RECORD OF DECISION

NAVAL WEAPONS INDUSTRIAL RESERVE PLANT

BETHPAGE, NEW YORK

OPERABLE UNIT 2 - GROUNDWATER

NYS REGISTRY: 1-30-003B

PREPARED BY

ENGINEERING FIELD ACTIVITY, NORTHEAST

NAVAL FACILITIES ENGINEERING COMMAND

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TABLE OF CONTENTS

SECTION

FIGURES

APPENDIX

DECLARATION STATEMENT – RECORD OF DECISION

Site Name and Location

Naval Weapons Industrial Reserve Plant (NWIRP), Bethpage
Town of Oyster Bay
Nassau County, New York
New York Registry Number: 1-30-003B
Funding Source: Environmental Restoration, Navy (ER,N)

Statement of Basis and Purpose

This Record of Decision (ROD) document presents the selected remedial action for Operable Unit (OU) 2 – Groundwater at the Naval Weapons Industrial Reserve Plant (NWIRP) in Bethpage, New York. The Department of Navy (Navy), in consultation with New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH), is issuing this remedy in accordance with New York State applicable requirements. The site is not listed on the National Priorities List (NPL); however, a copy of this document will be sent to the USEPA Region II offices for information.

The Navy's decision for groundwater is based on the Administrative Record for NWIRP Bethpage. A listing of the documents in the Administrative Record are provided in Attachment A of this ROD. The Navy's remedy for groundwater was also based upon public input to a Proposed Remedial Action Plan (PRAP) for regional groundwater prepared and presented by NYSDEC in December 2000. NYSDEC then issued *a Record of Decision for Operable Unit 2 Groundwater Northrop Grumman and Naval Weapons Industrial Reserve Plant Sites, Nassau County Site Numbers 1-30-003A&B* in March 2001. Much of the information presented in this Navy ROD for Groundwater was taken from the NYSDEC OU 2 ROD referenced above.

Assessment of the Site

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action described in this Record of Decision, present a current or potential threat to human health and the environment.

Description of the Selected Remedy

The remedial action described in this document represents the second remedial phase or operable unit involving the NWIRP Bethpage site. It addresses on-site contaminated groundwater beneath the Navy's 105-acre parcel and it also addresses contaminated groundwater that has migrated off-site and has commingled with a contaminated groundwater plume located beneath property owned by the Northrop Grumman Corporation (NGC). Due to the existence of this commingled plume, NYSDEC issued a Record of Decision for "regional groundwater" that described a remedial strategy to address contaminated groundwater beneath both Navy and NGC property and also addresses that portion of contaminated groundwater that has migrated downgradient of both properties into the surrounding community. The United States Environmental Protection Agency (USEPA) Region II previously issued a Record of Decision in September 2000 for that portion of the groundwater contaminant plume that lies beneath and downgradient of property owned by Occidental Chemical since this facility is presently designated as a National Priorities List (NPL) site.

The NYSDEC Groundwater ROD was based on the results of the Remedial Investigation/Feasibility Study (RI/FS) for the Northrop Grumman and the Naval Weapons Industrial Reserve Plant Class 2 Inactive Hazardous Waste Disposal Sites and the criteria identified for evaluation of alternatives. The selected remedy included a number of response measures that were categorized into a Groundwater Remedial Program and a Public Water Supply Protection Program.

This document describes those components of NYSDEC's OU 2 ROD that will be implemented by the Department of Navy subject to the availability of Environmental Restoration, Navy (ER,N) funds in future fiscal years that will allow for implementation of the various remedial groundwater components discussed below.

NYSDEC's Groundwater ROD discusses regional groundwater beneath the Navy and NGC properties plus the downgradient, commingled portion as a single entity or operable unit. For the purposes of the Navy's Groundwater ROD, groundwater has been subdivided into an on-site and off-site component. The Navy's selected remedy for ON-SITE GROUNDWATER includes the following:

1. An **institutional control** consisting of the placement of a restriction in the deed of transfer to the County of Nassau, New York prohibiting extraction of groundwater from within the boundaries of the 105-acre or Plant 20 parcels located at the Navy's former Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage facility. In order to aid in the compliance with the deed restriction, the Navy has completed the abandonment of the seven (7) deep production wells formerly located on the 105-acre parcel. The production wells were used for the extraction of groundwater as non-contact cooling water to support operations conducted by NGC during a time when Northrop Grumman leased the 105-acres from the Navy. If a future occupant of the Navy's 105-acre parcel wishes to pursue groundwater extraction, language will be included in the appropriate deed(s) of transfer requiring prior Navy notification and securing written permission from the Nassau County Department of Health and/or NYSDEC.

Further, the selected remedy for ON-SITE GROUNDWATER is also based on the recognition that an existing groundwater extraction and treatment system, known as the Onsite Containment (ONCT) System, continues to contain and remediate VOC-contaminated groundwater emanating from the Navy's property. The ONCT system was constructed, and is currently being operated on an annual basis, by the Northrop Grumman Corporation and was installed as a component of NYSDEC's Regional Groundwater ROD. The Navy recognizes that continued operation of the ONCT system is paramount to ensuring that the Navy's selected remedy for ON-SITE GROUNDWATER remains protective of human health and the environment. In the event that the ONCT system fails to continue to operate, the Navy also recognizes that it's ON-SITE GROUNDWATER remedy would no longer be protective of human health or the environment. In this case, the Navy will re-evaluate the protectiveness of the ON-SITE GROUNDWATER remedy and implement all requisite measures as determined by the Navy in consultation with NYSDEC, NYSDOH, and the Nassau County Department of Health to ensure the continued protection of human health and the environment.

As stated above, NYSDEC's selected remedy for groundwater included a number of response measures that were categorized into a Groundwater Remedial Program and a Public Water Supply Protection Program. The components of these two programs for which the Department of Navy has agreed to implement are all considered to be located off of Navy property and are, therefore, being considered as OFF-SITE GROUNDWATER issues. The Navy's selected remedy for OFF-SITE GROUNDWATER includes the following:

Groundwater Remedial Program

- mass contaminant removal through groundwater extraction and treatment in an offsite area near the GM 38 monitoring well cluster;
- pre-design investigation to determine the optimal groundwater extraction location(s) in the GM 38 offsite treatment area(s);
- operation and maintenance of the GM 38 area remedy;
- additional groundwater investigation in the vicinity of well GM-75D2 in order to determine whether groundwater contamination in this area represents a significant threat to downgradient public water supply wells.

Public Water Supply Protection Program

The Navy recognizes the importance of continued provision of potable water to those communities/populations served by water supply wells that are, or that may become, impacted by site-related contamination. To this end, the NYSDEC Groundwater ROD required that a public water

supply protection program be implemented. The components of this program for which the Department of Navy will implement include:

- installation of Vertical Profile Borings (VPBs) to gather water quality and lithologic data that will be used in the regional groundwater computer model to aid in the placement of outpost monitoring wells;
- development of a Public Water Supply Well Contingency Plan that uses data gathered during the VPB installation program and the regional groundwater computer model to identify the locations of the outpost monitoring wells and to also assign "trigger values" to each outpost well in order to determine if treatment or other comparable alternative measure will be required for other public water supply wellfields located downgradient of the VOC-contaminant plume. If triggered, this will alert the Navy to begin discussions with the appropriate water district regarding various treatment alternatives;
- installation of the outpost monitoring wells in areas upgradient of potentially affected water supply wellfields as outlined in the Public Water Supply Well Contingency Plan;
- public water supply wellhead treatment or comparable alternative measures, as necessary, for wellfields that become affected in the future.

It should be noted that another component of the Public Water Supply Protection Program was the treatment of wellfields 4, 5, and 6 associated with the Bethpage Water District (BWD). Wells at these Plants had either been, or would likely be, adversely impacted by VOC-contaminated groundwater emanating from Navy and NGC properties prior to issuance of NYSDEC's Groundwater ROD in 2001. Due to the immediate threat to public health, the Navy supplied funding to BWD, in June 1996, for the construction and 30-year operation of an air stripping treatment system for BWD's Plant 5 facility. This action was considered to be an interim action that was part of the Navy's Operable Unit 1 Soils ROD issued by the Navy in July 1995. In the mid-1990's, NGC took similar action to protect the water supplies at BWD Plants 4 and 6.

Regulatory Acceptance

The New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH) concur with the components identified in this document and that their implementation will result in the protection of human health and the environment. In addition, NYSDEC has indicated that the Navy's ROD for Groundwater would have to include all elements of the remedial strategy outlined in NYSDEC's OU 2 ROD issued in March 2001 before State concurrence would be issued. However,

the only components of NYSDEC's OU 2 ROD that are not included in the Navy's ROD for Groundwater is the continuing operation of the ONCT system, monitoring of the permanent groundwater well network and continued payments to Bethpage Water District for the Plants 4 and 6 treatment systems. Therefore, the Navy feels that with these components already in place and being operated by another party, it is not necessary for the Navy to include them in this document. Further, the Navy recognizes that the continued operation of the ONCT system is paramount to ensuring that the Navy's ROD remains protective of human health and the environment. In the event that the other party fails to continue to operate the ONCT system, then the Navy also recognizes that the Navy would have to re-evaluate the effectiveness of the remedy and propose changes that would ensure that the remedy remains protective of human health and the environment.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable to the remedial action to the extent practicable. Because this remedy will result in hazardous substances remaining at the Site above levels that allow for unlimited use of and unrestricted exposure to the Site, a review will be conducted at least every five years after commencement of remedial action to ensure that the remedy continues to be protective of human health and the environment.

_____ _____

Date

FRANCIS P. CASTALDO, CDR, CEC, USN
Military Deputy, Shore Station Management
Naval Air Systems Command

RECORD OF DECISION
OPERABLE UNIT 2
Naval Weapons Industrial Reserve Plant
Bethpage, New York
January 2003

SECTION 1: SUMMARY OF THE RECORD OF DECISION

The Department of Navy in consultation with the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health has selected this remedy to address the significant threat to human health and/or the environment created by the presence of hazardous waste at the Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage, an inactive hazardous waste disposal site. In particular, this ROD addresses contaminated groundwater located beneath NWIRP Bethpage and also includes a portion of contaminated groundwater that has migrated off of NWIRP Bethpage property. As more fully described in Sections 3 and 4 of this document, historical operations that resulted in hazardous material generation at the facility included, but were not limited to, metal finishing processes, maintenance operations, painting of aircraft and components and other activities that involve aircraft manufacturing. Wastes generated by plant operations were disposed directly into either drainage sumps, dry wells and/or on the ground surface resulting in the disposal of a number of hazardous wastes, including the volatile organic compounds (VOCs) perchloroethene (PCE) and trichloroethene (TCE), the semi-volatile organic compound (SVOC) polychlorinated biphenyls (PCBs) and the inorganics chromium and cadmium at the site. Some of these contaminants have migrated from the points of disposal to surrounding areas, including the soils of these sites and the groundwater beneath and downgradient of NWIRP Bethpage property.

These disposal activities have resulted in the following significant threats to the public health and/or the environment:

- a significant threat to public health associated with contaminated soils, groundwater and drinking water;
- a significant threat to the environment associated with contaminated soils and groundwater.

A previous record of decision for soils (Operable Unit 1) was issued by the Navy in July 1995 and is currently being implemented to address the significant threat to human health and the environment from the hazardous waste disposal activities mentioned above.

The Department of Navy is the lead agency for this project and provides funding for remedial activity to address contamination that has occurred on or has emanated from Navy-owned property. This authority has been delegated to the Department of Navy as part of Presidential Executive Order 12580. Regarding

groundwater, the remedy discussed below was selected by the Department of Navy in order to eliminate the significant threats to the public health and/or the environment to the maximum extent practicable caused by the hazardous waste disposal activities that occurred at NWIRP Bethpage.

The Navy's selection, however, was heavily based upon a Record of Decision for Regional Groundwater developed by NYSDEC to address a commingled, regional groundwater contaminant plume located beneath properties owned by the Navy as well as property's owned by the Northrop Grumman and Occidental Chemical Corporations. NYSDEC's Operable Unit 2 ROD described a remedial strategy that would address contaminated groundwater beneath both Navy and Northrop Grumman Corporation (NGC) property and also addresses that portion of contaminated groundwater that has migrated downgradient of both properties into the surrounding community. The United States Environmental Protection Agency (USEPA) Region II previously issued a Record of Decision in September 2000 for that portion of the groundwater contaminant plume that lies beneath and downgradient of property owned by Occidental Chemical since this facility is presently designated as a National Priorities List (NPL) site.

NYSDEC's Groundwater ROD discusses regional groundwater beneath the Navy and NGC properties plus the downgradient, commingled portion as a single entity or operable unit. The Navy's ROD, however, will describe those components of NYSDEC's Groundwater ROD that will be implemented by the Department of Navy. For the purposes of the Navy's Groundwater ROD, groundwater has been subdivided into an on-site and off-site component. The Navy's selected remedy for ON-SITE GROUNDWATER includes the following:

1. An **institutional control** consisting of the placement of a restriction in the deed of transfer to the County of Nassau, New York prohibiting extraction of groundwater from within the boundaries of the 105-acre or Plant 20 parcels located at the Navy's former Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage facility. In order to aid in the compliance with the deed restriction, the Navy has completed the abandonment of the seven (7) deep production wells formerly located on the 105-acre parcel. The production wells were used for the extraction of groundwater as non-contact cooling water to support operations conducted by NGC during a time when Northrop Grumman leased the 105-acres from the Navy. If a future occupant of the Navy's 105-acre parcel wishes to pursue groundwater extraction, language will be included in the appropriate deed(s) of transfer requiring prior Navy notification and securing written permission from the Nassau County Department of Health and/or NYSDEC.

Further, the selected remedy for ON-SITE GROUNDWATER is also based on the recognition that an existing groundwater extraction and treatment system, known as the Onsite Containment (ONCT) System, continues to contain and remediate VOC-contaminated groundwater emanating from the Navy's property. The ONCT system was constructed, and is currently being operated on an annual basis, by the Northrop Grumman

Corporation and was installed as a component of NYSDEC's Regional Groundwater ROD. The Navy recognizes that continued operation of the ONCT system is paramount to ensuring that the Navy's selected remedy of ON-SITE GROUNDWATER remains protective of human health and the environment. In the event that the ONCT system fails to continue to operate, the Navy also recognizes that it's ON-SITE GROUNDWATER remedy would no longer be protective of human health or the environment. In this case the Navy will re-evaluate the protectiveness of the selected remedy for ON-SITE GROUNDWATER and implement all requisite measures as determined by the Navy in consultation with NYSDEC, NYSDOH, and the Nassau County Department of Health to ensure the continued protection of human health and the environment.

As stated above, NYSDEC's selected remedy for groundwater included a number of response measures that were categorized into a Groundwater Remedial Program and a Public Water Supply Protection Program. The components of these two programs for which the Department of Navy has agreed to implement are all considered to be located off of Navy property and are, therefore, being considered as OFF-SITE GROUNDWATER issues. The Navy's selected remedy for OFF-SITE GROUNDWATER includes the following:

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supply protection program be implemented. The components of this program for which the Department of Navy will implement include:

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- development of a Public Water Supply Well Contingency Plan that uses data gathered during the VPB installation program and the regional groundwater computer model to identify the locations of the outpost monitoring wells and to also assign "trigger values" to each outpost well in order to determine if treatment or other comparable alternative measure will be required for other public water supply wellfields located downgradient of the VOC-contaminant plume. If triggered, this will alert the Navy to begin discussions with the appropriate water district regarding various treatment alternatives;

- installation of the outpost monitoring wells in areas upgradient of potentially affected water supply wellfields as outlined in the Public Water Supply Well Contingency Plan;

- public water supply wellhead treatment or comparable alternative measures, as necessary, for wellfields that become affected in the future.

It should be noted that another component of the Public Water Supply Protection Program was the treatment of wellfields 4, 5, and 6 associated with the Bethpage Water District (BWD). Wells at these Plants had either been, or would likely be, adversely impacted by VOC-contaminated groundwater emanating from Navy and NGC properties prior to issuance of NYSDEC's Groundwater ROD in 2001. Due to the immediate threat to public health, the Navy, in June 1996, supplied funding to BWD for the construction and 30-year operation of an air stripping treatment system installed on the BWD Plant 5 facility. This action was considered to be an interim action that was part of the Navy's Operable Unit 1 Soils ROD issued by the Navy in July 1995. In the mid-1990's, NGC took similar action to protect the water supplies at BWD Plants 4 and 6.

SECTION 2: SITE LOCATION AND DESCRIPTION

NWIRP Bethapge is located in east-central Nassau County, Long Island, New York, approximately 30 miles east of New York City. The Navy's property totaled approximately 109.5 acres and was formerly a Government-Owned Contractor-Operated (GOCO) facility that was operated by the Northrop Grumman Corporation (NGC) until September 1998. As shown on Figure 1, NWIRP Bethpage is bordered on the north,

west, and south by property owned, or formerly owned, by NGC that covered approximately 605 acres, and, on the east, by a residential neighborhood.

NWIRP Bethpage is currently listed by NYSDEC as an "inactive hazardous waste site" (#1-30-003B) as is the Northrop Grumman Corporation (#1-30-003A) and the Hooker/RUCO site (#1-30-004) located less than 1/2 mile west of the NWIRP Bethpage.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

NWIRP Bethpage was established in 1933. Since its inception, the primary mission for the facility has been the research, prototyping, testing, design engineering, fabrication, and primary assembly of military aircraft. The facilities at NWIRP Bethpage include four plants (No. 3, 5, and 20, used for assembly and prototype testing; and No. 10, which contains a group of quality control laboratories), two warehouse complexes, a salvage storage area, water recharge basins, an industrial wastewater treatment plant, and several smaller support buildings.

The following is a discussion of the waste handling practices at the three identified disposal areas at the NWIRP facility (see Figure 2 for area locations):

Area 1 - Former Drum Marshaling Area

From the early 1950's to 1978, drums containing liquid wastes were stored on a cinder covered area over a cesspool leach field. This leach field may have been used to discharge process wastewater. In 1978, the drum storage area was moved a few yards to the south to a 100- by 100-foot concrete pad. This pad did not have a cover or berms around it. In 1982, the drum storage area was moved to Area 3.

Various solvents were stored at Area 1. Cadmium and cyanide wastes were also stored in this area from the early 1950's through 1974. Approximately 200 to 300 drums were stored at these locations at any given time. Reportedly, all drums of waste which were stored at these areas were taken offsite by a private contractor for treatment and disposal.

Area 2 - Recharge Basin Area

Prior to 1984, some Plant 3 production-line rinse waters were discharged in the three on-site recharge basins. These waters were directly exposed to chemicals used in the industrial processes (rinsing of manufactured parts). Only non-contact cooling water has been discharged into these basins since 1984. The source of this non-contact cooling water has been on-site production wells.

On at least one occasion (1956), hexavalent chromium was detected in the water in the recharge basins at concentrations in excess of allowable limits. This matter was discovered and handled by the Nassau County Department of Health.

Adjacent to and west of the recharge basins are the former sludge drying beds. Sludge from the Plant 2 Industrial Waste Treatment Plant (part of the Grumman Site as described above) was dewatered in these beds before being disposed of off-site.

Area 3 - Salvage Storage Area

The NWIRP salvage storage area is located to the west of Area 2. This area has been used for the storage of fixtures, tools, and metallic wastes such as aluminum and titanium scraps, since the early 1950's.

Located within the salvage storage area was a 100 by 100-foot area that was used for the storage of drummed waste. This 100 by 100-foot area was reportedly covered with coal ash cinders. Halogenated and non-halogenated waste solvents were stored in this area from the early 1950's through 1969. The exact location of this drum storage area is not known. Since 1982, drums have been stored in a covered area with a concrete pad and berms.

3.2: Remedial History

An Initial Assessment Study was conducted at the NWIRP-Bethpage site in 1986. Based upon the results of this study, it was concluded that three areas at the site posed a threat to human health or the environment. A description of the NWIRP sites is presented in Section 3.1. In March 1993, NYSDEC listed the NWIRP as a separate Class 2 Registry Site, distinct from the Northrop Grumman Site.

An RI/FS was conducted at the site from August 1991 through July 1995. The purpose of the RI was to determine the nature and extent of the contamination that was found during the Initial Assessment Study. The NWIRP ROD called for addressing soils contamination at the three areas of concern. The NWIRP remedies called for the excavation and removal of specific areas of PCB and solvent contamination and the reduction of soils to be excavated by the implementation of a soil vapor extraction system in conjunction with shallow groundwater remediation through air sparging.

3.3: Enforcement History

The United States Navy has undertaken their environmental studies pursuant to the Navy's Installation Restoration Program. The State of New York provides oversight of the work conducted by the Navy pursuant to a Memorandum of Understanding between the State and the Department of Defense.

Resource Conservation and Recovery Act

The Navy's property is also under a Resource Conservation and Recovery Act (RCRA) program that is regulated under 6 NYCRR Part 373. This is New York State's permitting process for facilities that are designated as a large quantity generator of hazardous waste and ultimately the closure process for active facilities that store, generate, and treat hazardous wastes over a certain quantity as defined under this regulation. The RCRA program as promulgated under NYSDEC regulations is authorized by the USEPA to issue RCRA permits.

SECTION 4: SITE CONTAMINATION

To evaluate the contamination present at the site and to evaluate alternatives to address the significant threat to human health and the environment posed by the presence of hazardous waste, the Navy has conducted a basewide remedial investigation and feasibility study (RI/FS).

4.1: Summary of the Remedial Investigation and Feasibility Study

The purpose of the RI was to define the nature and extent of any soil and groundwater contamination resulting from previous activities at the Site. The RI was conducted in two phases. The first phase was conducted between February 1991 and October 1991 and the second phase between August 1992 and September 1993. Two reports were prepared entitled "Final Remedial Investigation Report NWIRP, May 1992," and "Phase 2 Remedial Investigation Report, NWIRP, October 1993," that described the field activities and findings of the RIs in detail.

The following environmental investigation techniques were used in order to achieve the goals for the RIs:

- Soil gas surveys were conducted in various locations throughout the site in order to locate potential areas which could be sources of groundwater contamination.

- Soil samples were collected in various locations throughout the site to confirm the results of the soil gas surveys and to identify source areas that could not initially be located using soil gas techniques.
- Groundwater samples were collected from monitoring wells that were installed as part of the two Remedial Investigations and by other organizations (such as the United States Geological Survey).

After completion of the Remedial Investigation, a Feasibility Study (FS) was developed. The objectives of this study were to take the information gathered during both phases of the RI and develop remedial action objectives and goals for soils and, to a limited extent groundwater, that would minimize and/or prevent risks to human health and the environment while complying with ARARs.

A Proposed Remedial Action Plant (PRAP) was prepared for soils and a Record of Decision for soils, designated as Operable Unit (OU) 1, was issued by the Navy in July 1995. As mentioned earlier, the Navy is currently implementing the various components of the OU 1 Soils ROD.

4.1.1: Site Geology and Hydrogeology

The sites are underlain by five geologic/hydrogeologic formations (descending from ground surface):

- Pleistocene deposits (Upper Glacial Aquifer) consisting of various sands and gravels intermixed with discontinuous low permeability clay lenses, approximately 100 feet thick
- Magothy Formation (Magothy Aquifer) consisting of various sands and gravels varying in thickness interlaced with low permeabililty confining layers,
- Raritan Clay Formation
- Lloyd Sand Formation (Lloyd Aquifer)
- Bedrock

The Upper Glacial Formation (