
Research and Development



AERIAL PHOTOGRAPHIC SITE ANALYSIS FORT WADSWORTH NAVAL STATION Staten Island, New York

EPA Region 2



TS-PIC-95076
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AERIAL PHOTOGRAPHIC SITE ANALYSIS
FORT WADSWORTH NAVAL STATION

Staten Island, New York

by

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NOTICE

This document has undergone a technical and quality control/assurance review and approval by personnel of the EPA/ORD Characterization Research Division at Las Vegas (CRD-LV), and is for internal Agency use and distribution only.

ABSTRACT

This report presents an analysis of aerial photography of the Fort Wadsworth Naval Station, located in Staten Island, New York. The site was analyzed to assist the Environmental Protection Agency's (EPA) Region 2 in its environmental assessment of the site. This analysis covers the period between 1940 and the present.

Findings include small areas of fill, ground scars and disturbed ground, as well as mounded material, refuse, debris and open storage areas. In addition, land development activity occurred when new structures and fields were built between 1954 and 1960 and when the Verrazano-Narrows Bridge was constructed between 1960 and 1966.

The EPA's Environmental Photographic Interpretation Center in Warrenton, Virginia, a part of the Monitoring Sciences Branch of the Characterization Research Division in Las Vegas, Nevada, performed this analysis at the request of the Superfund Support Section of EPA Region 2 in New York, New York, and the Office of Emergency and Remedial Response in Washington, D.C.

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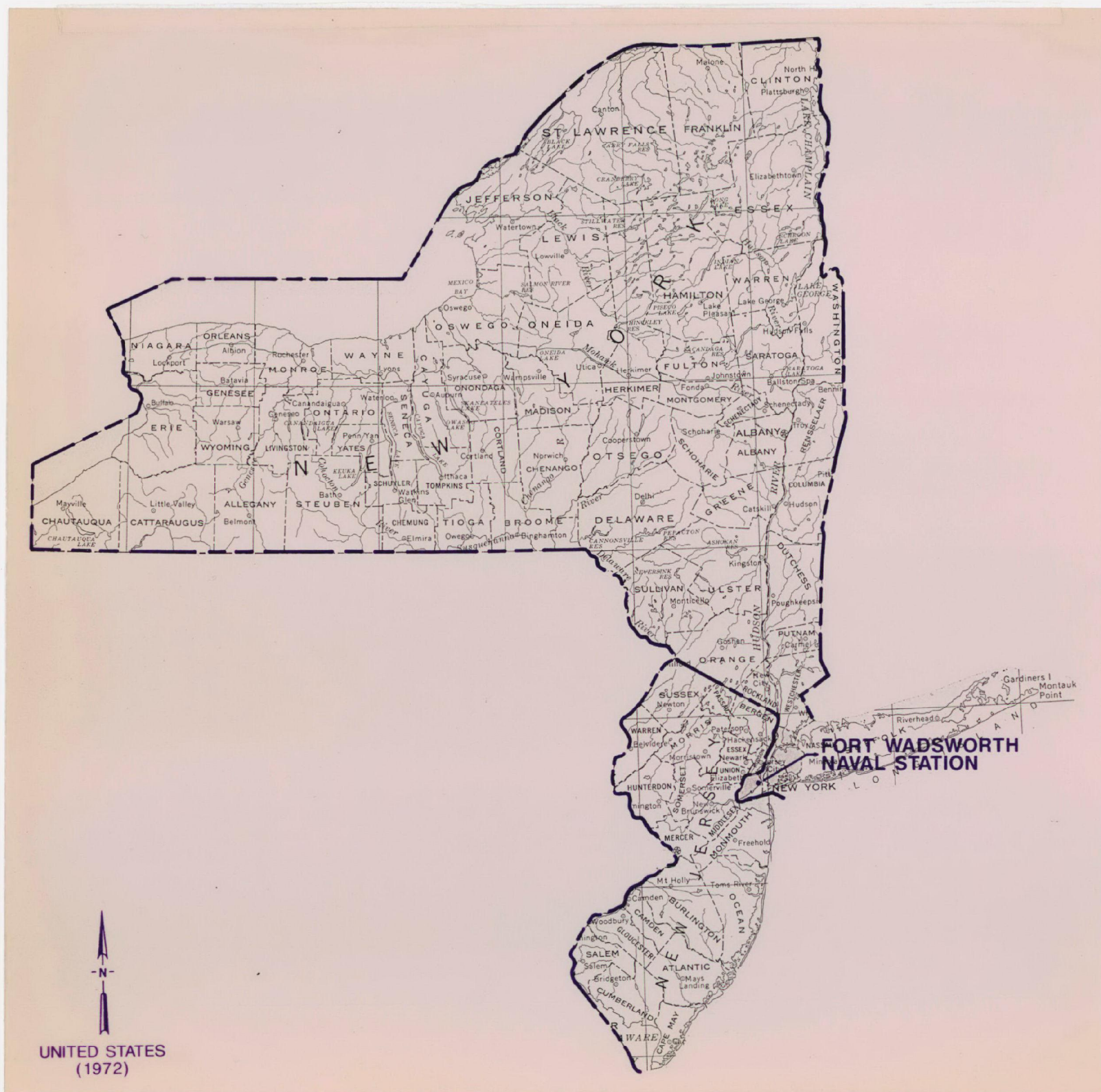


Figure 1. Study area location map, New York-New Jersey. Approximate scale 1:3,125,000.

INTRODUCTION

This report is a revision of the interim report "Aerial Photographic Site Analysis, Fort Wadsworth Naval Station, Staten Island, New York TS-PIC-95027, February 1995. This report, (TS-PIC-95076), includes photography from 1951 and 1966 that was analyzed but not reproduced in the TS-PIC-95027 report. The analysis of aerial photography was performed on the Fort Wadsworth Naval Station located on Staten Island, New York at the western terminus of the Verrazano-Narrows Bridge (Figures 1 and 2). The site comprises approximately 146 hectares (360 acres). The CERCLIS ID Number is NY4210020935.

The Environmental Protection Agency's (EPA) Region 2 requested this analysis in support of an environmental assessment of the site. Figure 2 shows the site location, keyed to a photocopy of a U.S. Geological Survey (USGS) 1:24,000-scale topographic map. Site boundaries or areas used in this analysis were determined from observations made from the aerial photography in conjunction with collateral data supplied by EPA Region 2 and do not necessarily denote legal property lines or ownership.

Aerial photography of Fort Wadsworth Naval Station was obtained to represent the period from 1940 to the present.¹ Features identified in a prior report (TS-PIC-82079) covering this area were confirmed and are included in this TS-PIC-95076 report. Photography from 1974, 1984 and 1993 was analyzed but not reproduced for the either the TS-PIC-95027 or TS-PIC-95076 reports due to the lack of significant features, activities, and/or changes. The locations of the previously discussed features or structures reported on earlier photography are also annotated on later photographs with the same letter designator to serve as reference points.

The EPA's Environmental Photographic Interpretation Center in Warrenton, Virginia, a part of the Monitoring Sciences Branch of the Characterization Research Division in Las Vegas, Nevada, performed this analysis at the request of the Superfund Support Section of EPA Region 2 in New York, New York, and the Office of Emergency and Remedial Response in Washington, D.C.

¹A complete listing of maps and photography used in this report is provided in the References section.

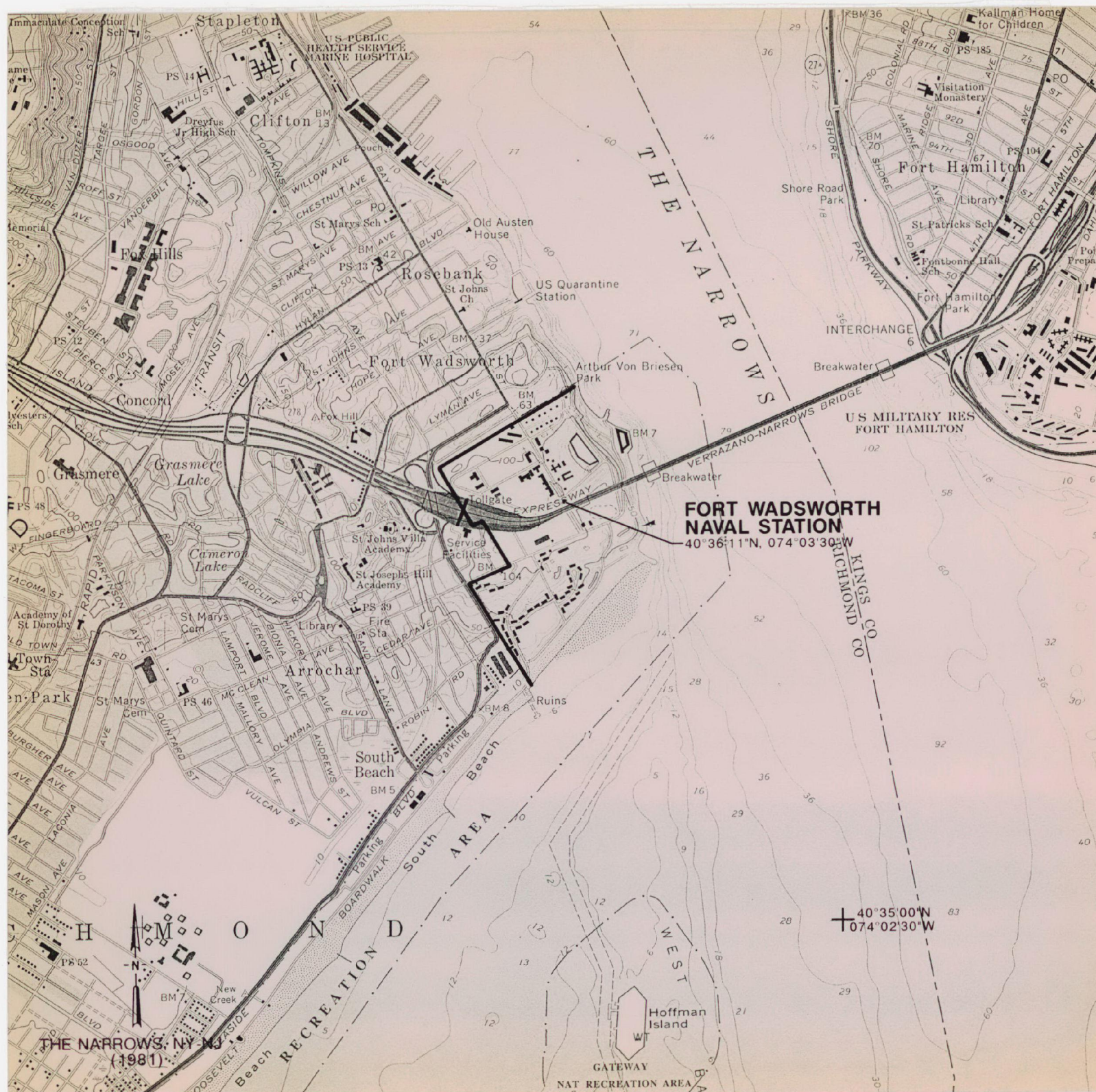


Figure 2. Local study area location map, The Narrows, New York-New Jersey.
Scale 1:24,000.

METHODOLOGY

A search of government and commercial sources was undertaken to obtain the best suited aerial photography of the site spanning the desired time frame. The photography and other sources of information used in this report are listed in the References section.

The analysis was performed by viewing backlit transparencies of aerial photography through stereoscopes. Stereoscopic viewing creates a perceived three-dimensional effect which, when combined with viewing at various magnifications, enables the analyst to identify signatures associated with different features and environmental conditions. The term "signature" refers to a combination of visible characteristics (such as color, tone, shadow, texture, size, shape, pattern, and association) which permit a specific object or condition to be recognized on aerial photography.

The terms "possible" and "probable" are used to indicate the degree of certainty of signature identification. "Possible" is used when only a few characteristics are discernible or these characteristics are not unique to a signature. "Probable" is used when incrementally more characteristics are discernible. No qualifying terms are used when the characteristics of a signature allow for a definite feature identification.

Photographic prints were made from those years of aerial photographic coverage that reveal significant information about the site. Overlays to the prints and/or base maps serve to locate significant features; additional observations and analysis are discussed in the text. Site boundaries or areas used in this analysis were determined from observations made from the aerial photography in conjunction with collateral data supplied by EPA Region 2 and do not necessarily denote legal property lines or ownership.

Due to factors inherent in the photographic printing process, prints do not exhibit the level of detail that is visible in the original aerial photography. Therefore, some features identified from the aerial photography may not be clearly discernible, or even visible, on the photographic prints presented in this report.

AERIAL PHOTO SITE ANALYSIS

APRIL 6, 1940 (FIGURE 3)

Probable dark-toned fill material has been deposited along with possible refuse and lighter-toned fill material near a road on the eastern side of the site (Annotation A). An access road leads into another area where light-toned fill material is being deposited (Annotation B).

Light-toned ground scars and probable medium-toned earthen mounded material (MM) can be seen near a multi-unit housing development (Annotation C) and may be related to their construction. On the other side of the development a ground scarred area and possible fill area can be seen. Also, refuse and or construction debris are visible south of one of the multi-unit houses.

Disturbed ground (DG) is seen in a slight ravine in the central portion of the site (Annotation D). The mottled appearance and presence of an access road may indicate disposal in this area.

Drainage arrow annotations are used to show the irregular drainage patterns within the study area caused by the ruins of the former earthen battleworks and gun mount fortifications built at this historic, coastal defensive, fort.



INTERPRETATION CODE

BOUNDARIES AND LIMITS

- x-x-x-x FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- x x x x x FENCE
- STUDY AREA

DRAINAGE

- - - DRAINAGE
- ← FLOW DIRECTION
- - - - - INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- ===== VEHICLE ACCESS
- + + + + + RAILWAY

SITE FEATURES

- ||||| DIKE
- SL STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WL WETLAND

Figure 3. Fort Wadsworth Naval Station, April 6, 1940. Approximate scale 1:7920.

APRIL 20, 1951 (FIGURE 4)

Open storage of mounded material, tanks and/or equipment has occurred at the location of the probable fill noted in the eastern portion of the site (Annotation A). A small amount of possible refuse is seen where disturbed ground was noted in 1940 (Annotation D). Open storage of containers and equipment on a former building site is also noted (Annotation E).

Other features visible include possible refuse/debris on the beach (Annotation F), a debris piled beside a large shed-type building (Annotation G), and a probable open dump site for fill material (Annotation H).

The multi-unit housing development site (Annotation C) has been dismantled. The sites around Annotations C and B, previously observed as piles of fill and/or debris on the 1940 photography, have since become overgrown with vegetation and are noted as disturbed ground.



INTERPRETATION CODE

BOUNDARIES AND LIMITS

- x-x-x-x FENCED SITE BOUNDARY
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- x x x x x FENCE
- STUDY AREA

DRAINAGE

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TRANSPORTATION/UTILITY

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Figure 4. Fort Wadsworth Naval Station, April 20, 1951. Approximate scale 1:6000.

JANUARY 4, 1954 (FIGURE 5)

Open storage of mounded material, tanks and/or equipment has continued at the location of the probable fill noted in the eastern portion of the site (Annotation A). There has been new construction at the location of a previously reported disturbed ground (Annotation B).

The dump site for possible refuse appears to have expanded since 1951 (Annotation D). There is open storage of containers and equipment on a nearby former building site (Annotation E). There is no waste disposal activity noted at the former waste disposal, construction, or disturbed ground areas (Annotations C, F, G, and H).



INTERPRETATION CODE

BOUNDARIES AND LIMITS

- x—x—x FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- x x x x x FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
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TRANSPORTATION/UTILITY

- ===== VEHICLE ACCESS
- +++++ RAILWAY

SITE FEATURES

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Figure 5. Fort Wadsworth Naval Station, January 4, 1954. Approximate scale 1:6720.

FEBRUARY 17, 1960 (FIGURE 6)

Since 1954, filling, grading, excavation and other features associated with site development are present in a northern portion of Fort Wadsworth labeled "Development Area". No features unique to waste disposal activity are noted. A small amount of light-toned mounded material is present on the former open storage area in the eastern portion of the fort, although most of this area is now used for parking (Annotation A). A graded area observed in the southern portion of the fort is probably related to the construction of additional residential dwellings (Annotation C).

The previously reported location for open storage of containers and equipment is still present (Annotation E). The previously reported area of possible refuse and/or debris in 1951, but reported as inactive in 1954, now appears to be fenced (Annotation F). Two excavations near the west perimeter of the fort are likely related to construction activity rather than waste disposal (Annotation I). There is no waste disposal activity noted at the former waste disposal, construction, or disturbed ground areas (Annotations B, C, G, and H).



INTERPRETATION CODE

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DRAINAGE

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TRANSPORTATION/UTILITY

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- + + + + + RAILWAY

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Figure 6. Fort Wadsworth Naval Station, February 17, 1960. Approximate scale 1:6200.

FEBRUARY 22, 1966 (FIGURE 7)

The 1966 aerial photography reveals the Verrazano-Narrows Bridge has been constructed across the central portion of the fort. The location labeled "Development Area" on the 1960 photograph has been converted to an open area with the addition of seven new buildings. A small area along the north side of the Verrazano-Narrows Bridge has mounds of material and possible refuse present (Annotation A). The disturbed ground noted on the beach in 1960 has become the site of beach replenishment/filling activity (Annotation F). The previously reported two excavations near the west perimeter of the fort are the locations of two recently constructed residences (Annotation I). There is no waste disposal activity noted at the former waste disposal, construction, or disturbed ground areas (Annotations B, C, D, E, G, H and I).



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Figure 7. Fort Wadsworth Naval Station, February 22, 1966. Approximate scale 1:7200.

APRIL 12, 1970 (FIGURE 8)

Since 1966 there has been no significant new construction at Fort Wadsworth except construction to enlarge the number of ramps providing access to the Verrazano-Narrows Bridge. A small area along the north side of the bridge has mounds of material and possible refuse present and appears to be used as a dumpster site (Annotation A). No other significant changes occur at Fort Wadsworth through 1993. There is no waste disposal activity noted at the former waste disposal, construction, or disturbed ground areas (Annotations B, C, D, E, F, G, H and I).



INTERPRETATION CODE

BOUNDARIES AND LIMITS

- x-x-x-x-x FENCED SITE BOUNDARY
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- x x x x x FENCE
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DRAINAGE

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TRANSPORTATION/UTILITY

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- + + + + + RAILWAY

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Figure 8. Fort Wadsworth Naval Station, April 12, 1970. Approximate scale 1:7920.

REFERENCES

AERIAL PHOTOGRAPHY

<u>Date</u>	<u>Agency</u>	<u>Mission</u> <u>Code</u>	<u>Agency</u> <u>Frame #</u>	<u>Film</u> <u>Type</u> ¹	<u>Orig.</u> <u>Scale</u>	<u>EPIC</u> <u>Frame #</u>
04/06/40	AVPT ¹	---	12:184-186	BW	1:20,000	43238-43240
04/20/51	NOS ³	SIJ-6	1712-1713	BW	1:10,000	3918:061-062
01/04/54	USGS ⁴	VBV	6:64-66	BW	1:20,000	3848-3850
02/17/60	LKB ⁵	0010	7:32-34	BW	1:12,000	43276-43278
02/22/66	USGS	VBIO	3:35-36	BW	1:24,000	3837-3838
04/12/70	NYSDOT ⁶	----	31:7-8	BW	1:24,000	43241-43242
11/30/74	LKB	2953	1:138-140	BW	1: 9,600	43279-43281
03/27/84	LKB	3818	7:15-16	BW	1:19,200	43282-43283
12/12/93	KAS ⁷	93-138	10:140-141	BW	1:12,000	43236-43237

M*P

<u>Source</u>	<u>Name</u>	<u>Scale</u>	<u>Date</u>
USGS	The Narrows, NY-NJ	1:24,000	1981

PUBLICATIONS

Hopkins, W.C. Waste Site Inventory, Staten Island, New York. May 1983.
EPA/EPIC Report TS-PIC-82079.

¹Film type identification: BW - Black-and-White

²Aerial Viewpoint, Houston, Texas

³National Ocean Survey, National Oceanic and Atmospheric Administration

⁴U.S. Geological Survey, U.S. Department of the Interior

⁵Lockwood, Kessler and Bartlett, Syosset, New York

⁶New York State Department of Transportation, Albany, New York

⁷Keystone Aerial Survey, Philadelphia, Pennsylvania