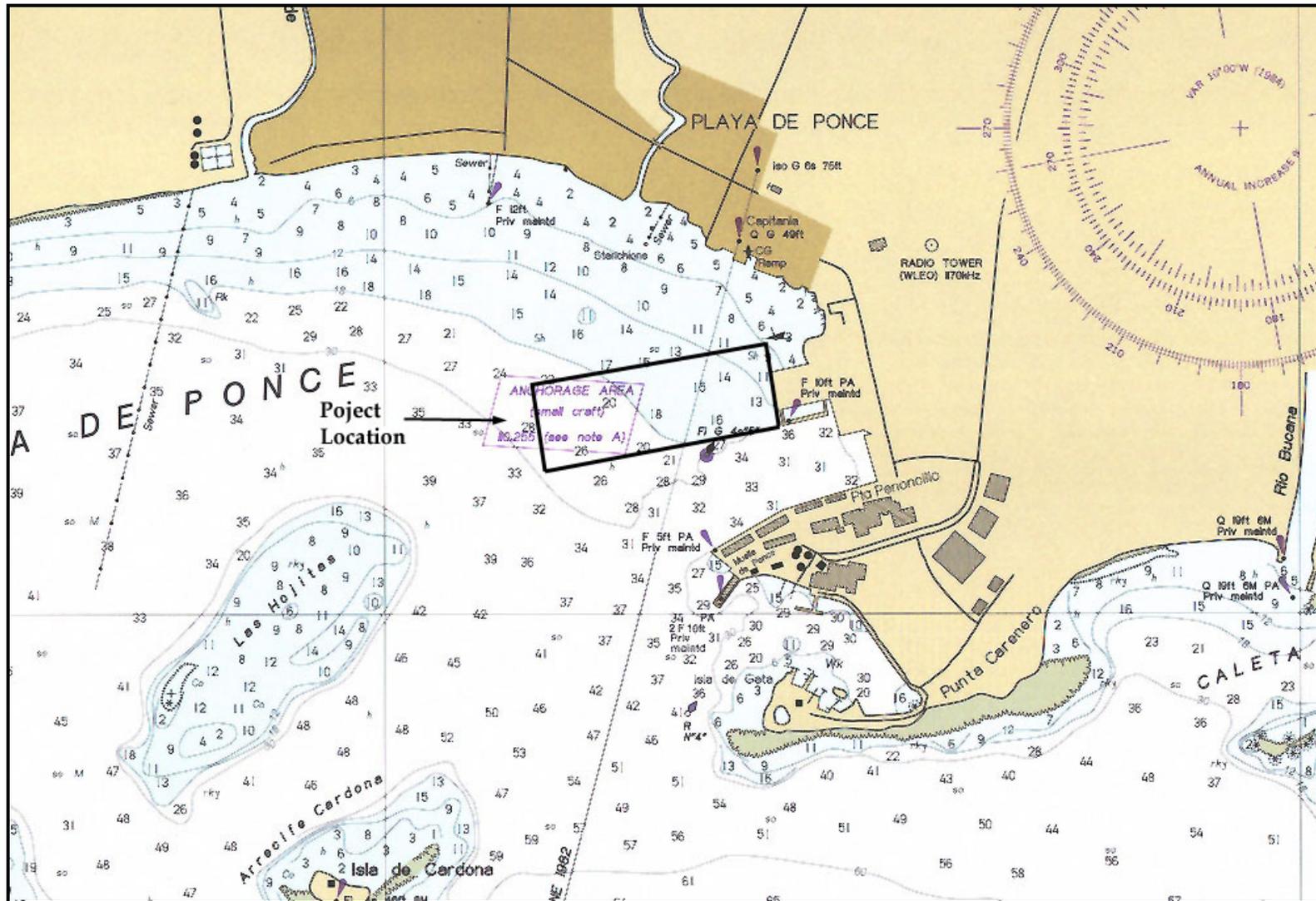


Figure 1. Project location map (NOAA chart 25683, Bahía de Ponce, 1985).

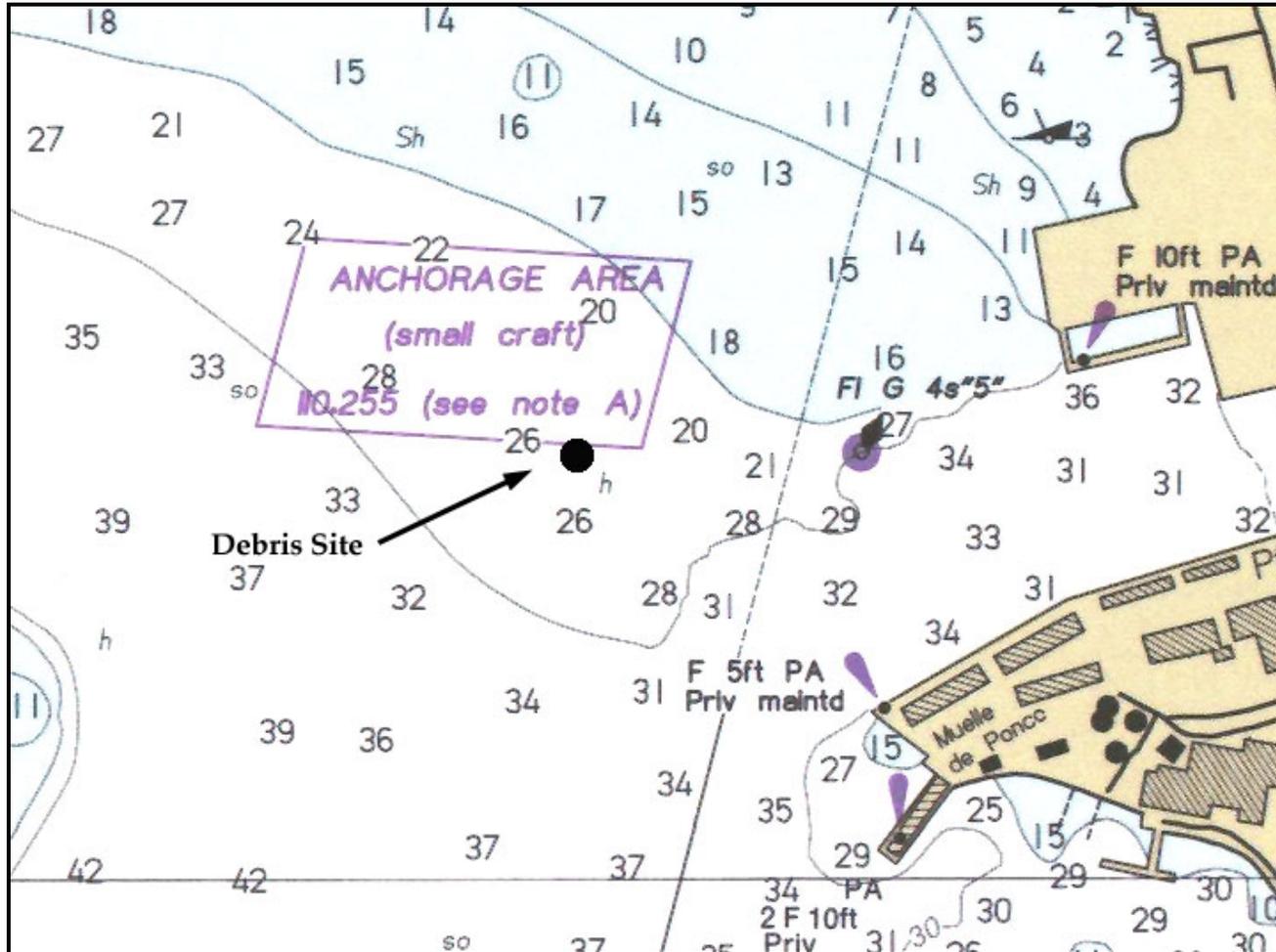


Figure 2. Debris site location map (NOAA chart 25683, Bahía de Ponce, 1985).

fragments of ironstone chamber pots, samples of ship's china and a stoneware bottle. Ferrous objects recovered for further investigation included samples of barbed wire, wire rope, a wrought iron tool and drilled and tapped iron flat bars.

Once material on the bottom surface had been mapped, a QUANTRO SENSING hand-held underwater proton precession magnetometer was used to search the areas in and around the survey web for possible buried cultural material. Areas where the magnetometer suggested the presence of material below the bottom surface were identified using surveyor's flagging tape. Areas associated with magnetic anomalies and those where surface material had been mapped were additionally investigated using a 3-meter-long hydraulic powered probe. The probe permitted each area to be tested for articulated structural remains to a depth of 3 meters.

Historical Background

The first settlement along Ponce Bay was at Bucaná sometime prior to 1597. The settlers were probably attracted by the fine harbor and salt beds located at the west end of the bay. The town was established between the Bucaná and Guayaney rivers on land given to Ponce de León by the cacique Agueybaná (Vega 2001:32). The area that would become modern Ponce was not settled until 1670. That settlement grew slowly before being officially designated a village in 1692. The town was originally called Nuestra Señora de Guadalupe y de San Antonio but was later renamed Ponce. Ponce initially developed from two core centers; one in the valley at the base of the cordillera and one at Playa de Ponce along the harbor. The two population centers were connected by a network of roads.

Ponce's population expanded during the 18th century. In 1765, 3,314 people lived in the district encompassing the town (Medina Carillo and López Rivera 2001:62). Of that number, approximately 10% or 354 persons were slaves. By 1776, that number had grown to 5,674 residents and 530 slaves (Medina Carillo and López Rivera 2001:62). The principal products of the region were livestock, coffee, tobacco and cotton with coffee serving as the main export. At least 47,000 fanegas or nearly 80,000 acres were devoted to the crop. By the end of the century, Ponce's economy was intimately tied to coffee production.

Initially all land on Puerto Rico was the property of the Spanish Crown. The islands inhabitants worked and maintained it under the right of usufruct. However, by the end of the 18th century the Bourbon Monarchy began instituting a series of land reforms designed to induce immigration to the island and increase agricultural production. As a result, the island received a large influx of

settlers from the Canary Islands. These farmers or *desacomodados* pressured the Spanish government on the island to dissolve or reduce the *hateros* or ranches which up to that time dominated the landscape. The privatization of land stimulated agricultural production, especially in coffee and tobacco.

A second measure instituted by the Crown was a crack down on smuggling. Throughout the preceding Hapsburg Dynasty and early Bourbon rulers the development of the islands were ignored in favor of the gold and silver producing colonies in Mexico and Peru. The only outlet for the islanders was illicit trading or smuggling. Far removed from the government on the north side of the island Ponce developed into large commercial smuggling center. Goods imported through this trade included wine, cloth, tools, firearms, gunpowder while exports consisted of hides, coffee, cattle, fruit and timber. The new policies instituted by the Crown called for the development of the harbors at Aquadilla, Mayaquéz, Ponce, Arecibo and Fajardo (Medina Carillo and López Rivera 2001:64). This included harbor improvements, development of customs facilities and the establishment of commercial houses.

In 1803, Ponce's customs house officially opened, though an actual structure for the facility would not be completed until 1841. In 1818, don Alejandro Ordoñez established the first urban development plan for Ponce. In 1825, development of Marina Street (modern Hostos Avenue) created separate areas for industrial, commercial, governmental and residential uses (Medina Carillo and López Rivera 2001:69). A fire in 1845 destroyed a section of this new development. Later growth within the area focused on expanding the towns commercial and maritime interests.

By the beginning of the 19th century, Ponce's population had increased to 7,235. The district encompassing Ponce was divided into *cotos* (enclosures), ranches and breeding areas, *estancias* (farms) or arable lands where livestock were raised or crops such as coffee, sugarcane, tobacco or other crops were grown (Medina Carillo and López Rivera 2001:66). With the *Cedula de Gracia* (Warrant of Grace) in 1815, Ponce's economy shifted exclusively to sugarcane production. In 1878, Ponce contained 28 haciendas and 13 mills devoted to sugarcane (Medina Carillo and López Rivera 2001:67).

Ponce grew to become a major commercial center during the course of the 19th century. Its harbor and facilities ranked second behind San Juan on the north coast. In 1842, Ponce's exports were valued at 953,609.07 pesos (Medina Carillo and López Rivera 2001:69). Regular steam service began in 1853 with the arrival of the steamship *Borinqueño* (Vega 2001:40). Also during this period, a number of commercial houses were established to promote the city's maritime interests. The first such business, the Vidal & Compañía, was founded in 1843. Other

important houses in the city included the Carlos Armstrong & Cía in 1868, Fugurull, Antfonetti, Márquez & Co. in 1870, E & P Salazar in 1880, Mayol Hermanos in 1880 and Juan Gilet also in 1880 (Vega 2001:40).

Civic leaders soon realized that for Ponce to compete in the international market improvements were needed to modernize its harbor. Sometime prior to 1882, a wooden pier was constructed off Punta Peñoncillo. Prior to that construction vessels had to anchor in the bay and lighter their goods to shore. In 1894, a second pier was constructed in front of the Capitanía de Puerto (Port Authority). The port's infrastructure expanded with the delivery of rails and winches for the

construction of a new cargo pier in 1897 (Vega 2001:41). The approaches to the harbor were also improved with the erection of lighthouses on Caja de Muertos in 1887 and Cayo Cardona in 1889.

The port continued to develop and by the first decade of the 20th century the city's imports averaged 167,759 tons and its exports 38,350 tons (Medina Carillo and López Rivera 2001:69). A fort that served to defend the port was demolished to make way for new facilities. By 1915, Playa de Ponce sported 15 streets with a city hall, square, warehouses, firehouse and a train terminal.

Today, Ponce is a thriving city with 188,722 inhabitants (in 1995). The city remains a vibrant agricultural and commercial center and still holds its position of second largest harbor on Puerto Rico.

Summary of Findings

Assessment of the anomaly revealed a scatter of cultural material exposed on the bottom surface (Figure 3). Though a number of late 20th century objects were identified on the site, most of the artifacts found date to the late 19th and early 20th centuries and consist mostly of ballast rock, miscellaneous iron debris, bottles and ceramics. This material appeared to be concentrated in four areas (Figure 4): Cluster 1 - a 200-square-meter cluster around reference points A1, A2, A3 and A4; Cluster 2 - a large 1,895-square-meter loose scatter of material in the vicinity of points A5, A6, A7, A8, A9, A10, B5 and B6; Cluster 3 - a small 15-square-meter cluster around B1 and Cluster 4 - a narrow linear scatter material extending 13-square-meters northeast from B3.

Cluster 1

Cluster 1 is located in the northeast end of the site with material scattered along the bottom in a northwest to southeast direction (Figure 4). The cluster is

composed of two groupings of material. One grouping is located near reference point A4 and is composed mainly of ballast rock scattered over a 4 x 2 meter area. One two-piece molded dark green bottle with an applied rim was found within the ballast scatter.

The second grouping begins half way between reference points A1 and A4 and extends 5.5 meters northwest of A2. The associated material is loosely scattered and is composed of a variety of artifacts. Ballast rock dominates the material found in this grouping. Iron artifacts consisted of four pipes and one small piece of T-iron. Two of the pipes measured 15.24 cm in diameter, one 2.33 meters long and the other 1.47 meters long. The other two pipes measured 6.35 cm in diameter and were 99.08 and 45.72 cm long. The T-iron measured 66.04 cm long, 7.62 cm wide and 3.81 cm high. One brass port light compass housing was also documented. The object measured 12.7 cm in diameter, contained a 2.54 cm lip and was 1.90 cm thick. The inside surface of the cover was threaded. Four

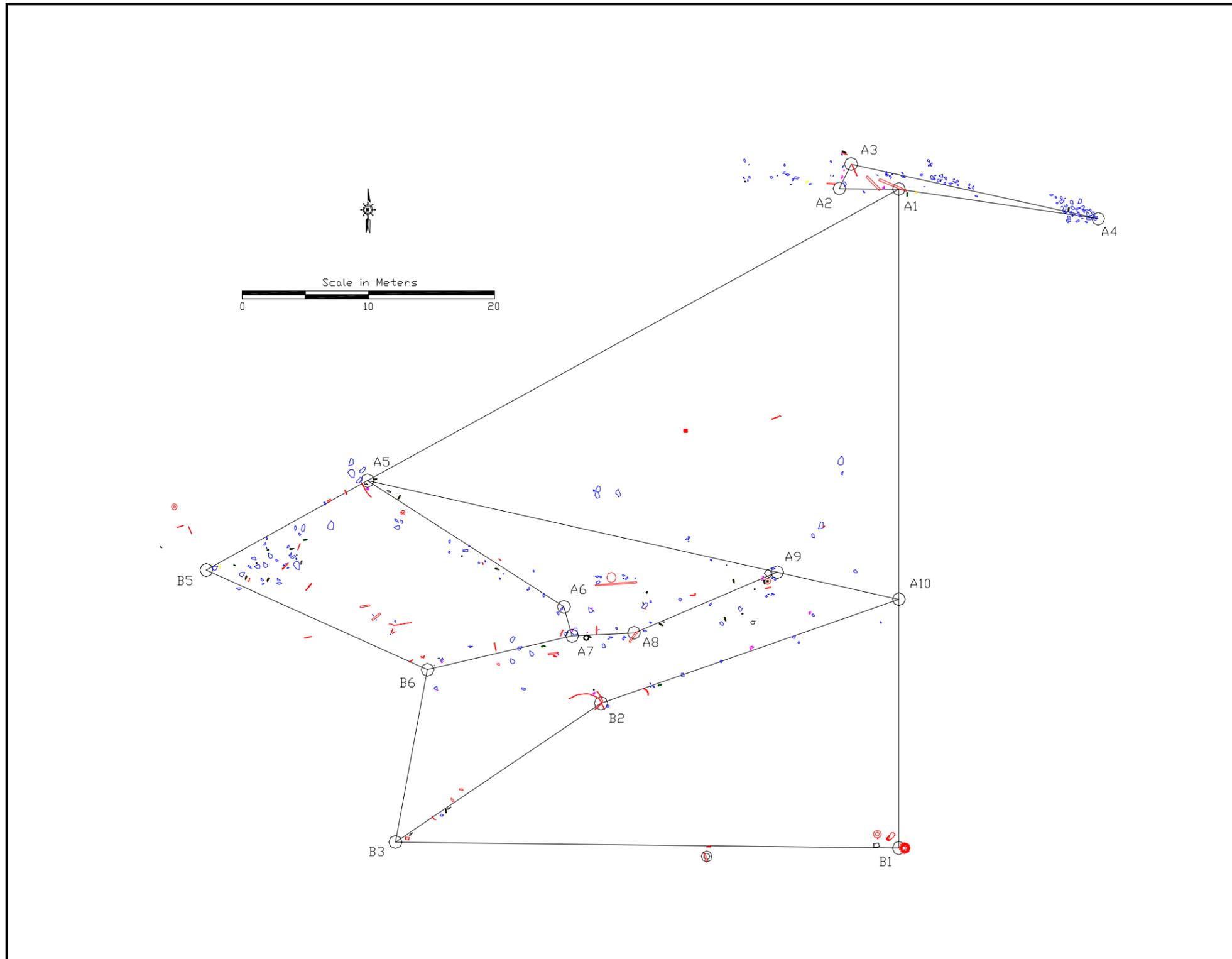


Figure 3. Ponce ballast and debris site map.

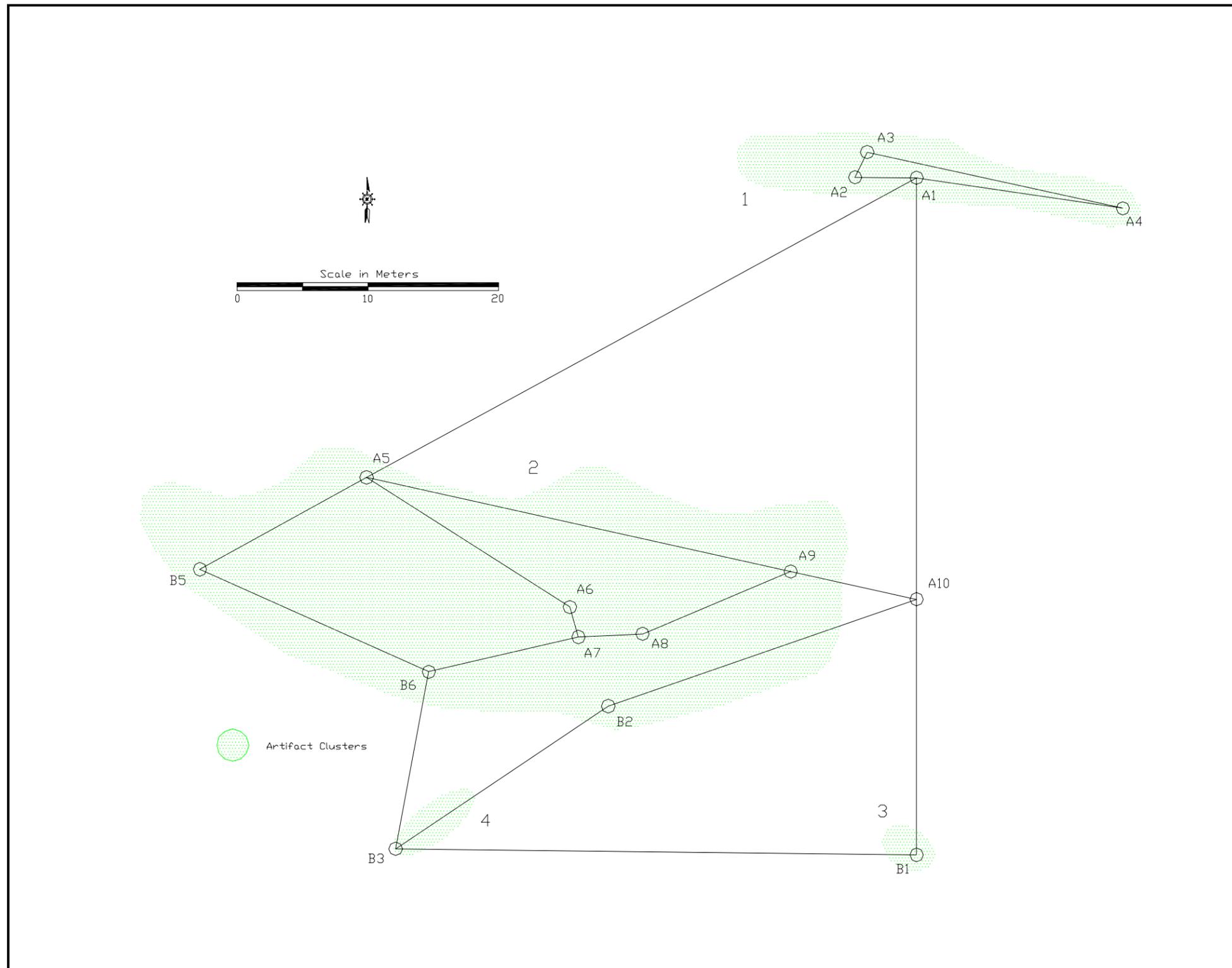


Figure 4. Location of artifact clusters.

bottles and three ceramic sherds were found on the bottom surface. Three of the bottles were complete; one was a dark green two-piece molded bottle with an applied rim, another was a green two-piece bottle with a screw top and the third was a clear flask with a screw top. The fourth bottle was clear in color and consisted of only the base. One of the plates was complete measuring just 7.62 cm in diameter. The plate contained the decoration and logo of the New York - Porto Rico Steamship Company. Another small fragment found in this area contained the same decoration, but no logo. The third ceramic sherd found contained a partial makers mark: "A H & Co" "V." The final artifact from this area was a whole fire brick. The brick contained the mark "A. P. GREEN" "EMPIRE S.M." The brick measured 22.86x11.43x6.35 cm in dimension.

Cluster 2

Cluster 2 is located in the center of the site with material scattered widely along the bottom surface in a northwest to southeast direction between reference marks A10 and B5 (Figure 4). Within this loose cluster there is a small grouping of material in the vicinity of reference mark B5. This grouping is composed mainly of ballast rock scattered over a 10 x 6 meter area. Eight whole and five bottle fragments were also noted in this area. Three of the whole bottles appeared to be modern brown bottles, two were modern clear bottles and the remaining three were two-piece molded, one of each of clear, green and dark green. Iron artifacts included three sections of wire rope/cable, two pipes, one angle iron, one "L"-shaped flat iron, a notched rectangular iron object and one coil of barbed wire. The lengths of wire rope/cable measured 2.54 to 3.81 cm in diameter and varied in length between 50.8 and 66.04 cm. One of the pipes measured 64.05 cm long, 6.1 cm in diameter and contained an "L" connector at one end. The other pipe measured 60.95 cm long and 5.05 cm in diameter. The angle iron measured 85.3 cm long with side dimensions of 1.5 cm. The "L"-shaped flat iron measured 26 cm long, 13.2 cm wide and 6.2 cm thick. The notched iron object measured 33.6 cm long and 21.35 cm wide. One side of the object was cut out; that cut out measured 15.2 cm long and 12.2 cm deep. The coil of barbed wire measured 16.8 cm thick with a maximum diameter of 48.9 cm. The final artifact from this grouping was a fragment of yellow brick. The brick measured 14.5x11.4x5.2 cm in dimension. No ceramics were found in this part of Cluster 2.

The remaining material associated with Cluster 2 was scattered with no clear discernable groupings. As with the rest of the site ballast rock formed the main component within the cluster. The rest of the artifacts comprised material common throughout the site: bottles, ceramics and a variety of metal objects. Fourteen whole and five bottle fragments were found. Of the whole bottles three were clear, nine were dark green and two were green. Six of the bottles were

observed with characteristics features: two of the dark green and one of the clear contained applied lips and two of the clear and one of the green were two-piece molded. In addition, one white 12.2 cm-diameter glass facial cream jar was found as was a fragment of ridged cobalt blue glass. Nine pieces of ceramics and one ceramic bottle were found in this area. Seven of the pieces appeared to be whiteware and/or ironstone and one was porcelain and another majolica or tin-glazed. All but one of the pieces of ceramics was fragmentary. The complete plate measured 22.95 cm in diameter and contained a makers mark: "Greenwood China" "Trenton NJ." One of the fragmentary plates also contained the makers mark: "Villeroy & Boch" "Dresden." Two other pieces appear to be members from a set of china. One bowl fragment contained the maroon trim and logo for the New York - Porto Rico Steamship Company. A second plate fragment also contained the maroon trim but was missing the logo. A Dutch gin bottle was also found. The red brown stoneware bottle measured 30.95 cm long and 10.7 cm in diameter. The bottle was inscribed with "WYNANDFOCKINK" "AMSTERDAM" on one side and "4" on the opposite side under the handle.

A number of iron artifacts were found scattered throughout Cluster 2. Most of these objects consisted of non-descript debris such as pipe, wire, straps, bars, plates or pins (See Table 1 for measurements). A few, however, appeared to be unique or possibly diagnostic. These included coils of barbed wire, a boiler grate, a lifting yoke, a bracket, wire rope with hemp core and an anchor. Two coils of barbed wire were found; each measured 48.35 and 35.7 cm in diameter and 16.65 and 9.0 cm thick. The boiler grate measured 86.55 cm long, 10.45 cm wide in the center and 31.5 cm thick. The ends of the grate tapered to a point which were also broader, measuring 49.5cm thick. The lifting yoke measured 31.9 cm long, 52 cm wide and 2 - 3.3 cm thick. The distance between the arms were 7.4 cm. Each arm contained a 1.4 cm hole near the end. The wire rope with the hemp core measured 134 cm long and 3.3 cm in diameter. The hemp core measured .79 cm thick. The bracket measured 29.05 cm tall, 36.75 cm wide and 4.65 cm thick. The anchor was broke with only the arms and crown surviving. The anchor measured 68.7 cm wide between the flukes. The arms measured 5.2 cm wide and 6.5 cm thick. The flukes were triangular in shape with each side measuring 23.05 cm.

Cluster 3

Cluster 3 is located in the southeastern end of the site with material closely concentrated near reference mark B1 (Figure 4). The cluster is composed of two coils and one roll of wire and one encrusted wooden box. One of the coils was 82.96 cm in diameter, 30.48 cm thick and consisted of plain 3.17 cm wire. The other coil measured 60.96 cm in diameter and 15.24 cm thick. The wire measure

3.17 cm thick and contained a hemp core .79 cm thick. The roll of wire was 30.48 cm in diameter, 5.08 cm thick and 55.88 cm long. The wire was wrapped around a core of hemp. The final artifact found in this location consisted of an encrusted wooden box measuring 25.4 cm long, 14.24 cm wide and 20.32 cm thick. The box was packed with flat wrought iron straps with threaded holes on each end. The straps measured 14.29 cm long, 2.54 cm wide and 1.27 cm thick. The straps were wrapped in a canvas like material.

Table 1. Miscellaneous Iron Artifacts

Table 1 - Miscellaneous Iron Artifacts					
Artifact	Length (cm)	Width (cm)	Thickness (cm)	Diameter (cm)	Comment
Pipe	78.74			3.81	L-connector on one end
Pipe	13.97			3.81	
Wire	45.72			5.08	
Coil	30.48			27.94	Wire
Flat	40.64	5.08			Bent, L-shaped
Strap	107.95	10.16			Bent
Strap	330.2	10.16			
Circular object				76.2	Container
Flat	60.96	5.08			
Pipe	48.7			7.65	
Pipe	24.13			2.54	
Flat	17.78	5.08			
Pipe	60.96			6.1	
Plate	21.4	13.97			Irregular shaped
Pipe	30.48			6.1	
Round	27.94	25.4		2.54	Pin, Z-shaped
Strap	191.77	10.7	0.63		
Pipe	82.36			10.16	
Pipe	76.2			10.16	
Flat	36.83	6.35			
Flat	7.62	3.81			
Flat	7.62	3.81			
Strap	355.6	8.89	2.54		

Cluster 4

Cluster 4 is located in the southwestern end of the site with material scattered along the bottom in a southwest to northeast direction (Figure 4). The cluster is composed of a mixture of material scattered in a straight line for a distance of nearly 6 meters. The cluster is composed of one piece of ballast, three bottles, an iron pipe, two iron plates and an iron pin. Two of the bottles are clear, one contains a screw top and the other is broken at the top but contains a flat bottom which is embossed with "#5." The third bottle is green in color. It is also broken at the top and contains a champagne bottom. The iron pipe measured 30.48 cm long and was 15.24 cm in diameter and contained a 1.27 cm lip. The two iron plates were similar in size, one measured 30.48 cm in length, 8.89 cm in width and 1.27 cm thick and the other was 30.48 cm long, 7.62 cm wide and 2.54 cm thick. One iron pin was also found in the area. The pin measured 38.02 cm long and 1.27 cm in diameter. One end of the pin was threaded.

Magnetometer Survey and Hydraulic Probing

The entire site area was examined with the underwater hand-held magnetometer at the conclusion of the surface artifact documentation. That survey revealed four areas with possible subsurface material: an area encompassing Cluster 1; an area encompassing Cluster 3; an area between reference marks A5 and B5 and an area encompassing reference marks A6, A7, A8 and A9 (Figure 5). Each of these four areas were further investigated by the 3-meter-long hydraulic probe. The results of the probe survey revealed no buried artifact clusters or articulated structural remains. An isolated brick inscribed with "[?][?]TRANDER" "[?][?]HAWK" was found during probing in the vicinity of A9.

Diagnostic Artifacts

Thirty artifacts were temporarily recovered during the course of investigation. These artifacts represent diagnostic materials or objects which could aid in determining the cultural affiliation and function of the site. Recovered material included samples of ceramics, bottles, brick, iron objects and concretions. An analysis of this material suggests that the site dates between the late 19th and early 20th century. Each artifact was sketched and photographed and redeposited on the site.

Ceramics

A number of the ceramics found on the site contained makers marks or other identifiable decorations. At least four unique patterns or marks were identified. One of the complete plates found contained the makers mark "Greenwood China" "Trenton NJ" (Figure 6). The Greenwood Pottery Company was founded in 1861 by James Tams and James P. Stephens. Soon after the introduction of

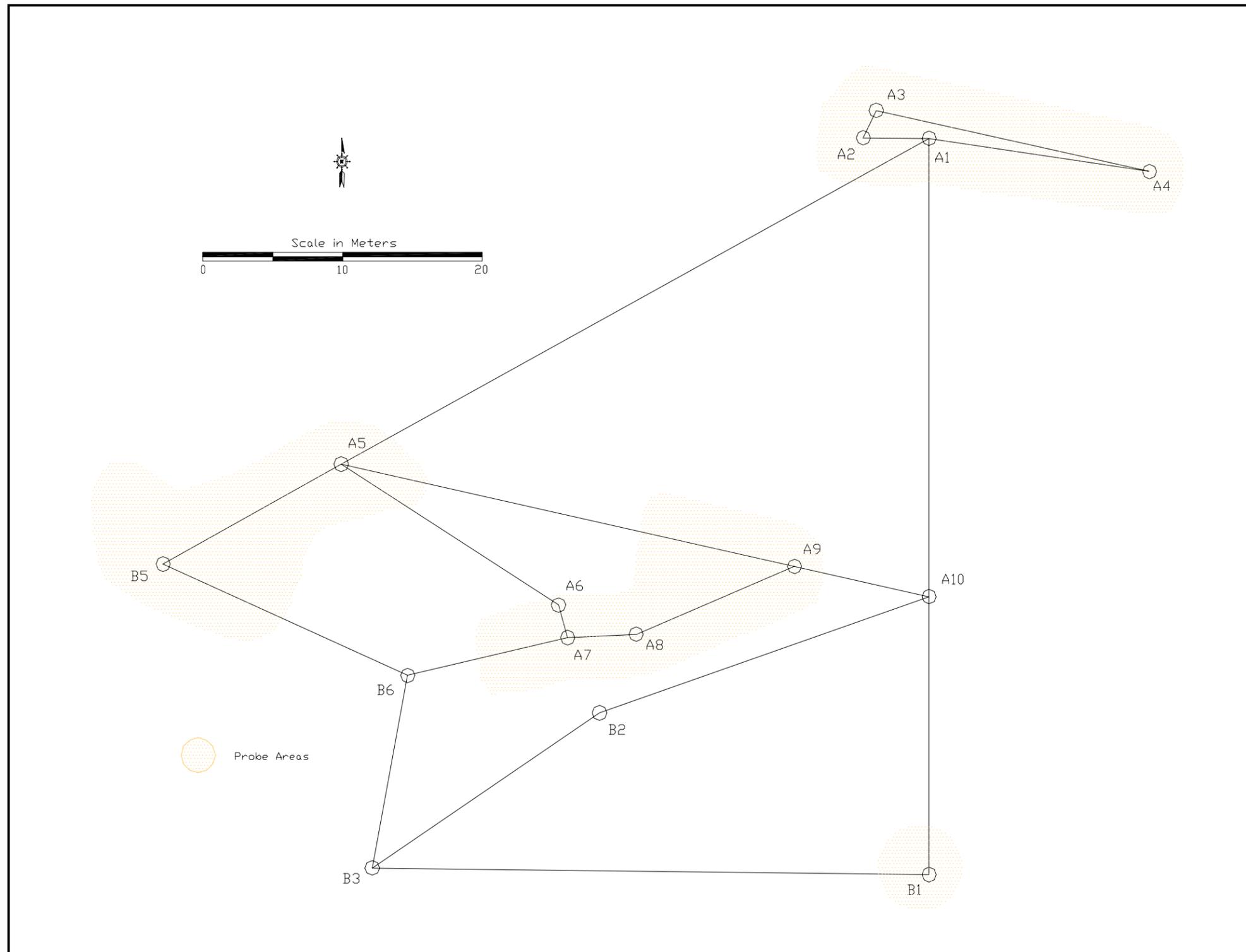


Figure 5. Location of areas investigated by hydraulic probe.

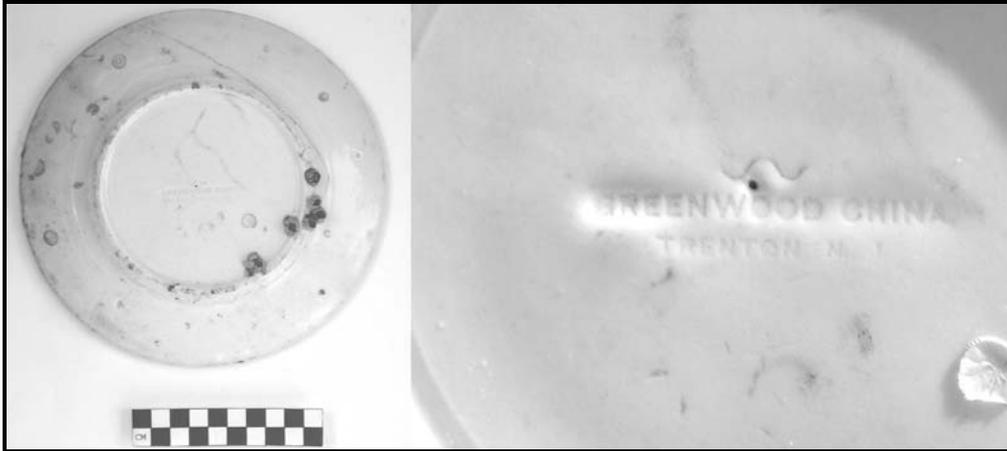


Figure 6. Plate displaying “Greenwood China” “Trenton NJ” makers mark.

vitriified, translucent china wares in 1876 the company became one of the largest producers for the hotel, steamship and railway market (Cameron 1986:146). The style of makers mark found on the bottom of the documented plate was first used in 1886.

One sherd was stamped with “A H & C^o” “V” (Figure 7). This mark was employed by the Alfred Hache & Co. of Mehun-sur-Yevre, France. The company produced export porcelain from 1845 to 1931 (Kovel 1986:158).

Another ceramic fragment contained three quarters of the markers mark for “Villeroy & Boch” “Dresden” (Figure 8). The German firm Villeroy & Boch was established in 1836 with the merger of two large potteries owned by N. Villeroy and Jean-François Boch. The company established a factory in Dresden (1856-1948) for the production of transfer-printed creamwares (Cameron 1986:340). Villeroy & Boch is still in operation today.

The final distinctive ceramic found on the site were several pieces of china from The New York & Porto Rico Steamship Company [NY&PR] produced by the James M. Shaw & Co. of New York (Figures 9, 10). Four samples of the china were found: two appeared to be ironstone and the other two whiteware. Only two contained the company logo, of which one was a whole plate. The other two contained the patterns distinctive maroon trim. Though no information could be located on the Shaw company data concerning the steamship line was gleaned from internet and library sources. The NY&PR was founded in 1885. The company originally served as a freight line and engaged in the sugar trade before switching to the lucrative tourist and immigrant service in 1889 (Emmons 1985:133; Yurga n.d.). The company was purchased in 1907 by Charles W. Morse. When Morse’s planned steamship monopoly collapsed, the NY&PR

along with three other Morse lines formed a holding company, the Atlantic, Gulf



Figure 7. Plate fragment with "A H & C" "V" makers mark.



Figure 8. Plate fragment with "Villeroy & Boch" "Dresden" makers mark.



Figure 9. Examples of New York & Porto Rico Steamship Company China.



Figure 10. Examples of New York & Porto Rico Steamship Company logo and the pattern's makers mark.

and West Indies Steamship Company [AGWI], to manage the affairs of the four lines. The NY&PR continued service until 1949 when the AGWI and all its assets were liquidated.

Bottles

Two bottles, one glass and one ceramic, were documented with company or brand names. The glass bottle was recovered during the initial survey. That bottle was brown in color and was embossed with "WELZ & ZERWECK" "HIGHGROUND BREWERY" "BROOKLYN, NY" (Figure 11). An internet search of that name revealed that the Welz & Zerweck Brewery was in operation in Brooklyn, NY between 1857 and 1920; the name did not officially become Welz & Zerweck until 1897 (Brooklyn Genealogy Information Page n.d.). The ceramic Dutch gin bottle was inscribed on one side with "WYNANDFOCKINK" "AMERSTERDAM" and "4" on the opposite (Figure 12). The company began production in 1679 and is still in operation today.

Barb Wire

A number of samples of barb wire were recovered for documentation. During the late 19th century many varieties were patented when this type of fencing became popular during the westward migration in the United States. Examples of the various types can be found in Robert T. Clifton's book, *Barbs, Prongs, Points, Prickers, & Stickers* (1970). Only two of the pieces recovered were intact enough or not concreted to allow identification. One of the pieces contained a segment of the strand and barb. The strand is a two piece type and contains a barb similar to Burnell's Barb (449). That style of barb was patented by Arthur S. Burnell on 19 June 1877 (Figure 13). The second piece consists only of the barb. The barb is similar in shape to Glidden's Coils, Channeled Square-Wire Variation (139) and Dodge-Washburn's barb, Three-wrap Variation (440) and Three-wrap Half-round Variation (441) (Figure 14). The Glidden's and Dodge-Washburn's variations were manufactured after the original patent in 1876 and 1882 respectively.

Anchor

The anchor was not recovered but documented *in situ* by archaeologists. The anchor is fashioned from iron and is broken at the throat with only the arms, crown and flukes surviving. The smooth rounded shape of the crown is similar to varieties produced between the mid-19th and early 20th centuries (Figures 15, 16; Curryer 1999:84).

Brick

Three bricks were found during the investigation, two of which were whole. The whole bricks appear to be fire bricks and are creamish white in color. Both fire bricks contained makers marks. One of the bricks was inscribed with "A. P.



Figure 11. Welz & Zerweck beer bottle.



Figure 12. Dutch gin bottle with "WYNANDFOCKINK" "AMSTERDAM" STAMP, (lower left) and "4" (lower right).



Figure 13. Example of strand and barb documented on site (left) and identification (right).

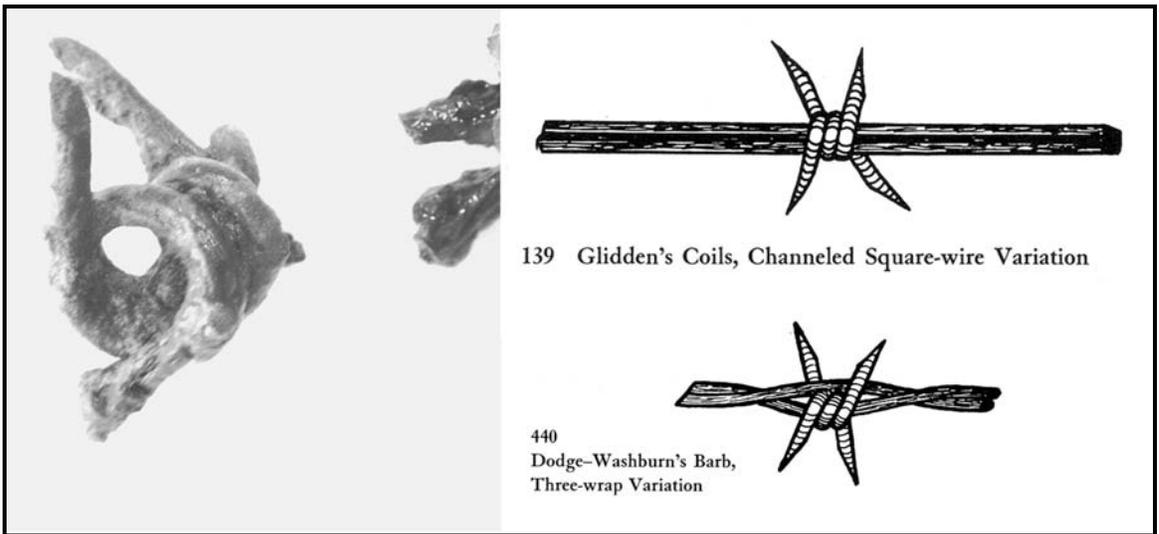


Figure 14. Example of barb documented on site (left) and identification (right).

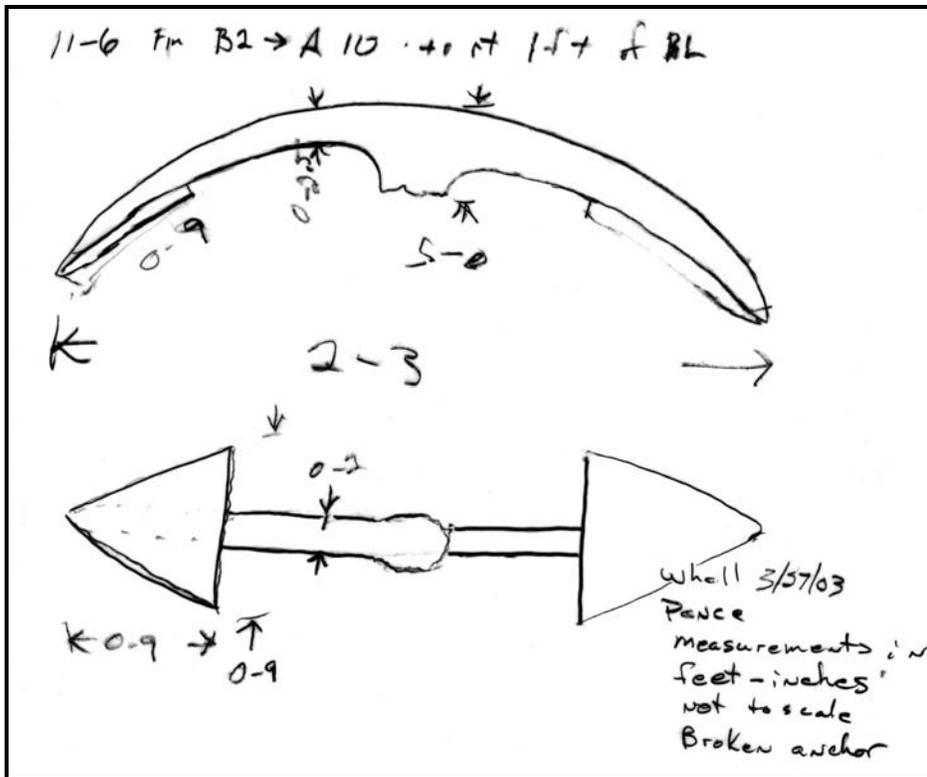


Figure 15. Field sketch of anchor.

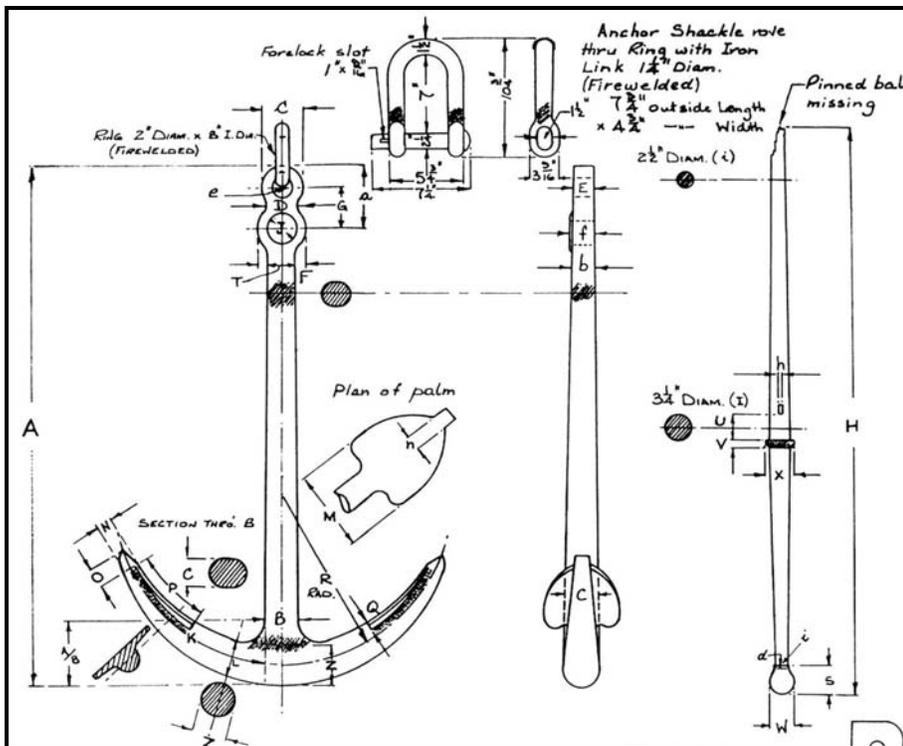


Figure 16. Illustration of anchor similar to Ponce Harbor anchor (Curryer 1999:84).

GREEN" "EMPIRE S.M." and the other contained "[?][?]TRANDER" "[?][?]HAWK" (Figures 17a, 17b). In *Bricks and Brickmaking: A Handbook for Historical Archaeology* (1987), Karl Gurcke notes an A. P. Green Fire Brick Co. in his appendix listing brick brands in America and Canada. The company was based in Missouri and operated between 1919 and 1942. One of the brands that the company manufactured were "Empire" bricks. The author also notes that the S. M. on the brick may stand for stiff-mud. Gurcke's appendix also indicates that the manufacturer for the other brick may be Ostrander. Two Ostranders appear in the appendix: 1. Francis A. Ostrander of New York (1884) and 2. Ostrander Fire Brick Co. of New York (1921-1930). No additional information could be found on the brand or which company supplied the brick.

Conclusions and Recommendations

Examination of the Ponce Harbor target site produced no evidence of shipwreck remains. Material on the bottom surface proved to be a combination of debris associated with the normal activities of a port. Most of it appeared to be artifacts such as bottles, ceramics, wire, broken anchors, scrap iron and other discarded items. Cargos of ships anchoring in Ponce Harbor must have been transferred to shore in barges or small vessels. Clearly some of that material was lost during lightering operations. The presence of items such as rolls of barbed wire, rolls of wire rope and a crate of drilled and tapped flat bars suggest that they have been inadvertently lost overboard during these operations.

Based on the evidence generated by this Phase II investigation, there are no shipwreck remains associated with material on the bottom surface. While the harbor bottom debris identified during this survey sheds light on the port activities of Ponce Harbor, it would be difficult to justify systematic archaeological retrieval. While that would produce a collection of artifacts associated with Puerto Rico's trade, only generalizations about port lightering activities and anchoring patterns could be drawn from archaeological provenience. In the final analysis, there appears to be no archaeological or historical rationale for additional investigation. The site examined does not appear to meet any of the criteria for nomination to the National Register of Historic Places and no additional investigation is recommended in conjunction with the proposed project. However, monitoring of the material dredged from the site should be considered to recover any small artifacts that could be used in type collections or exhibits interpreting the history of Ponce for the public.



Figure 17. Examples of bricks with manufacturer label: A.P GREEN (upper and [?][?]TRANDER (lower).

Bibliography

Brooklyn Genealogy Information Page

n.d. Scholes Street: Welz & Zerweck Brewery. www.bklyn-genealogy-info.com/Town/Eastern/S.html.

Cameron, Elisabeth

1986 *Encyclopedia of Pottery & Porcelain 1800-1960*. Facts On File Publications, New York, New York.

Clifton, Robert T.

1970 *Barbs, Prongs, Points, Prickers, & Stickers*. University of Oklahoma Press, Norman, Oklahoma.

Curryer, Betty Nelson

1999 *Anchors: An Illustrated History*. Naval Institute Press, Annapolis, Maryland.

Emmons Frederick E.

1985 *American Passenger Ships: The Ocean Lines and Liners, 1873-1983*. University of Delaware Press, Newark, Delaware.

Gurcke, Karl

1987 *Bricks and Brickmaking: A Handbook for Historical Archaeology*. University of Idaho Press, Moscow, Idaho/.

Kovel, Ralph and Terry

1986 *Kovel's New Dictionary of Marks*. Crown Publishers, Inc., New York, New York.

Medina Carrillo, Norma and Thérèse-Marina López Rivera

2001 *Archaeological Prospection Phase 1A Port of the Americas Ponce-Peñuelas-Guayanilla, Puerto Rico*. Prepared by CSA Architects & Engineers, San Juan, Puerto Rico. Submitted to Puerto Rico Infrastructure Financing Authority, Hato Rey, Puerto Rico.

Vega, Jesus

2001 *Submerged Cultural Resources Survey Port of the Americas Ponce Bay, Puerto Rico*. Prepared by Terrestrial & Underwater Archaeology, San Juan, Puerto Rico. Submitted to CSA Architects and Engineers, San Juan, Puerto Rico and The Puerto Rico Infrastructure Authority, Hato Rey, Puerto Rico.

Yurga, John

n.d. The New York & Porto Rico Steamship Line. www.njscuba.com.