

ENVIRONMENTAL ASSESSMENT

for

**ESTABLISHMENT OF RESTRICTED ZONE
ALONG THE MATTAWOMAN CREEK**

and

DREDGING NEW CHANNEL OUTSIDE THIS ZONE

at

NOS, INDIAN HEAD, MARYLAND

prepared for

**CHESNAVFACENGCOM
CHESAPEAKE DIVISION
Washington Navy Yard
Washington, D.C.**

by

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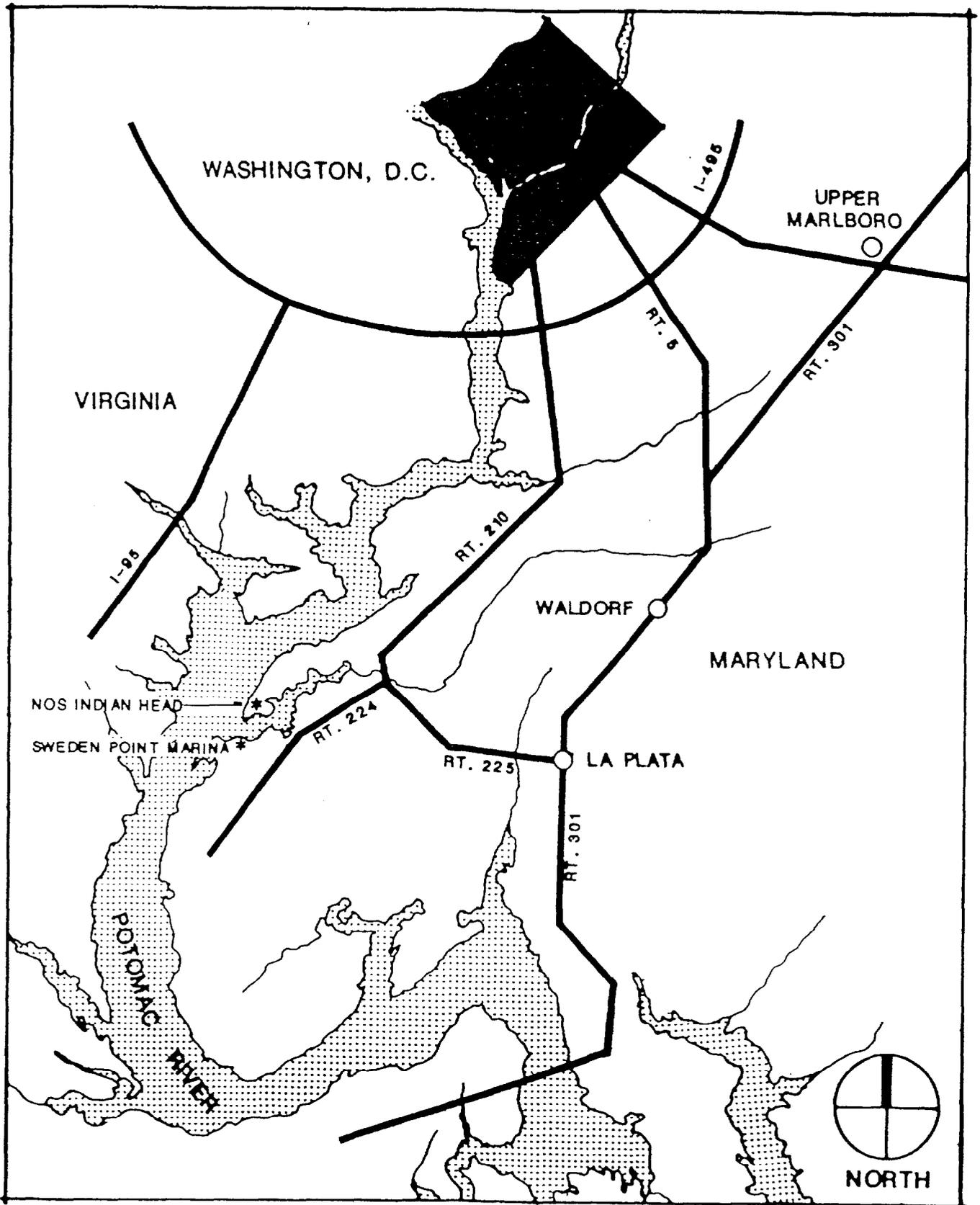
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N.O.S. INDIAN HEAD, MARYLAND
 ENVIRONMENTAL ASSESSMENT

FIGURE 1 - Vicinity Map



**NAVAL ORDNANCE STATION INDIAN HEAD, MARYLAND
ENVIRONMENTAL ASSESSMENT**

EXECUTIVE SUMMARY

Two associated actions are proposed for Mattawoman Creek in Indian Head, Maryland. One action will be initiated by the U.S. Navy; the other action will be initiated jointly by the Navy and by the State of Maryland, Department of Natural Resources (DNR). These associated actions will foster as full public use of Mattawoman Creek for boating and fishing as possible, given the U.S. Navy's mission at the Naval Ordnance Station, Indian Head. The actions are also being undertaken in the interest of public safety to recreational boaters in the creek. The Environmental Assessment examines the likely environmental effects of these associated actions.

The first action is the Navy's reduction of the danger zone currently extending from the Naval Ordnance Station (NOS) across Mattawoman Creek. The U.S. Navy has, since 1961, maintained a danger zone in the creek, stretching the width of the creek, shore-to-shore. The danger zone designation need not, however, extend so far as the Sweden Point Marina, nor is it necessary for NOS to enforce the provisions of the danger zone at all times.

The second action involves the dredging of a secondary, alternative channel in Mattawoman Creek, to be undertaken by the Maryland Department of Natural Resources (DNR). This realignment would provide a second channel for boaters in the vicinity of the HNBQ facility at NOS. A small portion of the existing channel now falls within the Explosive Safety Quantity Distance (ESQD) arcs opposite this facility. A second channel must be dredged, to guide boat traffic outside the ESQD arcs, whenever activities in this facility present such potential hazards that boaters must temporarily stay outside the ESQD arcs. The new channel alignment will be approximately 2,000 feet long, 50 feet wide, and four feet deep at mean low water. The new channel will be dredged hydraulically. The dredge material will be disposed of at an existing, approved dredge material placement (DMP) site located at the Smallwood State Park, outside the 100-foot buffer established by the Chesapeake Bay Preservation Act. Approximately 8,000 cubic yards of dredge material will result from the channel dredging project.

In May 1991, bottom samples were taken by the Maryland Department of Natural Resources/Maryland Environmental Service from three locations in Mattawoman Creek, at the proposed dredge site and through project depth. An evaluation of the bulk sediment analyses of these samples indicated that the dredge material to be removed is non-toxic.

The dredging project will be conducted during the winter and thus will have no effect on the creek's important fish spawning grounds, especially for largemouth bass and other anadromous fish. No dredging will occur during the "environmental window" for fish spawning, February 15 through September 30.

Dredging will be performed hydraulically, in that this method produces the least environmental impact. The resultant dredge material will be placed in an existing dredge material placement (DMP) site located at Sweden Point State Park. Sparse submerged aquatic vegetation (SAV) has been found in the portion of the creek to be dredged. No significant impacts to SAV are, therefore, anticipated as a result of completion of the channel dredge project.

NOTE: ALL MENTION OF NOS
WILL BE CHANGED.

Water quality in Mattawoman Creek will not be adversely affected by the dredging project. The dredge material will be disposed of in an existing, upland dike that is above the mean high water line. As a result, the dredge material will not re-enter the creek. The outfall for the dredge material placement (DMP) site has been protected with stone to prevent erosion.

There is no anticipated impact of either proposed action on the flood plain, shoreline vegetation, SAV, endangered or threatened species or habitats, or historic resources.

Potential impacts upon adjacent land uses are confined to noise during the dredge and dredge disposal operations which will adhere to state regulations (MD Dept. Health and Mental Hygiene Subtitle 20, Noise Pollution). Recreational fishing and boating within the ESQD area in Mattawoman Creek will be prohibited, once the new channel is dredged. It is not anticipated that the new channel will attract additional boaters to Mattawoman Creek.

OPPOSITE THE HBNQ FACILITY WILL NECESSARILY NOT BE ALLOWED AT THOSE TIMES THE DANGER ZONE IS ENFORCED AT THAT LOCATION

There are no federal, state, or local permits required for the danger zone reduction. The Code of Federal Regulations, under which the boundaries of the danger zone and the limits to boating activity within the danger zone, will need to be amended, to reflect the new boundaries of the danger zone within Mattawoman Creek. The proposed dredging activity, and the disposal of the dredge material in the existing DMP site, will require a Wetlands Permit and Water Quality Certificate from the State of Maryland and a permit from the U.S. Army Corps of Engineers. Since a federal entity (the U.S. Naval Ordnance Station at Indian Head) is involved in the proposed actions, it is likely that a federal Section 404/Clean Water Act permit will also be required.

The action is supported by federal, state, county, and local interests.

**NAVAL ORDNANCE STATION INDIAN HEAD, MARYLAND
ENVIRONMENTAL ASSESSMENT**

INFORMATION LETTERS AND RESPONSES: A SYNOPSIS

In March 1991, an information letter was sent to local, county, state, and federal agencies with an interest in, or jurisdiction over, the proposed actions studied in the Environmental Assessment. Copies of the information letter and the responses received are included in the Appendix.

The following discussions detail the substantive concerns (as opposed to opinions or statements of fact) received regarding the proposed actions, and the manner in which these concerns have been addressed in the Environmental Assessment. With this information, it is possible to quickly understand the range of potential environmental impacts anticipated from the proposed actions, and the ways in which these concerns have been addressed.

U.S. Environmental Protection Agency:

1. Full explanation for need of project.

The project consists of two associated actions: reduction of the danger zone in Mattawoman Creek, at the U.S. Naval Ordnance Station Indian Head, Maryland; and dredging of an additional channel in Mattawoman Creek, opposite the HNBO facility at NOS Indian Head. In the first, the farthest limits of the danger zone will be reduced, to remove the Sweden Point Marina from the danger zone. This redrawing of the danger zone limitations is possible under the discretionary enforcement powers granted the Commanding Officer of NOS Indian Head in 33CFR334.240. In the second action, the Maryland Department of Natural Resources will contract to dredge a second channel in the creek, to realign one that presently falls within ESQD arcs that extend across the channel. The channel realignment will be located beyond the ESQD arc, as an alternative route for boaters when the danger zone is being enforced. The dredge material from the channel will be disposed of in an existing dredge material placement (DMP) site at Smallwood State Park, for which a State of Maryland Wetlands License (No. 86-107) was granted in August 1986 to complete the Sweden Point Marina Project.

2. A description of historical discharges into the watershed (Should include all known regulatory violations).

Over a number of years, the U.S. Naval Station at Indian Head has deposited runoff in Mattawoman Creek that contains chemicals and metals resulting from, or used in, the various research, development, and production activities at NOS. NOS had 48 industrial outfalls and three sanitary sewer outfalls in 1990; 27 of these discharged into Mattawoman Creek. Discharges into these outfalls have included those from five spill sites, with runoff containing silver, mercury, and zinc. Other known contaminants from NOS outfalls include cadmium, selenium, copper, and arsenic. Disposal activities at NOS have been operated under National Pollution Discharge Elimination System (NPDES) permits. The U.S. Department of the Interior has initiated a five-year study of metals in sediment and biota of Mattawoman Creek, as well as a monitoring program for mercury bioaccumulations in bass, bluegill, and catfish. (These studies are included in the Appendix.)

3. Depth of proposed project.

The new channel in Mattawoman Creek will be four feet deep below mean low water.

4. Volume of material to be dredged.

Approximately 8,000 cubic yards of dredge spoils will result from the channel dredging project.

5. Type of dredging method.

The new channel will be dredged hydraulically, with outfall directed back into Mattawoman Creek. Approval and licensing for this site was given by the DNR and the U.S. Army Corps of Engineers for the marina expansion and fuel dock/boat ramp dredging projects. It is anticipated that hydraulic dredging will be used to maintain the channel.

6. Sediment sampling program.

Mechanical analyses of the Mattawoman Creek sediments in the area of the proposed channel dredge were undertaken by the University of Maryland in July 1989 and October 1990. The sediments were found to consist of sand, silt loam, clay, and clay loam.

7. Sediment testing program.

- o Grain size analysis
- o EP toxicity testing
- o Bulk sediment analysis
- o Modified Elutriate testing
- o Tributyl Tin (TBT)
- o Bioassay

A bulk sediment analysis was performed by Martel Laboratories, for the Maryland Department of Natural Resources/Maryland Environmental Services, in June 1991. The quality of the Mattawoman Creek sediments was found to be such that they could be classified as clean and uncontaminated. Their quality was judged equal to or better than typical Chesapeake Bay channel sediments.

Martel advised the DNR that the good quality of the sediment made the remaining tests requested by EPA unnecessary.

8. Control plan for upland disposal option.

The dredge material will be disposed of in an existing, previously-used dredge material placement (DMP) site that was approved by the Maryland Board of Public Works (Wetlands License No. 86-107) and the U.S. Army Corps of Engineers. The DMP site was constructed in 1986 and used for the Sweden Point Marina Expansion Project. There is sufficient capacity in this DMP site to accommodate the dredge material from the new channel.

9. Clarification of involvement of Sweden Point Marina.

Sweden Point Marina is located on the southern shoreline of Mattawoman Creek, opposite NOS Indian Head. Under federal regulations (33CFR334.240), a danger zone was established for the entire width of the creek, as a result of the various ordnance manufacturing, storage, and disposal activities at NOS. Under these regulations, the Commanding Officer at NOS Indian Head is responsible for enforcement of the danger zone; this enforcement includes the right to permit private boating in the creek when no hazard exists as a result of NOS activities. Accordingly, it has been determined that there is no hazard to boaters using the facilities at Sweden Point and, thus, the U.S. Navy's danger

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zone regulations and limitations need not apply to the marina. The Maryland Department of Natural Resources is in the process of improving and expanding the existing boat launching facilities at the marina. Unless the danger zone is redrawn, boating activities at that facility would be potentially compromised by the possible enforcement of the danger zone limitations.

10. Time of year dredging will occur in relation to boating, other recreational users and anadromous/resident fisheries spawning in Mattawoman Creek.

Dredging will occur during the period of October through mid-February to reduce and potential impacts to fish spawning in Mattawoman Creek. The actual dredging operation will not impact recreational boating activities.

Charles County, MD: Planning and Growth Management:

1. Dredge material should not be placed within the 100-foot buffer, furthermore hazardous material may not be placed in the Critical Area.

Dredge material will be placed in an approved dredge material placement (DMP) site at the Smallwood State Park. The DMP site received Wetlands License No. 86-107 from the Maryland Board of Public Works in August 1986. The DMP site was used for dredge disposal for the Sweden Point Marina Expansion Project in 1989. Excess capacity exists in the DMP site for the dredge material from the proposed channel dredge. The DMP site is upland, above the high-water mark, and outside the 100-foot buffer area. No hazardous material will be dredged in this project.

Maryland Department of Natural Resources, Forest, Park and Wildlife Service:

1. Wetlands destruction should be minimized and any wetlands destroyed by dredging should be replaced elsewhere in Mattawoman Creek.

Dredging will be performed hydraulically. The proposed channel has been aligned in such a manner as to not impact any existing SAV. This action will minimize disturbance to wetlands. The dredging will produce a minimum impact channel, four feet deep and 50 feet wide. There will be no net loss of wetlands as a result of the proposed dredging.

2. The channel should be designated to avoid SAV beds because of all their benefits, including food for water fowl.

In a June 1989 study of the wetlands vegetation in Mattawoman Creek, the Maryland Department of Natural Resources reported that no SAVs were observed where the new channel is to be located.

Maryland BASS Federation:

1. Our major concern is that the Navy will place the original channel off-limits when the new channel is completed. We would resist that with vigor. The present channel place that the new route is intended to replace is perhaps the best fishing area in the creek.

The old channel that falls within the ESQD arcs, and is to be supplemented by the channel realignment, will not be off-limits to fishermen. The Commanding Officer of the Naval Ordnance Station at Indian Head, as the enforcement agency for the federal regulations governing the danger zone in Mattawoman Creek, has the discretion to keep private boats out of the creek area covered by the ESQD arcs when activities at NOS warrant such an action. Because NOS supports public use of Mattawoman Creek, private boats will be permitted in all portions of the creek whenever the

provisions of the danger zone need not be enforced. The occasional enforcement of the boating limitations in the danger zone by the Commanding Officer, under the provisions of 33CFR334.240, is in the interest of public safety.

2. The proposed new channel will destroy substantial water vegetation (spatterdock) and the wave action from the boat traffic will have an effect on the remaining vegetation in two directions in lieu of only one as it now exists.

It is not anticipated that water vegetation will be destroyed in the dredging project. The six-knot boat speed limit on Mattawoman Creek, east of Marsh Island, should protect existing wetlands from adverse wave activity from boat wakes.

3. We are quite concerned about the potential for disturbing contaminants that may be hidden in the wetland soils when dredging commences.

The Maryland Department of Natural Resources, Maryland Environmental Services, through Martel Laboratory Services, Inc., conducted bulk sediment analyses of samples collected from the proposed dredge area in Mattawoman Creek. The sediment was found to be "characteristic of clean, uncontaminated material, with quality equal to or better than typical sediments from channels in the Chesapeake Bay."

4. The channel will also have an effect on water fowl and other aquatic inhabitants.

Although dredging operations may temporarily disturb water fowl that customarily inhabit Mattawoman Creek, these impacts are anticipated to last only for the period of dredging. The water fowl should quickly return to that portion of the creek once dredging operations are completed.

5. We are concerned that dredging activity during the spring of the year will have a negative effect on spawning fish.

No dredging will occur during the prime fish spawning season, which runs from February 15 through September 30.

6. The spoils site is in the immediate drainage area of Mattawoman Creek. If the soil is contaminated, it will reenter the water.

The dredge material placement (DMP) site at the Sweden Point Marina will be used for storage of the dredge material. This DMP was approved by the U.S. Army Corps of Engineers in 1986 was used in 1989 for the marina. The DMP is upland, above the high-water mark, diked, and beyond the 100-foot buffer required by the Chesapeake Bay Preservation Act. Excess capacity exists in the existing DMP site to contain the material dredged in the proposed channel realignment. Again, the material to be removed has been tested and found to be non-toxic.

Department of the Army, Baltimore District, Corps of Engineers:

1. The subject Environmental Assessment should address hydrologic changes to the Mattawoman Creek caused by the proposed dredging. All changes in flood rates and water levels should be documented. If there are no changes, this should be stated as well.

Because the proposed dredge activity in Mattawoman Creek will involve a "minimum impact channel" four feet deep and 50 feet wide, and the new channel will not impact existing flood rates and water levels.

State of Maryland, Chesapeake Bay Critical Area Commission:

1. The placement of dredged spoil on State lands will require Commission approval if the disposal site is located within the Buffer. Dredged spoil must be placed so as to minimize interference with the natural transport of sand.

The dredge material will be placed in a previously-approved and previously-used dredge material placement (DMP) site in Smallwood State Park. The DMP site is upland, above the high-water mark, and outside the 100-foot buffer next to Mattawoman Creek.

2. The actual dredging must be conducted in a manner, and must use a method, which causes the least disturbance to water quality and aquatic and terrestrial habitats in the immediately surrounding area, or within the Critical Area generally. Hazardous material may not be placed in the Critical Area.

The dredging will be performed hydraulically and outfall will be directed back into the dredged area. This method of dredging is the most efficient and least environmentally detrimental. The dredge material will be placed in a previously-approved dredge material placement (DMP) site in Smallwood State Park. No hazardous materials have been found in the sediment tests taken of the proposed dredge site; therefore, no hazardous materials will be disposed of in the DMP.

State of Maryland Department of the Environment:

1. Dredging is not allowed in areas of submerged aquatic vegetation (SAV) from March 1 through June 15 of every year.

Dredging will not occur in the period 1 March to 1 July.

2. Dredge spoil must be disposed of only in uplands.

The dredge material will be placed in a previously-approved dredge material placement (DMP) site in Smallwood State Park. The DMP site is upland, above the high-water mark, diked, and outside the 100-foot buffer next to Mattawoman Creek.

3. Dredge spoil containment areas must be so constructed as to limit the content of suspended solids in the discharge from the disposal site to no more than 400 parts per million. The turbidity of receiving waters must never exceed nephelometric 150 turbidity units (NTU).

The dredge material will be disposed of in an existing diked upland dredge material placement (DMP) site that was approved by the Maryland Board of Public Works and the U.S. Army Corps of Engineers, and constructed in 1989. The DMP has been in operation since its construction and has met all regulations. There is excess capacity in the DMP site to receive the dredge material proposed for this project. No violations of these standard Department of the Environment and U.S. Environmental Protection Agency requirements will occur.

U.S. Department of Agriculture, Soil Conservation Service:

1. This deeper and straighter channel will result in more and faster boat traffic (power boats). This will cause more wakes and an increase in potential shore erosion in this area. What is planned to counter-act this?

There is an enforced six-knot speed limit in Mattawoman Creek, east of Marsh Island, which is west of the area of the proposed channel realignment. Further, boat traffic in this section of the creek has been historically low and mainly originates at the privately-owned ramp in the Town of Indian Head. As no improvements to this facility are planned, little or no increase in boat traffic from it is anticipated. Together, these two factors should result in little or no increase in boat wakes or shore erosion.

2. The dredged spoil needs to be handled in an environmentally sensitive manner in order to minimize any adverse impact of soil disposal.

The dredging will be performed hydraulically and outfall will be directed back into the creek. The dredge material will be placed in a previously-approved dredge material placement (DMP) site in Smallwood State Park. The DMP site is upland, above the high-water mark, diked, and outside the 100-foot buffer next to Mattawoman Creek. The DMP site was granted a Wetlands License (NO. 86-107) by the Maryland Board of Public Works and U.S. Army Corps of Engineers in August 1986. No hazardous materials have been found in the sediment tests taken of the proposed dredge site; therefore, no hazardous materials will be disposed of in the DMP.

**NAVAL ORDNANCE STATION INDIAN HEAD, MARYLAND
ENVIRONMENTAL ASSESSMENT**

I. PURPOSE AND NEED FOR PROPOSED ACTION

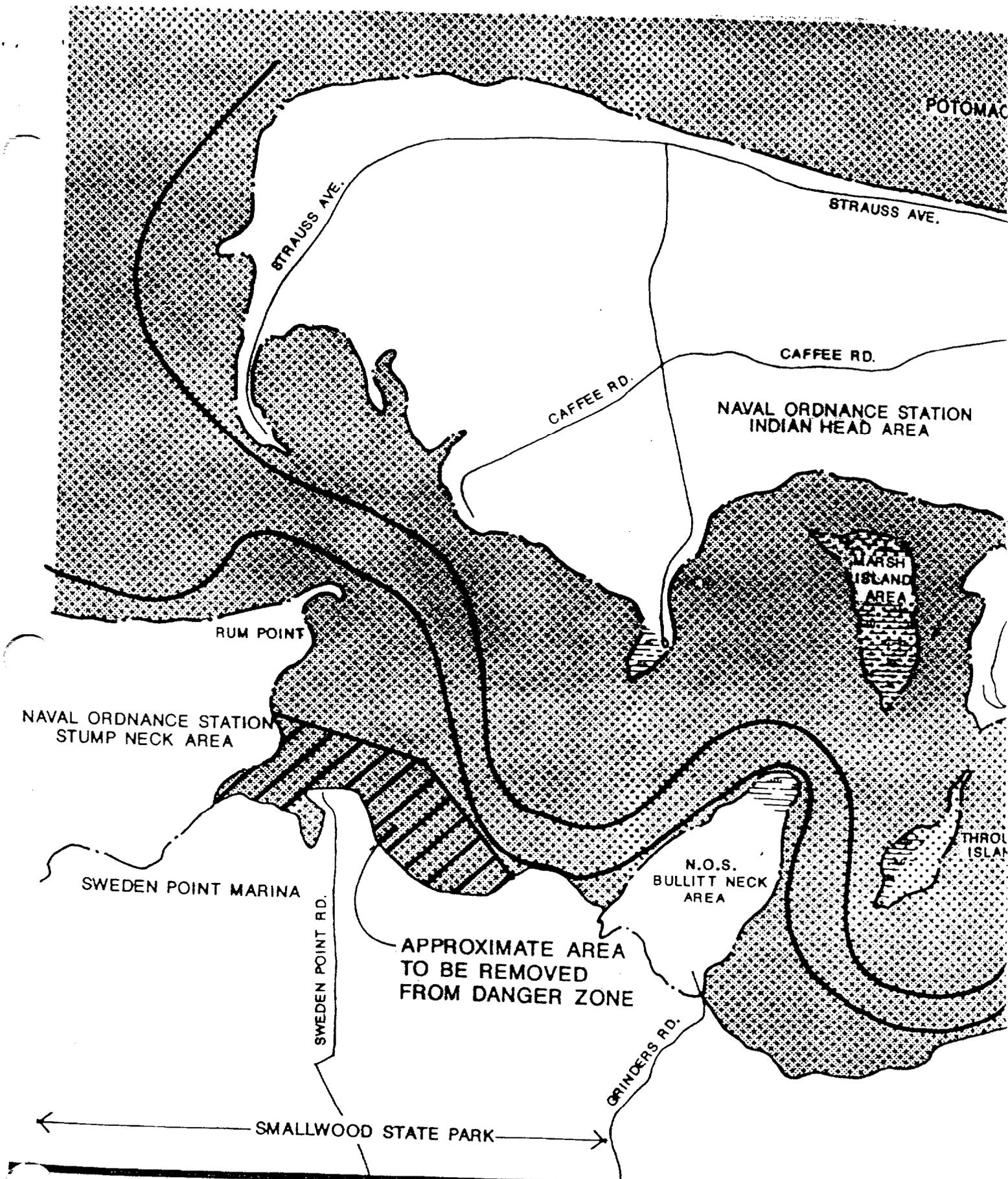
A. General Description of the Proposed Action

The Environmental Assessment will study the likely environmental effects of two associated actions proposed to occur in Mattawoman Creek, off the U.S. Naval Ordnance Station, Indian Head, Maryland. These two actions are:

1. Reduction of the danger zone currently extending from the Naval Ordnance Station (NOS) Indian Head across Mattawoman Creek. Under federal regulations (33CFR334.240) dating from 1961, a danger zone extends across Mattawoman Creek, southeast and southwest of NOS Indian Head, reflecting the ordnance manufacturing, storage, and disposal activities at NOS. The outer limits of the danger zone in Mattawoman Creek are the shorelines, chosen as boundaries for ease of description in navigational documents at a time when there was little development in this portion of Charles County. It has been determined that the State of Maryland's Sweden Point public marina, within the Smallwood State Park opposite NOS Indian Head, no longer needs to be encumbered by the danger zone regulations. (Figure 2) This determination has been made under the enforcement powers granted the Commanding Officer at NOS by the federal regulations governing the danger zone.
2. Dredging of a new channel in Mattawoman Creek and disposal of the dredge material. In a cooperative and associated action, the State of Maryland Department of Natural Resources, Boating Administration will hydraulically dredge a new channel in Mattawoman Creek to supplement a portion of the existing channel that falls within the ESQD arcs opposite the HBNQ facilities at NOS Indian Head. This channel is to be used by boaters when the danger zone is enforced in this portion of the creek. The second channel is proposed to be approximately 2,000 feet long, 50 feet wide, and four feet deep at mean low water. The dredge material will be disposed of at an existing dredge material placement (DMP) site at the Smallwood State Park. This DMP site was constructed in 1989, under a Wetlands License (No. 86-107) granted by the Maryland Board of Public Works and the U.S. Army Corps of Engineers, for the dredging of the Sweden Point marina and has available capacity for the Mattawoman Channel dredge material. The DMP site is a two-part upland dike and is located outside the 100-foot buffer area required by the Chesapeake Bay Preservation Act. DNR estimates that approximately 8,000 cubic yards of dredge materials will result from the channel dredging project. (Figure 3)

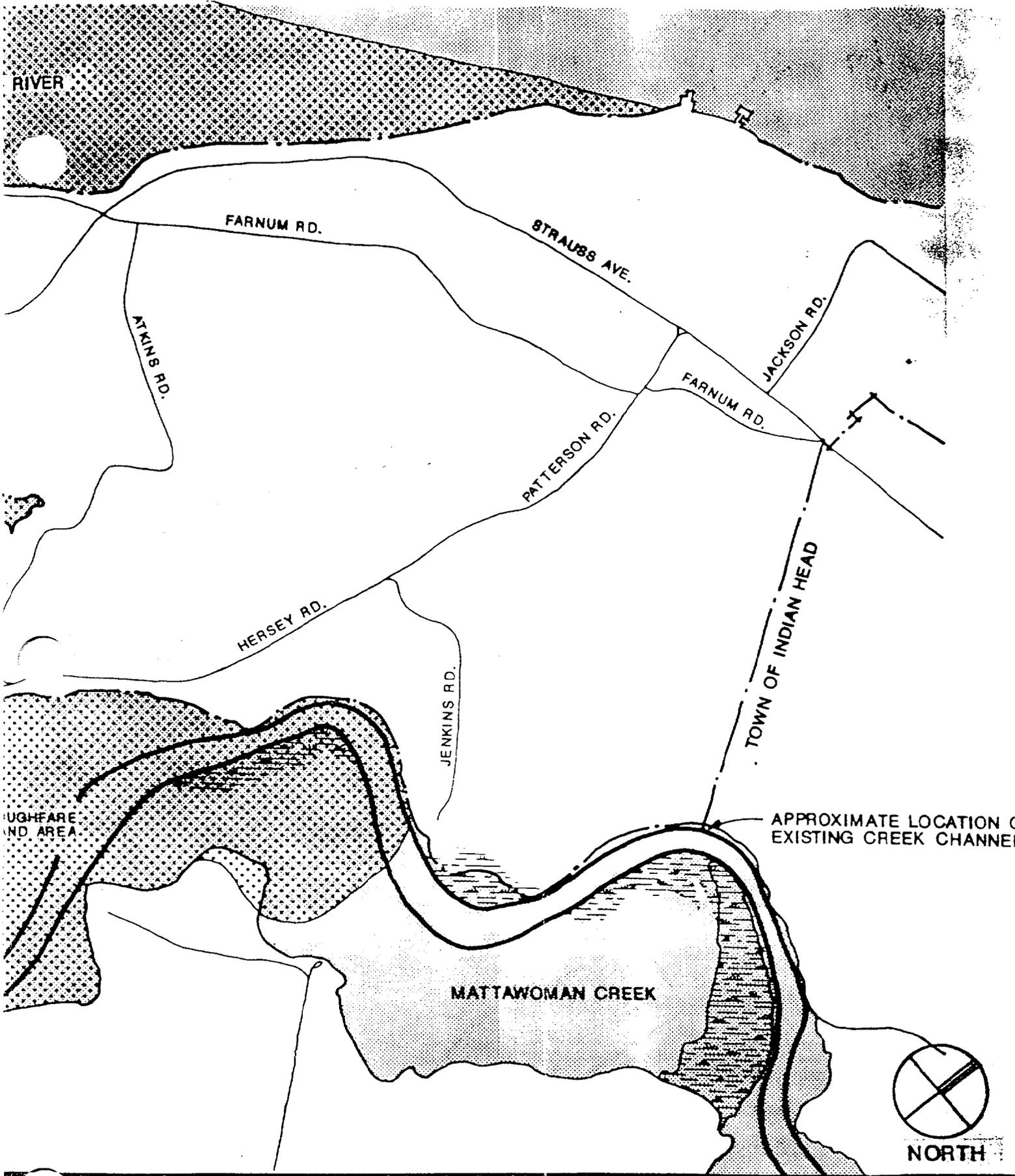
In these two associated actions, NOS Indian Head/U.S. Navy will be responsible for the reduction of the danger zone in Mattawoman Creek, and subsequent change to the Code of Federal Regulations. The State of Maryland/Department of Natural Resources (DNR) will be responsible for channel dredging, disposal of the dredge material, the maintenance and marking of the new channel with buoys, and maintenance of the entire Mattawoman Creek channel.

The results of these associated actions are: the creation of a danger zone in Mattawoman Creek that adequately addresses the U.S. Naval Ordnance Station's mission in the national military objective of maintaining national security; the ability of the U.S. Navy to fulfill its responsibility to maintain public safety within Mattawoman Creek; the ability of the State of Maryland to serve the public by providing boat launching and boat mooring facilities at the Sweden Point Marina; and the safe disposal of dredge materials according to federal and state regulations.



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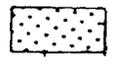
FIGURE 2 - The Danger Zone



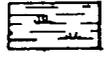
LEGEND



WATER BODIES

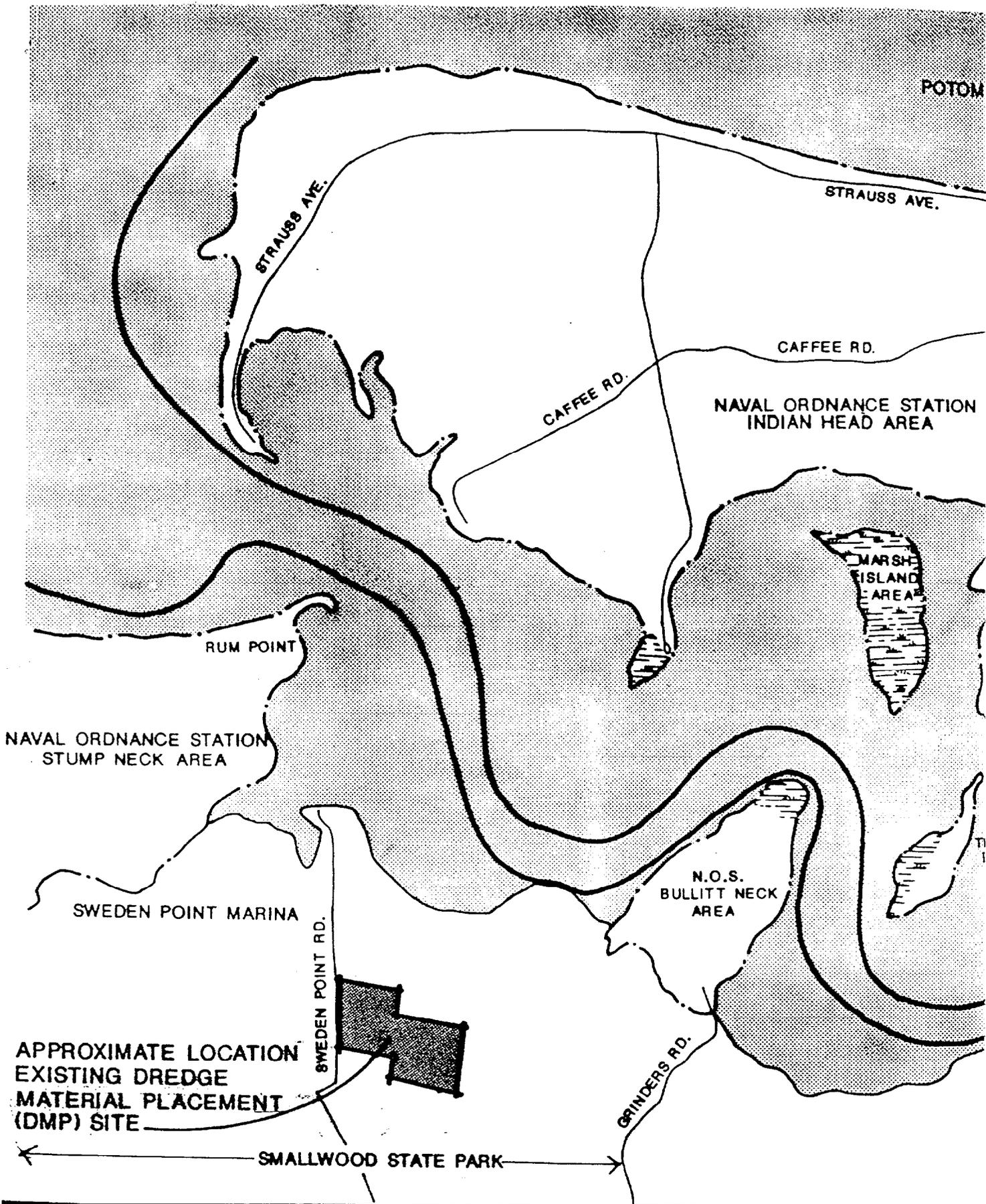


DANGER ZONE



MARSH OR SWAMP

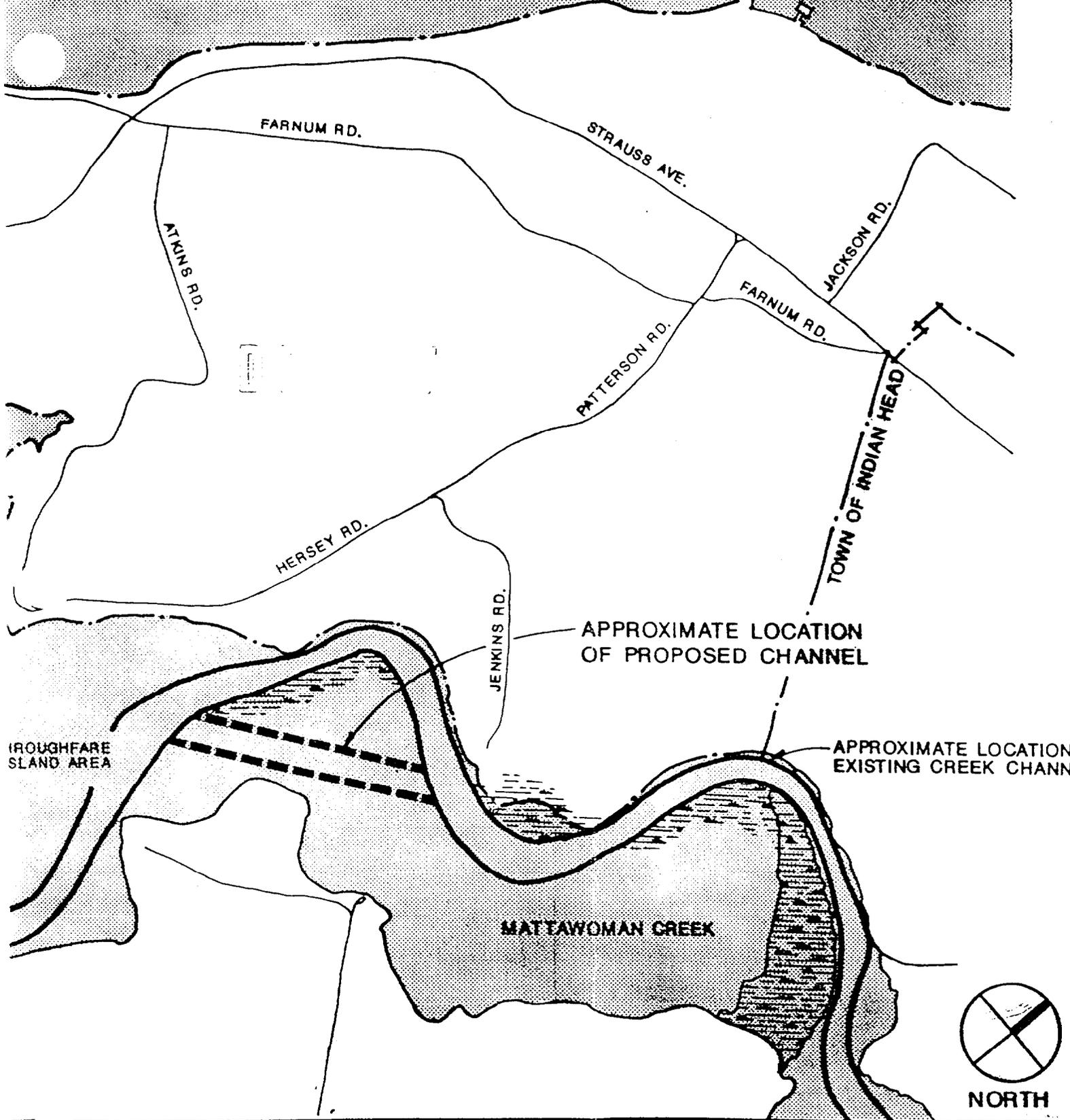




N.O.S. INDIAN HEAD, MARYLAND ENVIRONMENTAL ASSESSMENT

FIGURE 3 - Proposed Channel Dredge / Existing DMP Site

AD RIVER



LEGEND



WATER BODIES



MARSH OR SWAMP



B. U.S. Naval Ordnance Station (NOS) Indian Head, Maryland

The U. S. Naval Ordnance Station (NOS) at Indian Head, Maryland was established in 1890 as a Naval Proving Ground. Its location on the peninsula ("Cornwallis Neck") formed by the Potomac River and Mattawoman Creek was chosen for its remoteness. The first mission of NOS Indian Head was to test and "prove" powder purchased by the U. S. Navy and guns produced at the Washington, DC Navy Yard. In 1900, a smokeless powder plant was constructed at the station. The station then manufactured single-base propellants and conducted experimental operations. Additional property at Stump Neck, across Mattawoman Creek and along Chicamuxen Creek to the south, was purchased as an annex in 1901, to ensure public safety in the firing and testing of larger guns. In 1921, all proving ground facilities were moved from Indian Head to the U.S. Navy facility at Dahlgren, Virginia. At that time, Indian Head was redesignated as the Naval Powder Factory; in 1958, its name was changed to the Naval Propellant Plant. Indian Head became a Naval Ordnance Station in 1968. At the same time, Bullitt Neck and Rum Point, across Mattawoman Creek from Cornwallis Neck, were purchased by the Department of the Navy. From the early 1970s, the function of NOS has shifted from an earlier role as a predominantly production facility to one as a highly technical engineering support operation. At the same time, however, the production of propellant and specialty chemicals, and related design and production, are significant NOS functions.

As stated in the 1988 Draft Master Plan Update, the current, primary mission of NOS Indian Head is to:

Provide quality and responsive technical, engineering, manufacturing, and material support to the Fleet and other operating forces for combat subsystems, equipment, and components in the areas of gun, rocket, and missile propulsion, energetic chemicals, missile weapon simulators and trainers, ordnance devices, air crew escape propulsion systems, warheads, special weapons, and explosives and to perform other tasks as assigned by the Commander, Naval Sea systems command. Provide Naval station mission-essential services as assigned.

In addition, the mission of NOS Indian Head includes the provision of technical support, production capability, and technical expertise in all phases of weapons systems propulsion, explosives development, and propellant and explosive chemistry. NOS also houses and supports two major tenant activities, the Naval Explosive Ordnance Disposal Technology Center (NAVEODTECHCEN) and the Naval School, Explosive Ordnance Disposal (NAVSCOLEOD). The NAVTECHCEN provides research and development and develops procedures for the safe handling and disposal of explosive ordnance. The Naval School provides training in the recovery, evaluation, and safe disposal of explosive ordnance to U.S. and foreign military personnel and selected civilians.

The various munitions manufacturing, testing, and storage facilities at NOS include storage magazines, explosives processing plants, and test detonation ranges. Each of these facilities has established around it an Explosive Safety Quantity Distance (ESQD) arc to provide for personnel safety and facility protection. NAVSEA OP5 regulations govern the establishment of ESQD arcs and the overall handling and storage of explosive materials. (See Appendix) Under these regulations, a Quantity Distance is defined as the relationship between the quantity of material stored or used and the distance required to provide a given level of protection to individuals, buildings, and/or activities. The Quantity Distances are based on acceptable levels of risk for different types of exposure. The enforcement of ESQD arcs and the related placement of activities that require these arcs do not guarantee absolute safe distances but rather seeks to reduce the risk of harm to persons or property.

There are various ESQD arcs used at NOS Indian Head. These arcs are calculated based on the amount and type of material in question, the type of operation occurring at the building or area in question, and the construction and use of adjacent facilities. Ordnance manufactured and/or stored at NOS Indian Head includes warheads, missile propulsion units, cartridge-actuated devices/propellant-actuated devices (CAD/PAD), rocket catapults, casting powder, and nitrate esters.

Approximately two-thirds of the facility at NOS falls within an ESQD arc known as an Inhabited Building Distance (INH) Arc, as established by NAVSEA OP5. These regulations state that:

Inhabited building distances are the minimum permissible between an ammunition or explosives location and an inhabited building which is any structure, other than an explosives operating building, that is occupied in whole or in part as a habitation or place of assembly by human beings. Inhabited building distances shall also be provided between ammunition and explosives locations and the boundary of a shore establishment or the nearest point beyond the boundary where inhabited buildings could be erected.

The radius of each Inhabited Distance Arc varies, dependent upon the material stored and the potential hazard from fire or explosion. Most INH arcs at NOS are, however, 1,250 feet in radius. *1,000 to 1,500*

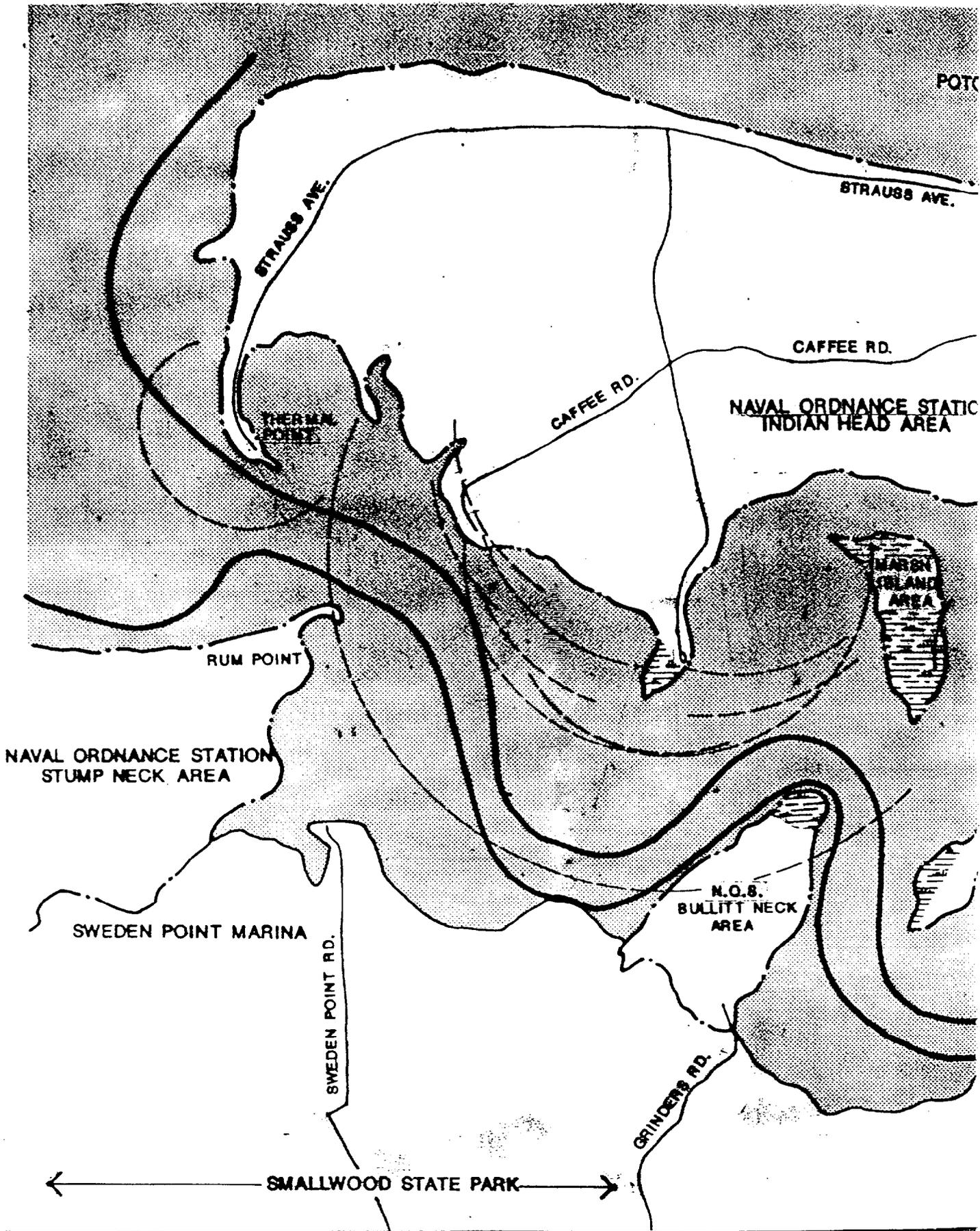
In addition, Public Highway Distance (PH) Arcs have been established around certain buildings at NOS Indian Head. Under NAVSEA OP5, a minimum distance (or arc) can be established between a public highway and a site where ammunition and explosives are located. The distance of a PH arc is set, under NAVSEA OP5, at 60 percent of the INH arc. The public highways include public streets, roads, highways, navigable streams, and passenger railroads, and include roads on military installations that routinely carry through public traffic. Again, the distance covered by each of these arcs varies, dependent upon the distance of the INH arcs, with the greatest distance being 1,890 feet at NOS.

The Inhabited Distance (INH) arcs and Public Highway (PH) arcs always exist; other arcs are instituted only when hazardous operations are occurring.

In April 1990, NOS Indian Head conducted an analysis of Potential Explosive Sites (PES) that encumber Mattawoman Creek with ESQD arcs. In addition, NOS performed a hazards, or "maximum credible event," analysis of the High Bulk Density Nitroguanidine (HBNQ) manufacturing process at NOS. The purpose of these analyses was to re-examine and reaffirm the ESQD arcs around certain facilities located along or near Mattawoman Creek, with certain arcs extending into the existing boat channel in the creek. (Figure 4)

The specific explosive hazards on Mattawoman Creek include the following:

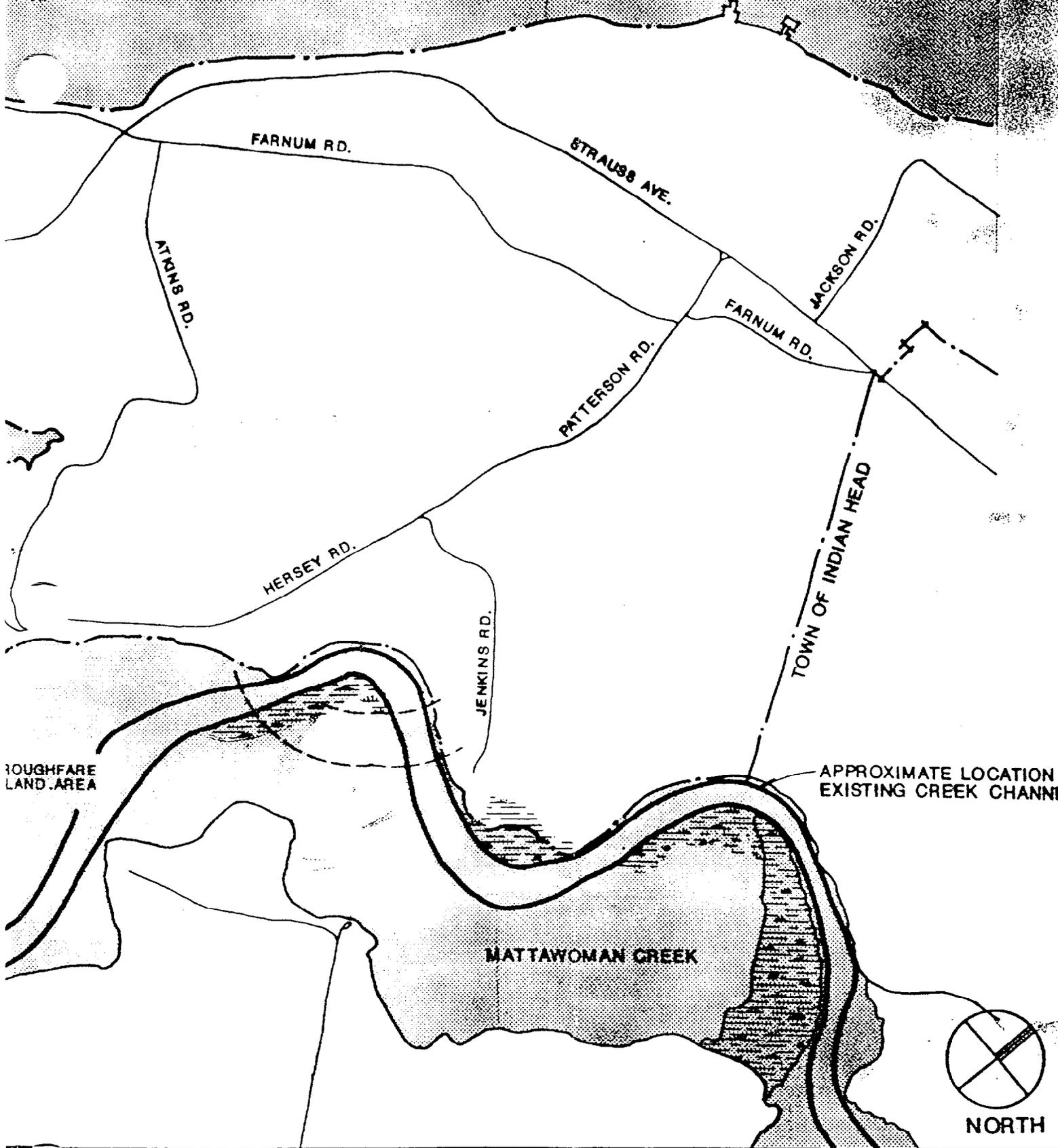
1. Thermal Treatment Area: This area is used for the thermal treatment of scrap propellants and explosives produced as by-products of plant operations. Because the thermal treatment area is located on a spit of land jutting into Mattawoman Creek, ESQD arcs extend into the creek and boat traffic must comply with the danger zone regulations, when they are being enforced by NOS. For the most part, the Thermal Treatment Area is operated on weekdays, ~~with operations taking place~~ at approximately 11:00 a.m. Before the thermal treatment occurs, a siren is sounded and the creek is checked to ensure that no boats are within the ESQD arcs.



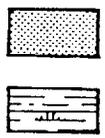
N.O.S. INDIAN HEAD, MARYLAND ENVIRONMENTAL ASSESSMENT

FIGURE 4 - Explosive Safety Quality Distance (ESQD) Arcs

CO RIVER



LEGEND



WATER BODIES

MARSH OR SWAMP



ESQD ARCS

2. Group Nine Magazine Area: These magazines are used for the storage of high explosives. Up to 250,000 pounds of Class 1/Mass Detonating materials are stored in them. The ESQD arcs for these buildings are 3,150 feet in radius. These arcs extend well into Mattawoman Creek and cover the channel at this location.
3. Small Motor Test Building: This building, with static firing bays opening toward Marsh Island and Mattawoman Creek, projects an ESQD arc of 1,250 feet. This arc does not cover the channel, however. The open side of the firing bays is protected by heavy screens to catch large metal parts that might occur during static firing.
4. High Bulk Density Nitroguanidine (HBNQ) Manufacture: This facility processes high bulk nitroguanidine (HBNQ) from bulk crystals dissolved in water and recrystallized. A pulverizer is used in this process. The ESQD arc for this facility has been established as 1,250 feet. The arc projects into Mattawoman Creek and over the existing channel. This encumbrance of the creek channel by the ESQD arc established at the HBNQ facility effectively closes off boat traffic in this portion of Mattawoman Creek, when the danger zone regulations are being enforced.

C. The Danger Zone

Under the Code of Federal Regulations (33CFR334.240), in 1961 the U.S. Army Corps of Engineers established a danger zone, relative to the operations at the U.S. Naval Ordnance Station at Indian Head, over Mattawoman Creek and Chicamuxen Creek, and portions of the Potomac River, at and near NOS Indian Head. (See Appendix) The activities occurring at NOS include the movement, testing, and/or disposal of hazardous materials and ammunition. Controlled explosions are also carried out at NOS, with an additional potential for accidental explosions. ~~These activities are usually carried out during weekdays.~~

The danger zone extends across the full width of Mattawoman Creek, from the eastern boundary of the station to the mouth of the creek at the Potomac River. This shore-to-shore boundary for the danger zone was decided upon in 1961 when there was little development in this portion of Charles County and a generalized boundary could be easily described in navigational charts. The danger zone also extends into the Potomac River, up-river and down-river to encompass the facilities at NOS, including Stump Neck, that require ESQD arcs.

The danger zone was established to ensure the full use of NOS Indian Head facilities and operations by the U.S. Navy, and to warn and protect the public from possible hazards resulting from those operations.

Under the danger zone regulations, enforced by the Commanding Officer of the Naval Ordnance Station at Indian Head, no private vessel or boat may enter or remain in the zone when hazardous operations are occurring at any of a number of facilities at NOS. Enforcement of the danger zone is indicated by a warning signal (flashing lights and/or horn). Warning signs are also posted along the shoreline to alert boaters that the danger zone may be enforced at any time. Once the warning signals are given, the boats must leave the creek. In general, the warning signals last for 30-60 minutes.

The enforcement powers granted to the Commanding Officer of NOS include the discretion to permit boats at any location in the creek when NOS activities do not warrant the danger zone limitations at that time.

In April 1990, NOS studied the ESQD risks/maximum credible events presented by 44 potential explosion sites on-station with ESQD arcs encumbering Mattawoman Creek. This analysis, contained in a Memorandum on Mattawoman Creek Encumbered by Station Operations and dated 7 April 1990, concluded that NOS has

sufficient authority under the Danger Zone designation for the Mattawoman Creek, 33 CFR 334.240, to control and protect the public from firings consisting of controlled explosions within the Danger Zone and controlled shore operations or accidental explosions hazardous to vessel traffic.

The analysis was undertaken to reassess and reconfirm the need for various ESQD arcs at Indian Head, including those that extend into Mattawoman Creek.

D. Sweden Point Marina

The State of Maryland, Department of Natural Resources (DNR), owns and operates the General Smallwood State Park directly across Mattawoman Creek from NOS Indian Head and immediately east of the Stump Neck annex. The park occupies approximately 630 acres of land and its boundaries include 1.5 miles of shoreline along Mattawoman Creek.

Smallwood State Park is a popular facility. In 1987, almost 160,000 persons visited the park, and over 100,000 visitors were recorded for the first eight months of 1988.

Beginning in 1976, Smallwood State Park provided access to the creek and the Potomac River to the west by way of six concrete launching ramps at Sweden Point for day-boaters. These ramps had formerly been a privately-owned facility; the facility was bought by the state for public use. Construction at the park in 1976 included the addition of piers and a bulkhead. The number of boat launchings from the park greatly increased during the 1980s; in 1982, there were a total of almost 1,300 boat launchings; in 1983, over 3,000 boats were launched from the marina, while by 1985, over 5,600 boats were launched there. In 1987, the estimated total number of launchings was almost 11,400 and almost 15,000 boat launchings from the Sweden Point Marina were recorded in 1988. The majority of launchings occurred during summer weekends, although there was also a high number of launchings during the bass fishing season, in April and May. In 1987, it was estimated that boat traffic generated by the boat launching and gasoline sales facilities at Smallwood State Park accounted for only one-fourth of the total number of boat trips along Mattawoman Creek. Most of the boats launched from the park headed downstream to the Potomac River, with about one-third of the boats heading east toward the Town of Indian Head.

The 1984 Maryland Recreation and Open Space Plan indicated that 77 percent of the statewide demand for public boat slips at that time was in the southern Maryland/suburban Washington, DC area; almost 65 percent of that demand was in Prince George's County. Although these data are somewhat out of date, they are indicative of recent strong demand for boating facilities such as those at the Sweden Point Marina.

During the month of June 1989, NOS Indian Head tabulated boat sightings along Mattawoman Creek through the use of time-lapse video photography set up at the Thermal Treatment Area and the HBNQ facility. During the four-week observation period at the Thermal Treatment Area, a total of 3,284 boats were recorded; during the one-week observation period at the HBNQ facility, 684 boats were recorded. In both instances, there were over four times as many boats observed on the weekends as on the weekdays. ~~(It should be noted that NOS testing and burning activities do not occur on the weekends.)~~ Although these counts were of the number of boats within the creek, and not of launchings

at the marina, the NOS data seem to imply a further increase in boat traffic in Mattawoman Creek from the data available for 1987.

The Maryland Department of Natural Resources (DNR), Waterway Improvement Program's long-range plan is to improve and expand the existing facilities, to include a 250-slip marina with support facilities, in order to meet an increasing demand for public boating opportunities along or near the Potomac River. Boats to be accommodated would include 20-foot to 45-foot power boats and sailboats. Included within the State development program are: stone revetments to protect the shoreline; dredging at the marina site and disposal of the dredge material into upland dredge disposal areas; a marina services building; a floating pier system, containing a maximum of 250 boat slips with utilities; a floating breakwater; a timber breakwater; an access road; a 130-car parking area; and dry boat storage for a minimum of 75 boats. In 1985 and 1986, DNR received a permit from the U.S. Army Corps of Engineers, the DNR, and the Maryland Department of the Environment to complete the marina expansion project. (See Appendix) In 1990, 50 of the new slips were constructed, as well as a breakwater, a marina services building, and additional roads and parking. Permits were also approved in 1990 to dredge an area to provide improved access to the existing fuel dock and boat ramp facility. This project has not proceeded, however, because of budgetary constraints. In addition, any additional construction of boat slips at the marina will only be completed with the concurrence of NOS.

There is an enforced six-knot speed limit on Mattawoman Creek, east of Marsh Island, with marine police facilities located at Smallwood State Park.

E. Dredging Project and Dredge Material Placement (DMP) Site

Under State regulations, dredging is defined as the "removal or displacement by any means of soil, sand, gravel, shells or other material, whether of intrinsic value or not."

The existing channel in Mattawoman Creek dates back to at least 1862, as is shown on the Nautical Survey of the Potomac River, published in 1906 by the U.S. Coast and Geodetic Survey.

The State of Maryland Department of Natural Resources, Boating Administration proposes to relocate the existing channel in Mattawoman Creek, at the point where that channel currently follows the NOS Indian Head shoreline opposite Buildings 497 and 498. The new channel, to be located south of the existing channel, is to be approximately 2,000 feet in length, 50 feet in width, and four feet in depth at the mean low water mark; approximately 8,000 cubic feet of dredge materials will be generated. The existing channel will remain; however, it will be closed to the public, WHILE THE DANGER ZONE LIMITS ARE IN EFFECT AND THE AREA IS ENCLOSED. HBNQ FACILITY

DNR has performed bathymetric surveys of both Mattawoman Creek and the area of the proposed relocated channel. Although the existing channel in the vicinity of the HBNQ facility is to a depth of up to almost 19 feet in some locations (the more common depth is between five and eight feet), the creek depth at the proposed channel location is currently only approximately two to four feet.

Dredging will be performed hydraulically. (Periodic maintenance dredging will also be completed by DNR if deemed necessary.) It is anticipated that maintenance dredging will be required every six to ten years, dependent upon the degree of natural occurrences impacting the channel.

The dredge material (silt and sand) from the new channel will be pumped, by way of a continuous pipeline, from the dredge site into Basin B, the larger of the existing dredge material placement (DMP) sites located at the Sweden Point Marina in Smallwood State Park. This dredging, and the disposal of the dredge material, will be performed in a method identical to that approved by DNR and the U.S. Army Corps of Engineers in 1985 and 1986 and proposed by the Maryland Department of Natural Resources for the expansion of the Sweden Point Marina. (See Appendix) The DMP site has sufficient

capacity to receive the dredge material that will result from the proposed dredge of the realigned channel in Mattawoman Creek, off NOS Indian Head.

The DMP site meets all requirements of the U.S. Environmental Protection Agency and the Maryland Department of the Environment. It was granted a Wetlands License by the Maryland Board of Public Works in August 1986; at the same time, the DMP site was approved by the U.S. Army Corps of Engineers. The DMP site is designed in such a manner as to meet or exceed the water quality standards required in the State Water Quality Certificate.

II. ALTERNATIVES TO PROPOSED ACTION

A. Reduction of the Danger Zone/No Action

The Commanding Officer at NOS Indian Head, empowered to enforce the federally-mandated danger zone limitations in Mattawoman Creek, has authorized the continued use of private boats in the immediate vicinity of the Sweden Point Marina, since NOS activities present no hazard to that portion of Mattawoman Creek. With the marina area "excused" from the danger zone, the danger zone boundaries will be redrawn. ???

Under the "No Action" alternative, the existing limits of the danger zone would be unchanged. The danger zone designation could remain across the entire width of Mattawoman Creek, including the Sweden Point Marina, thus potentially limiting public boating at and near the marina.

The No Action alternative to reduction of the danger zone is not consistent with the Naval Ordnance Station's desire to permit public use of the facilities at the Sweden Point Marina, nor does it reflect current safety requirements at the Naval Ordnance Station at Indian Head.

B. Dredge Second Channel/No Action

The State of Maryland proposes to dredge a second channel in Mattawoman Creek opposite the HNBQ facility. The purpose of this action would be to reroute boat traffic away from the ESQD arcs generated by the processing activities carried on at that facility, when the Commanding Officer at NOS determines that these activities might pose a hazard to boaters in the existing channel. HBNQ

The HBNQ manufacture functions at NOS require continuation of the ESQD arcs. The existing channel running near the HNBQ facility is encumbered by these ESQD arcs. As a result, no boat traffic is permitted in a portion of the channel while the danger zone is being enforced. If a second channel were not provided, private boats would occasionally not be allowed in this portion of the creek. This No Action alternative would be inconsistent with NOS Indian Head's wish to foster and encourage the continued use of Mattawoman Creek by small private boats.

The effect of the No Action alternative would be a disregard for both the current safety requirements at NOS Indian Head and the recreation requirements of the public that uses Mattawoman Creek.

III. EXISTING ENVIRONMENT

A. Study Area

Naval Ordnance Station (NOS) Indian Head is located in the northwestern portion of Charles County, Maryland, approximately 25 miles southwest of Washington, DC and immediately west of the incorporated Town of Indian Head. (Figure 1) The southern boundary of NOS is Mattawoman Creek; the northern and western boundaries are the Potomac River. The Sweden Point Marina is located in Smallwood State Park, across Mattawoman Creek from NOS and north of State Route 224. East of the marina is the promontory known as Bullitt Neck, a 47-acre, reservation that is part of NOS Indian Head. Immediately west of the Sweden Point Marina is Stump Neck, a 1,171-acre area acquired by NOS in 1901. Marsh Island (25 acres in tidal swamp), Hog Island (seven acres), and Thoroughfare Island (10 acres) in Mattawoman Creek also are part of NOS Indian Head.

1. Charles County

The 1990 Charles County population is approximately 101,150, or 40 percent greater than its 1980 population of just under 73,000. This increase reflects the county's growing importance in the Washington metropolitan area, especially as a location for affordable housing; significant commercial and industrial development has also occurred. The area surrounding and east of the Town of Indian Head is one of the more developed portions of Charles County.

One result of this accelerated growth of Charles County, reflective of the growth of the Washington, DC area in general, is an increased demand for public recreation facilities, such as those available at Smallwood State Park.

In the 1989 Charles County Comprehensive Plan, the Mattawoman Sewer Service Area, which includes the study area, is slated to accommodate up to an additional 40,000 residents by the year 2010, or up to 75 percent of the county's projected population growth over the next 30 years. Development within this large area is projected to occur as relatively high density residential and nonresidential uses. Thus, the demand for recreation areas and facilities such as that at Smallwood State Park will further increase in coming years.

The State-owned lands at Smallwood State Park and the Mattawoman Creek/Mattawoman Run corridor have been designated in the Comprehensive Plan as Resource Protection Districts. This designation reflects the concern by the county to preserve its natural beauty and environmental resources, especially along its many waterways. In these districts, development is to be restricted to very low residential densities, with stringent protection of forest lands and habitats. Public access to the waterfront, such as is now offered at the Sweden Point Marina, is to be encouraged.

The 1989 Comprehensive Plan indicates that, by the year 2010, Route 210 to Indian Head and Route 224 past Smallwood State Park will be significantly improved and their traffic-carrying capacity increased. These transportation improvements will result in better public access to, and thus likely greater use of, the Mattawoman Creek recreation facilities.

2. Town of Indian Head

NOS Indian Head abuts the Town of Indian Head on the west. Indian Head originated as housing built by the U.S. Navy for its employees at the Naval Ordnance Station. The town is now developed with a range of residential, commercial, and industrial-type uses, and is the most significant developed area for the western portion of Charles County.

The Town of Indian Head has experienced large increases in population and development in recent years. In 1980, the population of Indian Head was 1,381; by 1985, its population had increased to 1,612; this number more than doubled by 1990, when its population was 3,541. The town anticipates about 4,000 residents in 1995, based on building permits and available vacant land. Much of this growth in Indian Head mirrors that of Charles County and the Washington, DC area.

Both the Town of Indian Head 1988 Comprehensive Plan and the Zoning Ordinance recommend medium density residential land uses abutting the Naval Ordnance Station south of Route 210, and open space/recreation along the Mattawoman Creek. Adjacent to Mattingly Park is a small, privately-owned boat launching dock and fishing area. During the warm months, the boat ramp handles about 25 boats each weekday, and about 50-70 boats daily on the weekends.

The town is planning a Nature Trail along Mattawoman Creek and the associated wetlands, marshes, and woodland. This trail will also connect Mattingly Park and the private boat dock with another town park farther east.

Indian Head benefits economically from the various fishing events at the Sweden Point Marina and the fishing derbies in Mattawoman Creek, with food sales and motel room rentals.

B. NOS Indian Head

The Naval Ordnance Station at Indian Head covers approximately 3,389 acres. The total land area includes almost 1,975 acres within the Indian Head peninsula; approximately 1,170 acres at Stump Neck; and the remainder divided among Bullitt Neck, Marsh Island, Hog Island, and Thoroughfare Island. The Stump Neck peninsula is primarily used for ordnance disposal, research, and training. It also contains some administrative facilities and military housing. Bullitt Neck is an explosion safety hazard buffer area that also provides a protected wildlife refuge and a timber production area. Marsh Island is a tidal marsh providing a waterfowl sanctuary. Thoroughfare Island contains a mixture of swamp and forest and contains no land use; it is used as a waterfowl sanctuary. NOS Indian Head also contains 161 acres of land in railroad right-of-way.

The Fiscal Year 1991 military and civilian population for NOS Indian Head is 3,088. The NOS activities include staff departments (military operations, comptroller, safety, security, and quality assurance); industrial operations (ordnance, manufacturing technology, and test and evaluation); product support (supply, CAD/PAD, and weapons simulation); and resource management (data processing, resources and planning, civilian personnel, public works, and technical information). NOS detachments are found in Alester, Oklahoma and Yorktown, Virginia.

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C. Natural Features

1. Water Bodies

NOS Indian Head occupies the Cornwallis Neck peninsula bounded by the Potomac River and Mattawoman Creek. The Potomac River is a salt water, tidal tributary of the Chesapeake Bay. Mattawoman Creek, and Chicamuxen Creek, south of the NOS Stump Neck annex, are important minor waterways leading to and from the Potomac River. NOS Indian Head, on Cornwallis Neck, is within the Potomac River drainage basin; Stump Neck, NOS at Rum Point and Bullitt Neck, Smallwood State Park (including the Sweden Point Marina), and the greater part of the study area in general are within the 71-square mile Mattawoman Creek drainage basin. A number of small streams at and near NOS Indian Head drain directly into Mattawoman Creek, making up that

drainage basin. All water bodies within the study area, however, ultimately drain into the Potomac River. That portion of Mattawoman Creek opposite both NOS and the Sweden Point Marina is tidal and saline.

2. Flood Plain

Mattawoman Creek is within the large flood plain associated with the Potomac River. The U.S. Department of Housing and Urban Development, Federal Emergency Management Agency classifies the creek as Flood Zone A6, or an area of 100-year flood with a base flood elevation of six feet. The flood zone also extends over the Sweden Point Marina.

3. Wetlands

Under definitions accepted by the U.S. Army Corps of Engineers and the Environmental Protection Agency, wetlands are

areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

In general, wetlands encompass a wide variety of marshes, swamps, and bogs that lie in depressions or along rivers, lakes, and coastal waters. They lie between permanently flooded deep waters and well-drained uplands. Wetlands provide fish, waterfowl, bird, and wildlife habitats, as well as protect environmental quality and provide a range of socio-economic values. They provide natural flood control and protect water quality through trapping sediments and using nutrients in the water.

Mattawoman Creek has a vast network of tidal flats, tidal wetlands, and swamp areas. The Charles County Comprehensive Plan identifies a large area of major wetlands along Mattawoman Creek, generally opposite and east of the Town of Indian Head and Harrison Cut, and northeast along the Prince George's County boundary. All of Marsh Island is a wetland, as are portions of Thoroughfare Island and Hog Island, as well as the tip of Bullitt's Neck and Burning Point on the NOS peninsula. The vegetation in the wetland areas help to reduce the erosion of the shoreline by mitigating or partially absorbing the force of waves produced by wind, storms, and boat wakes.

The tidal and non-tidal wetlands of Mattawoman Creek contributed to the creek's designation by the State of Maryland as an Area of Critical State Concern in January 1981. This designation led to the later delineation of a state Natural Heritage Area in the creek, east of NOS Indian Head and the Town of Indian Head, outside the area of the proposed associated actions.

4. Vegetation

NOS Indian Head contains over 1,100 acres of forested land, on the Indian Head peninsula, at Stump Neck, and on Bullitt's Neck. The major woodland types at NOS are pine (including Virginia pine and loblolly pine), oak (including red oak, white oak, and chestnut oak), yellow poplar, sweetgum, and various hardwoods (such as hickory, beech, ash, black cherry, and maple). Other vegetation at NOS includes that found in the open fields and grassy areas, shrub areas, coastal areas, and marshlands.

NOS Indian Head has established a Forest Management Plan. Under this plan, the NOS shoreline of Mattawoman Creek has been designated a Streamside/Shoreline Zone, while Marsh Island, Thoroughfare Island, and the Burning Point peninsula have been designated Wetland Protection Zones.

That portion of Mattawoman Creek generally east of Hog Island and the Town of Indian Head has been designated as a Natural Heritage Area (NHA)/Area of Critical State Concern by the State of Maryland, under its Natural Heritage Program. Development or other disturbances within the NHAs are not permitted unless the proposed activity will have no adverse impacts on the habitats and "that the structure and overall species composition of the plant and animal communities will be retained." None of the portion of the creek opposite NOS and the Sweden Point Marina, however, is in the Natural Heritage Area.

Designation of the Natural Heritage Areas near NOS Indian Head and implementation of the Forest Management Plan at NOS Indian Head fulfill, in part, requirements of the Chesapeake Bay Critical Area Criteria enacted by the State of Maryland in 1984.

5. Wildlife

There are a number of bird species located on land that is part of NOS Indian Head, including the osprey, great blue heron, red-shouldered hawk, belted kingfisher, Eastern bluebird, mallard, American black duck, wood duck, and others. (A list of breeding birds within the U.S. Geologic Service Indian Head quadrangle are listed in the Appendix.)

In addition, there is a large deer population at NOS, as well as a range of amphibians and reptiles and a number of common mammals (such as opossum, mole, squirrel, mouse, raccoon, woodchuck, muskrat, rabbit, and others).

NOS Indian Head, in cooperation with the U.S. Fish and Wildlife Service and the State of Maryland, implemented a program of fish and wildlife conservation at NOS in 1980. This program is contained in the Wildlife Management Plan for NOS Indian Head. Under a series of management goals and objectives, that plan calls for NOS Indian Head to manage its various environmental resources to "maintain diverse habitats capable of supporting healthy populations of fish, game and nongame wildlife."

6. Aquatic Environments

The tidal wetlands along Mattawoman Creek in the vicinity of NOS Indian Head provide important spawning grounds for a number of fish. Of great significance are the anadromous fish (marine fish that spawn in fresh water) found in the Potomac River and Mattawoman Creek. Largemouth bass spawn in the river and creek near the Town of Indian Head and the waters off NOS. White perch spawn in the creek off NOS and Smallwood State Park, while yellow perch spawn about four miles upstream. Alewife and blueback herring spawn approximately one mile upstream. Other spawning areas nearby support spot, flounder, herring, striped bass, croaker, and gray trout. Mattawoman Creek also supports channel catfish and bluegill. These fish species indigenous to Mattawoman Creek are caught for sport and for commercial purposes. A number of bass fishing tournaments originate at Smallwood State Park each year.

The Chesapeake Bay and its tributaries have traditionally provided a broad range of aquatic grass beds and submerged plants. These submerged aquatic beds provide overwintering areas for migratory waterfowl, as well as fish spawning areas. Over time, the extent of these submerged beds has declined in the bay, because of a range of natural and man-made conditions, primarily point and non-point source pollution. The federal Environmental Protection Agency has identified areas of submerged aquatic vegetation (SAVs) within Mattawoman Creek. In 1989, areas of coontail (*Ceratophyllum demersum*) and hydrilla (*Hydrilla verticillata*) were recorded by EPA at the juncture of the Potomac River and Mattawoman Creek and between Marsh Island and the NOS shore line. An earlier, 1985

EPA study showed the SAV species wild celery (*Vallisneria americana*) in two locations of tidal wetlands east of NOS near Nelson Point and the Perry Wright area of Indian Head, opposite Nelson Point. Other plants known to comprise the tidal wetlands/marshes around NOS include rushes, sedges, arrow arum, bullhead lily, lotus, buttonbush, and wild rice.

In June 1989, the Maryland Department of Natural Resources, Waterway Improvement Division, conducted a wetlands vegetation survey of the shallow areas of Mattawoman Creek. These areas, other than the tidal mud flats, have emergent herbaceous plant growth, characterized by spatterdock (*Nuphar luteum*). Upstream, away from the proposed location of the new channel, there are stands of pickerelweed (*Potederia cordata*) and cattail, in addition to spatterdock. The only submerged aquatic vegetation (SAVs) found by DNR in the overall study area at that time were eurasian watermilfoil (*Myriophyllum spicatum*) floating on the water surface near Smallwood State Park. No SAVs were found in the area of the proposed channel.

7. Water Quality

The Mattawoman Creek drainage system covers 79 square miles in southern Prince George's County and northern Charles County. The first 25 miles of the creek are free-flowing, while the final five miles are in a tidal embayment. That portion of Mattawoman Creek that is opposite NOS Indian Head and Smallwood State Park is classified as a "tidal fresh stream." In the late summer and early fall, the water is somewhat salty. Water quality in the creek at this location has been described as only "fair."

Surface runoff from NOS is transported to the Potomac River and Mattawoman Creek; this runoff can be especially rapid, given the steeply-sloped topography of the peninsula. Sediments, metallic contaminants, and toxic substances, known to generate from various operations at NOS, are quickly carried into the Potomac and the creek. These discharges have been found to encourage the growth of algae and biota tolerant of pollution stress. (This issue is discussed at greater length in Section V of the Environmental Assessment and in the Appendix.)

The vast network of wetlands in Mattawoman Creek contribute to its surface water quality, in that wetlands filter out impurities in the water.

8. Endangered/Threatened Species and Habitats

Bald eagles are the only federally-listed endangered species known to frequent NOS Indian Head. A pair of bald eagles fledged two chicks at the Stump Neck Annex in the spring of 1989. In addition, the Potomac River in general is a potential habitat for the shortnose sturgeon (*Acipenser brevirostrum*) and a number of sea turtles; these species are also federally-listed.

Charles County and the Maryland Department of Natural Resources have advised that there are no bald eagle nest sites or any colonial waterbird nesting sites located near the dredge disposal area.

The Maryland Natural Heritage Program has identified the American lotus (*Nelumbo lutea*) as a threatened species located in the Mattawoman Creek Critical Area, in a shallow backwater area east of the Town of Indian Head, and east of both NOS and the Sweden Point Marina. (See Appendix) The creek is thought to be the only site for this species on the Maryland Western Shore; the creek's environment east of NOS Indian Head is felt to be an excellent habitat for the maintenance or enhancement of the plant. An increase in recreational boating or the use of power boats beyond the main Mattawoman Creek channel past Indian Head could damage the American lotus plants. Maryland has also identified a number of state-listed endangered species that are thought to inhabit Stump Neck near the Chicamuxen Creek. (The Chicamuxen Creek National Heritage Area,

established in 1987, contains these species.) These species include: the rainbow snake (*Farancia erythrogramma*), the sensitive joint-vetch (*Aeschynomene virginica*), and the scaly blazing-star (*Liatris squarrosa*). The Natural Heritage Program could not confirm that these species were also located on the Indian Head peninsula; however, a population of red-berried greenbrier (*Smilax walteri*), also a state-listed species, was confirmed at the main area of NOS Indian Head.

None of these species is known to occur at either the proposed location of the new channel or the existing Dredge Materials Placement site.

D. Built Features

1. Land Use

a. Charles County

Smallwood State Park and Sweden Point Marina are located off Maryland Route 224 along the southern shore of Mattawoman Creek, in southwestern Charles County. The major land use in this area is low-density single-family residential; there are scattered agricultural properties in the area also. Under the Charles County Comprehensive Plan, much of this area would be included in the Development District, with substantial growth (residential and commercial) planned here.

Much of the southern shore of Mattawoman Creek, between the U.S. Naval Ordnance Station at Stump Neck and Maryland Route 225, is currently owned by the State, with additional property recently acquired or in the process of being acquired by Maryland. These state-owned lands are included in either Smallwood State Park or the Mattawoman Natural Environment Area.

b. Town of Indian Head

The Town of Indian Head contains a variety of residential, commercial, and public land uses. The land along and immediately north of Mattawoman Creek is almost exclusively residential, with a majority of the homes single-family dwellings. Under the Charles County Comprehensive Plan, much of this area would also be included in the Development District. A greater density of residential uses can be anticipated along and near the creek.

c. Smallwood State Park

Immediately bordering Mattawoman Creek in Smallwood State Park is the Sweden Point Marina, which is the subject of one of the associated actions discussed in the Environmental Assessment. There is also a foot-bridge from the marina to a picnic area, across a wetlands.

East of Smallwood State Park is the Mattawoman Natural Environment Area, comprised of various publicly-owned land in permanent open space and natural area preservation.

d. NOS Indian Head

There are 10 major classifications of land use at the U.S. Naval Ordnance Station at Indian Head: operations/training, production, maintenance/utilities, research/development/training/education (RDT&E), explosives storage, supply/non-explosive storage, open space, administration, community facilities and services, and housing.

Over time, the land use pattern at NOS Indian Head has evolved into a pattern in which certain functions are generally grouped at certain locations on the peninsula. In general, the uses that border

Mattawoman Creek include those devoted to explosives storage, nitration, test and evaluation, manufacturing technology, and public works/supply.

The most significant buildings at NOS to the environmental assessment are Buildings ~~42-3-309~~ ^{ABNDQ} used for the manufacture of high bulk density nitroguanidine (HBDN). These buildings are located opposite the new channel to be dredged in Mattawoman Creek; in fact, their location there and the explosive safety arc "thrown off" by them are the reasons for the channel dredge action itself.

2. Historic Structures or Sites

Smallwood State Park contains "Smallwood's Retreat," the plantation house of William Smallwood, a Maryland patriot and military leader during the Revolutionary War. Smallwood's Retreat is listed on the Charles County Inventory of Historic Sites.

The Naval Ordnance Station at Indian Head is itself important to Charles County's history. The land on which the main station is located is known as Cornwallis Neck; this land was granted to Thomas Cornwallis in 1658 as part of a 5,000-acre tract called Mattawoman Neck. Bullitt Neck at one time belonged to William Smallwood. In general, Cornwallis Neck and Bullitt Neck were used for agriculture, predominantly tobacco farming.

In 1985, the Maryland Historical Trust conducted a Preliminary Archaeological Reconnaissance Survey of NOS Indian Head, including Bullitt Neck and Thoroughfare Island. The Maryland Historical Trust recommended that four sites at NOS be nominated for inclusion on the National Register of Historic Places, and that consideration be given to the nomination of Bullitt Neck to the National Register as an historic district. In addition, the Maryland Historical Trust study recommended that eight additional sites be further investigated for possible inclusion on the National Register.

The Maryland Historical Trust has indicated that there does not appear to be the potential for any submerged archaeological artifacts in Mattawoman Creek at the location of the proposed dredge project.

3. Recreation Facilities

Mattawoman Creek is a prime location for recreational fishing, especially for largemouth bass. A number of bass fishing events annually occur there, with participation quite high. Many of the boats that participate in these events are launched from the facilities at Sweden Point. The persons fishing for bass use the existing creek channel and other locations in the creek near NOS. A large number of recreational boaters also use the Sweden Point Marina, either staying within Mattawoman Creek or going out into the Potomac River.

Smallwood State Park, with picnic areas, walking trails, and "Smallwood's Retreat," surrounds the Sweden Point Marina.

The Mattawoman Natural Environment Areas, four distinct subareas along Mattawoman Creek totalling over 4,400 acres, are located south of NOS Indian Head, at Marbury, and east of the Town of Indian Head and south of Pomonkey. These state lands are Natural Heritage Areas and not active recreation areas. Interpretive trails, equestrian trails, and picnic areas may be added in the future.

Mattingly Park in the Town of Indian Head, with picnic areas and some play equipment, is next to the small, privately-owned boat launching facility on Mattawoman Creek that is open to the public.

IV. BULK SEDIMENT SAMPLING AND TESTING PROGRAMS

Mechanical analyses of the sediment in the area of the proposed dredge in Mattawoman Creek were performed by the University of Maryland Cooperative Extension Service/Department of Agronomy in July 1989 and October 1990. These analyses showed that the sediment was composed of sand, silt loam, clay, and clay loam.

Between May 16 and May 24, 1991, the Maryland Department of Natural Resources/Maryland Environmental Service, through Martel Laboratory Services, Inc., undertook bulk sediment analyses of samples collected from the area of the proposed channel dredge in Mattawoman Creek. The Certificates of Laboratory Analysis prepared by Martel Laboratory Services on May 24, 1991 are included in the Appendix.

The DNR took samples from the creek, at the location for the proposed channel. These samples were then provided to Martel. The bulk sediment evaluations were performed by comparing the sediments taken from Mattawoman Creek with a range of samples taken from the Chesapeake Bay, the Baltimore Harbor, and associated waters. An evaluation of these samples by the Maryland Environmental Service (MES) concluded that these sediments were "characteristic of clean, uncontaminated material, with quality equal to or better than typical sediments from channels in the Chesapeake Bay."

It was the opinion of MES that a Toxicity Characteristic Leachate Procedure (TCLP) test, recommended by the U.S. Environmental Protection Agency, was unnecessary for the sediment samples taken from Mattawoman Creek. The TCLP test seeks to identify the presence of hazardous heavy metals in sediments; MES stated that the Mattawoman sediments did not display toxic characteristics and thus did not warrant a TCLP test.

EPA also recommended additional, bioassay and modified elutriate tests for the Mattawoman Creek sediments, and a sieve analysis for grain size. MES felt that, given the "good" quality of the sediment, additional quality-related testing was also unnecessary. An EPA-recommended tributyl tin test, to ascertain the presence of a compound used in anti-fouling paints, was also deemed unnecessary, because of the historic lack of industry in the area that used, or might use, that paint. (NOS Indian Head has never used anti-fouling paint in its operations and there has not been an industrial-type marina in the area.) A grain size test could be performed, if an additional sample were provided to Martel.

In conclusion, MES stated that the good quality of the Mattawoman Creek samples, as discovered in the bulk sediment evaluations, made the need for further testing of these samples unnecessary.

V. NOS INDIAN HEAD: DISCHARGES INTO THE MATTAWOMAN CREEK

The U.S. Naval Station at Indian Head has 48 industrial outfalls and three sanitary wastewater outfalls, 27 of which discharge into Mattawoman Creek. In addition, several contaminant disposal and spill sites are located there, all of which discharge into the creek. Silver and mercury have traditionally been the most prevalent contaminants, among other metals.

In January 1990, the U.S. Fish and Wildlife Service published Metals in Sediment and Biota of Mattawoman Creek, Indian Head Naval Ordnance Station, Maryland. USFWS, the U.S. Environmental Protection Agency, and the Maryland Department of the Environment, examined runoffs from sanitary waste water, wash water, and floor drains into Mattawoman Creek from NOS, and the affect of the runoff on fish and wildlife.

Three measures of impact were used: metal residues, in sediment, fish, clams, and aquatic plants; bioassay tests, with larval fathead minnows and Microtox bacteria; and histopathological evaluations. Samples for each test were collected in Mattawoman Creek, from a site adjacent to several NOS discharges and a site several miles upstream.

These tests are used to determine the effectiveness of the National Pollution Discharge Elimination System (NPDES) permits issued to NOS Indian Head as part of the state/federal program to improve water quality in the Chesapeake Bay and its estuaries.

The study results produced the following conclusions:

1. Metal residues in biota did not show greater levels at the discharge site relative to the reference site.
2. Bioassays did not show acute effects were occurring at the discharge site relative to the reference site.
3. Chronic health effects to fish at the discharge site were indicated by histopathological results.
4. Levels of several metals in sediment near NOS discharges were higher than at the reference site.
5. Levels of several metals in sediment near ~~NOD~~^{NOS} discharges were higher than Chesapeake Bay means.

The study also recommended the monitoring and reduction of NOS discharges of copper, lead, arsenic, and possibly selenium.

USFWS also conducted a Mercury Monitoring Study in Mattawoman Creek, at NOS Indian Head, to determine if several mercury spills at NOS have affected aquatic life. The first three years of the five-year study have been completed.

The study looked at mercury levels in primary recreational fish of the Mattawoman: largemouth bass, bluegill, and channel catfish. Sampling stations were set up at Marsh Island, or next to the spill area, and upstream. No statistically significant difference in the concentrations of mercury were found between the fish tested at Marsh Island and those tested upstream. Further, mercury concentrations in fish caught at the Marsh Island site were close to the national mean.

VI RELEVANT LEGISLATIVE AND PERMITTING REQUIREMENTS

A. Federal Government

1. National Environmental Policy Act

The National Environmental Policy Act (NEPA) requires that all federal agencies prepare an environmental assessment to determine the likely impacts of agency actions to the natural environment. Means and methods to prevent or mitigate these impacts must be devised, wherever possible. The environmental assessment becomes the background document for the subsequent permits and approvals needed for the proposed action to occur.

2. U.S. Army Corps of Engineers

The U. S. Army Corps of Engineers regulates activities in the various American waterways. The legislative authority for this regulatory and permitting power is derived from the Rivers and Harbors Act of 1899, requiring a Corps of Engineers permit for the obstruction or alteration of U.S. navigable waters; the Clean Water Act, requiring a permit from the Corps for the discharge of dredge or fill material into U.S. waters; and the Marine Protection, Research, and Sanctuaries Act of 1972, requiring a permit to transport dredge material to an ocean dumping site.

In Maryland, the Corps of Engineers permit review is coordinated with that of the state wetlands license, under the Department of Natural Resources/Tidal Wetlands Division. The permits are issued simultaneously.

3. Section 404 of the Clean Water Act of 1977/Section 10 of the River and Harbor Act of 1899

The Clean Water Act seeks to eliminate the discharge of pollutants into the nation's waters. Under the Clean Water Act, it must be shown that the discharge of dredged or fill material into the aquatic ecosystem will not have an "unacceptable adverse impact" upon that ecosystem. The Clean Water Act's regulations require federal permits from the Corps of Engineers for most types of construction in, near, or around waters of the United States, including wetlands, open waters and intermittent streams. Section 404 regulations apply to all U.S. waters and specifically regulate the discharge of dredged or fill material. Section 10 of the Rivers and Harbors Act regulates any construction activities in navigable waters. Both laws apply to the proposed dredging of Mattawoman Creek and the disposal of the dredge material.

4. Other Legislation

The Coastal Zone Management Act requires federal agencies to cooperate with state and local agencies implementing regulations such as the Clean Water Act and the Rivers and Harbors Act. The Fish and Wildlife Coordination act requires coordination and review of permits, such as for the proposed actions in Mattawoman Creek, with other federal, state, and local agencies (such as, in this instance, the U.S. Fish and Wildlife Service, Maryland Department of Natural Resources, U.S. Environmental Protection Agency, and Maryland Department of the Environment). Executive Order 11988 requires protection of wetlands/prohibits construction in the floodplain; where the wetlands and floodplain cannot be avoided, the impact to them must be minimized.

B. State of Maryland

1. Clean Water Act, Section 401

The State of Maryland is required to issue a Water Quality Certification for any federally-permitted activity that may result in the discharging of dredged or fill material into State waters or wetlands. The certification is required to ensure that the proposed activity will not violate State water quality standards or limitations. A wetlands permit was issued to the dredge material placement site at the Sweden Point Marina in 1986.

2. Maryland Wetlands Act

Title 9 of the Maryland Wetland Act requires a State Wetlands License from the State Board of Public Works for "dredging, filling, or construction in State wetlands which include marshes, swamps, and submerged bottoms below the mean high water mark." (Similar actions in wetlands above the mean high tide line and affected by periodic tides must obtain a Private Wetland Permit issued by the Maryland Department of Natural Resources.) Alterations to State wetlands are permitted only in the service of an overall public interest, and taking into account the ecological, economic, developmental, recreational, and aesthetic values of those wetlands. This mandated State review of construction in wetlands supplements any required federal permits.

Dredging and/or filling in State (or private) wetlands is generally permitted only for water-dependent activities that must, in order to function, be located along the shoreline or in the wetland.

The state tidal wetlands permit review is now administered through the Maryland Department of Natural Resources/Tidal Wetlands Division, which coordinates project review with the U.S. Army Corps of Engineers. The Corps permit and the state tidal wetlands permit are reviewed jointly.

3. Coastal Zone Management Act, Section 307

Certification is required by the State Coastal Zone Management Program, with concurrence or disagreement from the State of Maryland, that actions permitted by the Corps of Engineers meet the State program. In Maryland, the Coastal Zone Management Program is contained within the Critical Areas Program, outlined below.

5. Chesapeake Bay Critical Areas Program

Charles County was required to adopt and implement a Critical Area Management Program to protect the water quality of the Chesapeake Bay and its tributaries, under the 1984 Critical Area Law (Natural Resources Article Section 8-1801 through 8-1816) enacted by the Maryland General Assembly. The Maryland law was a reaction to a recognition that "there is a critical and substantial state interest in fostering more sensitive development activity along the shoreline of the Chesapeake Bay so as to minimize damage to water quality and wildlife habitats." Under this legislation, the State defined the Critical Area as a "strip of land along the tidal shoreline extending 1,000 feet landward from the water's edge, or from the landward boundary of any adjacent tidal wetland."

The Charles County Critical Area Program was adopted in 1989. The program implements the various program goals of the Maryland Critical Area Law regarding minimizing water pollution from discharges or runoffs, conservation of various habitats, and establishment of land use development controls to protect the Chesapeake Bay environment. To this end, Charles County adopted and implemented a Critical Area Management Program.

Within the Charles County Critical Area, development is characterized as occurring in Intensely Developed Areas, Limited Development Areas, and Resource Conservation Areas. The Smallwood State Park/Sweden Point Marina and adjacent area are considered a Resource Conservation Area (RCA), in which wetlands, forests, aquaculture, and other environmental factors predominate. Future development in RCAs is limited to agricultural, forestry, and other resource and habitat protection uses. In addition, a 100-foot vegetated buffer zone is to be maintained along shorelines, wetlands, and aquatic and terrestrial environments, such as at Smallwood State Park.

The 1989 Charles County Comprehensive Plan further ramifies the policies of the Chesapeake Bay Critical Area legislation by designating waterfront lands as Resource Protection Districts.

In addition, under the Charles County Critical Area Program, the Smallwood State Park/Sweden Point area is designated an upland natural area. The program also identifies anadromous fish spawning areas as being located in Mattawoman Creek and shows the water-dependent facilities at the Town of Indian Head and Sweden Point. That portion of Smallwood State Park bordering Mattawoman Creek, including the Sweden Point Marina, are designated as within the Critical Area (1,000-foot) boundary.

Mattawoman Creek east of the Town of Indian Head and opposite the NOS, including Smallwood State Park, will be designated a Resource Protection District, under an overlay zone, by Charles County; within the overlay zone, strict performance standards will apply to protect sensitive environmental features. This designation further implements the county's Critical Area Program.

Charles County has established a Program for Habitat Protection Areas, to protect and preserve fish, plant, and wildlife habitats and protect water resource quality. Included in this program is a buffer management plan, non-tidal wetland protection policies, policies to protect endangered or threatened species, plant and wildlife habitat protection policies, and policies to protect anadromous fish spawning streams. This habitat protection program also further implements the Critical Area Program.

C. Danger Zone: Federal Regulations 334.240

In Section 33: Navigation and Navigable Waters of the Code of Federal Regulations, a navigational danger zone has been established by the U.S. Coast Guard for portions of the Potomac River, Mattawoman Creek, and Chicamuxen Creek that are bordered by the Naval Ordnance Station, including its Stump Neck annex.

The regulations that are contained in 33CFR334.240 are as follows:

- o Firings consisting of controlled explosions within the danger zone, and controlled shore operations, or accidental explosions, hazardous to vessel traffic within the limits of the danger zone, may take place at any time of the day or night and on any day of the week.
- o Flashing red lights, horns, and signs established at appropriate points will warn vessels of impending tests or operations considered to be hazardous to vessels within the danger zone.
- o No vessel except vessels of the United States or vessels authorized by the enforcing agency shall enter or remain in the danger zone while lights are flashing, when warning horns are in operation, or when warned or directed by a patrol vessel.

- o Nothing in this section shall prohibit the use of Mattawoman Creek or Chicamuxen Creek as a harbor refuge because of stress of weather.
- o Except as prescribed in paragraph (b)(3) of this section, vessels may enter and proceed through the danger zone without restriction; however, accidental explosions may occur at any time and vessels entering the area do so at their own risk.
- o Fishermen operating in the danger zone when warning signals are sounded shall evacuate the area immediately.
- o The regulations in this section shall be enforced by the Commanding Officer, U.S. Naval Ordnance Station, Indian Head, Maryland.

D. Legislative and Permit Requirements and Analysis

The proposed action under consideration in the Environmental Assessment includes the reduction of the danger zone across Mattawoman Creek from the U.S. Naval Ordnance Station at Indian Head, Maryland; the dredging of a new channel in Mattawoman Creek by the Maryland Department of Natural Resources; and the disposal of dredge material in the dredge material placement (DMP) site at the Sweden Point Marina, Smallwood State Park, constructed in 1989.

To take these actions, the following permits and other related actions are required, and the following regulations must be met:

- o A state tidal wetlands permit
- o An amendment to the current danger zone delineation
- o Adherence to the requirements of the Chesapeake Bay Critical Areas Program

All the necessary permits will be acquired and the relevant legislative requirements will be met before the actions described in the Environmental Assessment are taken.

1. State Tidal Wetlands Permit

A tidal wetlands permit is issued through the Tidal Wetlands Division of the Water Resources Administration (WRA) of the Maryland Department of Natural Resources. The Tidal Wetlands Division coordinates the project review by all other state agencies that must review and/or approve the project. Coordination also occurs with the U.S. Army Corps of Engineers permitting authorities. Approval of the state tidal wetlands permit incorporates the necessary Corps of Engineers permit.

The Corps of Engineers permit review and approval process includes a review of consistency with the federal Clean Water Act (Section 404/10) permits.

A "Joint Federal/State Application for the Alteration of Any Floodplain, Waterway, Tidal or Nontidal Wetland in Maryland" must be submitted to WRA; WRA will forward the application to the Corps of Engineers and other state agencies, if required. The application must include detailed plans, a project description, area photographs, and maps of the site and the general project location. The project must be advertised; if a public hearing is requested, one must be held. WRA will schedule a site inspection. WRA's report on the application, and its recommendations, will be submitted to the State Board of Public Works, for final processing and the issuance of a license. The permit is valid for a period of three years; a six-year permit may be issued for maintenance dredging of no more than 500 cubic yards of dredge material annually. (A copy of the application is included in the Appendix.)

2. Danger Zone Boundary Amendment

In order to establish new danger zone boundaries, the Code of Federal Regulations (33 CFR 334.240) will need to be amended. Furthermore, as the CFR danger zone regulations for Mattawoman Creek contain map coordinates for the danger zone boundaries, the new coordinates for the amended danger zone should be determined and included in the amended legislation. The U.S. Army Corps of Engineers will need to bring about the necessary changes to the Code of Federal Regulations.

3. Chesapeake Bay Critical Areas Criteria

The Chesapeake Bay Critical Area has been established as a 1,000-foot strip surrounding the bay and its tributaries, within the Maryland Coastal Zone. Federal action within the Coastal Zone, that require a Federal Consistency Determination under Maryland legislation, will be reviewed for the extent to which it meets the requirements of the state Critical Areas legislation. State actions also require a Coastal Zone Consistency Review, which incorporates all state requirements that can affect actions in the Coastal Zone, including those within the Critical Areas surrounding the Chesapeake Bay.

The dredged material from the proposed new channel will be placed in a permitted DMP site; this site is located outside the 100-foot buffer zone mandated under State and Charles County Critical Areas legislation.

VII. ENVIRONMENTAL CONSEQUENCES OF PROPOSED ACTION AND MITIGATION MEASURES

A. Impacts to Natural Features/Mitigation Measures

1. Water Bodies

No impact to the function or make-up of Mattawoman Creek is anticipated from either the reduction of the danger zone or the channel dredge/dredge disposal project. Neither the current patterns, nor the water circulation, nor the normal water fluctuations will be impacted by either of these proposed actions. Further, the salinity of Mattawoman Creek will not be altered or affected by these proposed actions.

2. Wetlands

No impact to the wetlands in Mattawoman Creek is anticipated from the reduction of the danger zone in the creek.

Little short-term impact, and no long-term impact, to wetlands in Mattawoman Creek is anticipated from the channel dredge project. Dredging will be performed hydraulically and outfall will be directed back into the creek, with both actions minimizing potential disturbance to wetlands. Further, there will be no net loss of wetland vegetation, as spatterdock is likely to return to the original channel.

A minimal amount of turbidity may occur in Mattawoman Creek, at the dredge site, with the dredging activity. This process will be brief, however, and no permanent or long-term impact on the wetlands in the creek is anticipated.

The dredge material will be disposed of in an approved, upland, diked dredge material placement (DMP) site located adjacent to the Sweden Point Marina. The outfall effluent will be discharged back into Mattawoman Creek, and will adhere to the State Water Quality Certificate, so that there will be no negative impact to wetlands from the dredge disposal methods to be used.

The Maryland Department of Natural Resources has established a six-knot speed limit on Mattawoman Creek east of Marsh Island. This area includes the location of the proposed new channel. The speed limit should minimize any possible effects of boat wakes on the surrounding wetland areas.

3. Flood Plain

No impact to existing flood rates, frequency, and/or duration and to water levels is anticipated, since the proposed dredge activity in Mattawoman Creek will involve a "minimum impact channel" (or the smallest channel needed to accommodate boat traffic) four feet deep and 50 feet wide.

4. Vegetation

There will be no significant impact upon existing upland vegetation on the Indian Head peninsula and at Smallwood State Park/Sweden Point Marina from either the danger zone reduction or the channel dredge and dredge disposal.

5. Wildlife

There will be no significant impacts to wildlife habitats or to resident wildlife at NOS or Smallwood State Park from either the danger zone reduction or the channel dredge and dredge disposal.

6. Aquatic Environments

There will be no impact to the aquatic environments in Mattawoman Creek as a result of the reduction of the danger zone emanating from NOS Indian Head.

There will be no significant impact to the Mattawoman Creek fish spawning grounds resulting from the proposed dredging. The dredging will not be done during the "environmental window" for fish spawning, February 15 through September 30.

Impacts to shallow water habitats from the dredge activities will be short-term.

Because the chemicals present in the sand, silt, and loam to be dredged have been judged to be "clean" and "uncontaminated," the water will not be contaminated by the substrate disturbed during dredging.

There will be little or no impact on the existing beds of spatterdock, or to those that may eventually grow into the former channel, from the adverse wave activity from boat wakes, as there is a six-knot speed limit for that portion of the creek east of Marsh Island, including the proposed new channel.

There will be no impact to the aquatic environment of Mattawoman Creek from the proposed dredge disposal action, as the dredge material will be disposed of in an existing, approved, upland dredge material placement site.

7. Water Quality

There will be no adverse impact on the water quality of Mattawoman Creek from the danger zone reduction .

There will be no long-term adverse impact on the water quality of Mattawoman Creek from either the dredge activity or the disposal of dredge material. The dredge material will be deposited in an existing upland dike that was constructed with approval from the U.S. Army Corps of Engineers. This dike is above the mean high water line and the dredge material will not, therefore, reenter the creek. Furthermore, the Smallwood State Park shoreline along Mattawoman Creek has been protected with the construction of a stone revetment to reduce shore erosion in the area.

The clarity, color, odor, and other similar qualities of the water will not be permanently altered by the proposed dredging project. The dredge disposal method proposed (disposal in an approved upland dike) will also not alter or affect these elements of water quality, as approved under the existing 1986 Water Quality permit.

Water quality in Mattawoman Creek is, and will continue to be, impacted from the quality and amount of runoff from NOS Indian Head and its operations, to a much greater degree and extent than it will be impacted by the proposed dredging project.

8. Endangered/Threatened Species and Habitats

There will be no impact to the threatened and endangered species within or affecting the Chicamuxen Creek Natural Heritage Area/Maryland Natural Heritage Area, since these areas are not within either the danger zone or the dredge/dredge material disposal area for the two associated actions.

B. Impacts to Built Features/Mitigation Measures

1. Land Use

a. Charles County

There will be no impact to land uses or built features in Charles County by the proposed danger zone reduction. Noise from the channel dredge and disposal project will conform to State regulations and pose little or no impact on local residents.

To the extent that the existing DMP site at the Sweden Point Marina is a "built feature," an additional impact of the proposed actions is to reduce the amount of available dredge placement capacity for future projects.

b. Town of Indian Head

No impacts on the Town of Indian Head would occur as a result of the U.S. Navy's reduction of the danger zone in Mattawoman Creek.

A short-term impact of the proposed channel dredge on the Town of Indian Head would be that the noise of the dredging and dredge disposal project might be heard by residents of the Mattingly Avenue area. Since the dredging will occur during the cooler months when the windows will likely be closed, however, this noise may be less of an impact.

There would be no long-range impacts on the Town of Indian Head by the channel dredge/dredge disposal. Since there are no improvements currently planned to the private boat launching facility at the end of Mattingly Avenue, no increase in the amount boater traffic on that street because of higher number of boaters in the new channel is anticipated.

c. Smallwood State Park

The greatest impact to Smallwood State Park and the Sweden Point Marina would be if this project were not undertaken. If the danger zone limits at NOS Indian Head were not permanently amended, boat launching activities at the marina would need to be severely curtailed during the time(s) that tests or hazardous operations are being conducted at NOS.

The dredging project itself will have little or no impact on recreational boating activities.

d. NOS Indian Head

There will be no impact on land uses at NOS Indian Head by the danger zone reduction.

There will be no impact on existing land uses at NOS from the proposed channel dredge and dredge material disposal, other than the noise of the dredging operation itself. Since the NOS land uses near the dredge site are industrial, however, any disturbance will only be minimal when compared to existing impacts to the area by on-going NOS activities.

2. Historic Structures or Sites

The Maryland Historical Trust has advised that the proposed actions, including dredging and dredge disposal, would not impact structures eligible for National Register designation or archaeological sites. There are no submerged archaeological sites in the proposed dredging area.

If, however, any previously unknown submerged historic or archaeological sites are discovered during the dredge operation, the proper state and/or federal authorities will be notified.

3. Recreation Facilities

Within Mattawoman Creek, the reduction of the danger zone by NOS Indian Head will benefit the public, through the encouragement of full use of the boating facilities at the Sweden Point Marina without the potential enforcement of the danger zone regulations there.

Public recreation in Mattawoman Creek will not be affected by the dredging or dredge disposal activities. There will be no impact on recreation in the creek by the dredge disposal action.

The impact upon recreation facilities next to Mattawoman Creek by the proposed danger zone reduction and channel dredge/dredge disposal activities is unknown, but is not anticipated to be negative.

VIII SECTION 404/10 PERMIT FOR DISPOSAL SITES FOR DREDGED FILL MATERIAL

Section 404 of the Clean Water Act seeks to "restore and maintain the chemical, physical, and biological integrity of waters of the United States through the control of discharges of dredged or fill material."

In conjunction with the necessary U.S. Army Corps of Engineers permit and Section 10 of the River and Harbor Act of 1899, a Section 404/10 permit is required for the Mattawoman Creek channel dredge and dredge disposal project. For this permit to be granted, it must be shown that

dredged or fill material should not be discharged into the aquatic ecosystem, unless it can be demonstrated that such a discharge will not have an unacceptable adverse impact either individually or in combination with known and/or probable impacts of other activities affecting the ecosystems of concern.

A sample of a Section 404 permit application is included in the Appendix. The basic data required for this permit is outlined below:

Name and Address of Applicant(s):

Maryland Department of Natural Resources
Boating Administration
Tawes State Office Building (E-4)
580 Taylor Ave.
Annapolis, MD 21401
(301) 974-2908

U.S. Naval Ordnance Station
Indian Head, MD
(301)

Name, Address, and Title of Authorized Agent:

N/A

Detailed Description of Proposed Activity:

The proposed activity involves the dredging of a second channel in Mattawoman Creek, to supplement the existing channel. The dredging project will be undertaken by the Maryland Department of Natural Resources. The creek itself lies within a danger zone established in 1961 opposite the Naval Ordnance Station at Indian Head. A small portion of that channel falls within the Explosive Safety Quality Distance (ESQD) arcs established in Mattawoman Creek opposite the U.S. Naval Ordnance Station (NOS). A realignment of the existing channel must be dredged at this location to provide an alternative route for boat traffic outside the ESQD arcs when the Commanding Officer of the NOS determines that a hazard to boaters exists. The limits of the ESQD arcs at this location are marked with buoys. The new channel alignment will be approximately 2,000 feet long, 50 feet wide and four feet deep at mean low water. The new channel will be dredged hydraulically.

Mechanical analyses of the sediment at the location of the proposed dredge indicate that the dredge material will consist of sand, silt loam, clay, and clay loam. The dredge material will be disposed of at an existing, approved dredge material placement (DMP) site at the Smallwood State Park, located outside the 100-foot buffer established by the Chesapeake Bay Preservation Act. Approximately 8,000 cubic yards of dredge material will result from the channel dredging project. The DMP site has a capacity of approximately 90,000 cubic yards; therefore, excess capacity is available to accommodate the material to be removed from the proposed channel.

Names and Addresses of Adjoining Property Owners:

(To be provided at the time of permit application.)

Waterbody and Location on Waterbody Where Activity is Proposed:

The proposed dredge activity will occur in Mattawoman Creek, in Charles County, Maryland. The new channel to be dredged is located opposite (south of) Buildings 497 and 498 at NOS Indian Head. The proposed new channel is also located approximately 3,125 feet west of the NOS boundary with the Town of Indian Head, Maryland.

THE HIBO FACILITY

The existing dredge material placement site to be used for the disposal of dredge material from the proposed channel dredge activity is located in Smallwood State Park, a state-owned recreation facility.

Location and Land Where Activity Exists or Is Proposed:

The proposed dredge activity will take place opposite Buildings 497 and 498 at NOS Indian Head. These buildings are located near Hershey Road and Jenkins Road, on NOS.

↑ HIBO FACILITY

The existing DMP site to be used for dredge material disposal is located in Smallwood State Park, off Maryland Route 225 in Charles County.

Information About Completed Activity:

The dredge material placement site to be used in this proposed activity has been constructed. It was authorized under a Maryland Board of Public Works Wetland License effective August 30, 1986.

Approvals or Denials by Other Government Agencies:

Wetlands License No. 86-107 was authorized by the Board of Public Works for the State of Maryland for the DMP site was used for the Sweden Point Marina Expansion Project.

In addition, Wetlands License No. 90-238 was approved, effective February 7, 1990, for a similar dredge/dredge disposal activity in Mattawoman Creek using the same DMP site. This proposed activity has not yet been undertaken, due to budgetary constraints.

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