



Fact Sheet

Explanation of Significant Differences Operable Unit 2 Record of Decision for Remedial Actions at Naval Weapons Industrial Reserve Plant Bethpage

February 2021

INTRODUCTION

This factsheet explains the Dept. of Navy's (Navy) intent to modify a Record of Decision (ROD) due to new information derived from the 2021 Five Year Review completed for the former Naval Weapons Industrial Reserve Plant (NWIRP) – Bethpage, New York. The Navy's 2003 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) ROD for Operable Unit 2 (Navy OU2 ROD) addresses contaminated groundwater sourced from NWIRP Bethpage. Specifically, the ROD was developed to identify actions to be conducted by the Navy to remediate OU2 groundwater contamination. Since 2003, the Navy has implemented most of the actions outlined in its ROD, with the outstanding items resulting from new findings or continued migration of the OU2 plumes. The Five Year Review evaluation resulted in several recommendations relative to meeting the remedial action objectives of the ROD. The Navy is using a document titled an Explanation of Significant Differences (ESD) to document its commitment to the new actions recommended by the Five Year Review.

WHAT IS AN ESD?

During an initial project plan, a ROD is drafted to explain remediation efforts that will be used to clean up a hazardous site. An ESD is used to document a major diversion from a ROD. In this case, the ESD is documenting the Navy's planned additional actions to remediate the OU2 plume by expansion of areas for treatment beyond that defined in the Navy OU2 ROD. The ESD also includes addressing a new chemical of concern - 1,4 dioxane and measures that will be added to mitigate it.

WHAT IS 1,4-DIOXANE?

1,4-Dioxane is a chemical that was historically used to stabilize 1,1,1-trichloroethane while in storage. The United States Environmental Protection Agency (USEPA) has not established a Safe Drinking Water Act maximum contaminant level (MCL) for 1,4-dioxane in drinking

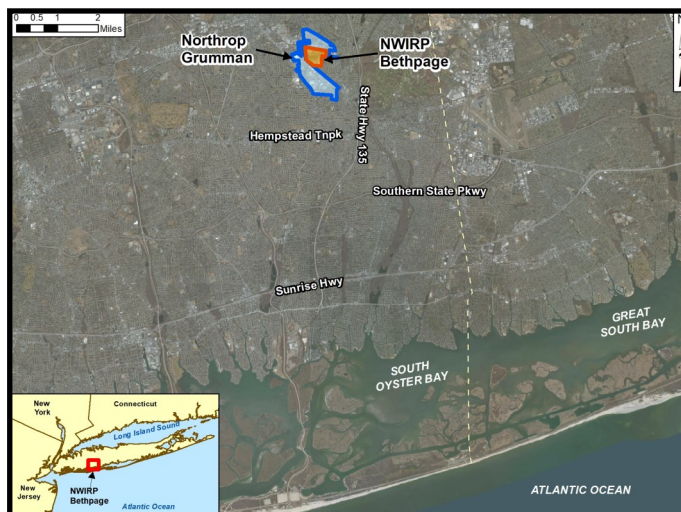


Figure 1 - General Location Map

water; however, the USEPA has established a screening level of 0.46 micrograms per liter ($\mu\text{g/L}$) for tap water, based on a 1×10^{-6} incremental lifetime cancer risk. On August 26, 2020, the New York State Department of Health promulgated a public water supply MCL for 1,4-dioxane at a limit of $1.0 \mu\text{g/L}$.

STATEMENT OF PURPOSE

The purpose of this ESD factsheet is to describe changes to the selected remedial action for OU2 Groundwater, originally presented in the Navy OU2 ROD. The Navy in consultation with New York State Department of Environmental Conservation (NYSDEC) has prepared a Draft ESD. The selected changes to the Navy OU2 ROD are additional applications of or build upon the primary treatment technology (groundwater extraction/pump and treat) selected in the Navy OU2 ROD, and are as follows:

- Extension of the RE108 Phase II Treatment System to extract and treat non-hotspot OU2 groundwater (i.e., volatile organic compound [VOC] concentrations of less than $1,000 \mu\text{g/L}$);
- Construction and operation of additional extraction wells and treatment of OU2 groundwater near the leading edge of the OU2 plumes; and
- Addition of 1,4-dioxane as an emerging chemical of

concern in OU2 groundwater and addition of a secondary technology to the primary treatment technology to specifically address 1,4-dioxane where required.

SITE HISTORY AND CONTAMINATION

The location of NWIRP Bethpage is shown on Figure 1. NWIRP Bethpage is no longer an active Navy installation. Historically, the installation began operations in the early 1940s. Since its inception, the NWIRP's primary mission was research prototyping, testing, design engineering, fabrication, and primary assembly of military aircraft. At its peak operation, the facilities at the former NWIRP Bethpage included four plants used for assembly and prototype testing, a group of quality control laboratories, two warehouse complexes (north and south), a salvage storage area, water recharge basins, the Industrial Wastewater Treatment Facility, and several smaller support buildings. The NWIRP was a government-owned facility that was operated by Northrop Grumman (NG) and its predecessors until September 1996 when operations at NWIRP Bethpage ceased.

The former 105-acre parcel that comprises NWIRP Bethpage is located in east-central Nassau County, Long Island, New York, approximately 30 miles east of New York City. NWIRP Bethpage was bordered on the north, west, and south by property owned or formerly owned by NG that covered approximately 500 acres, and on the east by a residential neighborhood.

The facility is currently used for commercial purposes. The land surrounding the former NWIRP Bethpage is primarily a mixture of commercial and residential development. The residential development surrounding much of the former NWIRP Bethpage and NG facilities is located in the Hamlets of Bethpage and Plainedge, in the Town of Oyster Bay, and the Hamlets of Levittown and Hicksville, in the Town of Hempstead.

OU2 consists of site-related VOC-contaminated groundwater beneath the Navy's former 105-acre parcel and VOC-contaminated groundwater that has migrated and continues to migrate south and east off property, where it becomes mixed with contamination originating on NG property. One primary source of the VOC-contaminated groundwater is Site 1.

OU2 does not include petroleum-contaminated groundwater associated with Site 4 (which is the subject of a separate Navy Record of Decision) or OU3 VOC-impacted groundwater associated with the Bethpage Community Park, for which NG is solely responsible.

The current VOC-contaminated groundwater plumes emanating from the Navy and NG sites span more than 3,000 acres and are over 700 feet deep in some places (Figure 2). The plumes emanating from NWIRP Bethpage have impacted or threatened public water supply well fields. Plume migration is ongoing to the south southeast at a rate of approximately 100 to 300 feet per year.

SELECTED REMEDY

In accordance with the Navy OU2 ROD, the Navy has implemented land use controls to address on-property groundwater contamination restricting its use. Further, the selected remedy for on-property groundwater recognizes that NG's OU2 on-site containment system (ONCT) system continues to contain and remediate VOC-contaminated groundwater originating from the Navy's and NG's properties.

The Navy OU2 ROD also specified that off-property groundwater would be addressed through the following:

- An active remedial program including design, implementation, operation, and maintenance of an extraction well system near the GM38 groundwater hotspot location.
- Installation of vertical profile borings (VPBs) and monitoring wells to allow for identification and monitoring of groundwater contamination and placement of outpost wells. Outpost wells provide early (five-year) warning of plume migration towards public water supply well fields.
- Development of a Public Water Supply Contingency Plan (PWSCP).
- A provision for wellhead treatment for public water supply systems or an alternative approach pursuant to the PWSCP.
- Evaluation of the GM-75 Area Groundwater to determine whether another hotspot is present.

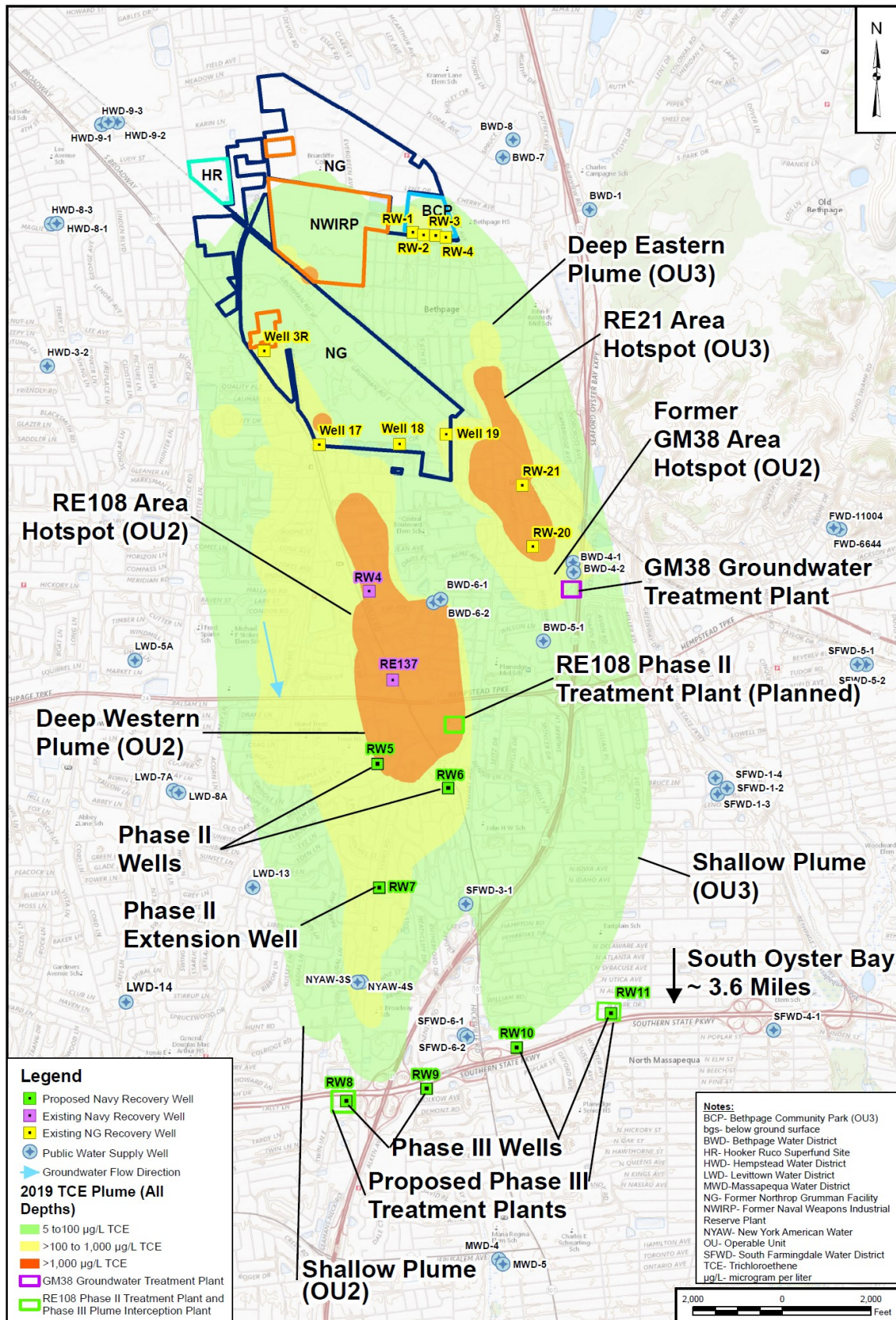


Figure 2 - Planned and Potential OU2 and OU3 Groundwater Infrastructure

BASIS FOR THE ESD AND DESCRIPTION OF SIGNIFICANT DIFFERENCES

The target cleanup goals of this ESD and the method of treatment for VOCs, remain the same as those originally documented in the Navy OU2 ROD, namely groundwater extraction and treatment.

Current treatment technologies will remain in place, with the addition of a new technology, Advanced Oxidation Process (AOP) treatment. This addition will not only reduce 1,4-dioxane concentrations, but will reduce other organic compounds as well.

The Navy OU2 ROD and PWSCP identified 17 VOCs as chemicals of concern in groundwater which were associated with the NG and NWIRP facilities in Bethpage, NY. This list was developed in 2003 and 1,4-dioxane was not on the list, since it was not considered to be a chemical of concern at that time.

The following discussion presents the proposed actions planned to be used to address the presence of 1,4-dioxane in OU2 groundwater.

GM38 Groundwater Treatment Plant

The Navy is upgrading the GM38 Groundwater Treatment Plant (GWTP) to remove 1,4-dioxane from the extracted groundwater, prior to discharge back into the aquifer. The GM38 GWTP upgrade will include the addition of an AOP treatment system to the existing treatment system.

RE108 Phase I Treatment System

The RE108 Phase I Treatment System includes the addition of a recovery well (RW4) to address contamination in the northern portion of the RE108 Hotspot. Extracted groundwater from this well is planned to be pumped to the existing GM38 GWTP for treatment. Recovery well RW4 is anticipated to have a 1,4-dioxane concentration of 12.4 µg/L. Once the GM38 upgrade has been completed to include AOP treatment, extracted groundwater from this recovery well will also receive treatment for 1,4-dioxane.

Operation of the Phase I system is intended to shorten the time required for operation of the Phase II System.

RE108 Phase II Treatment System

The Phase II treatment system is designed to extract contaminated groundwater at higher concentrations, those exceeding 1,000 µg/L. The treatment system is currently comprised of two recovery wells (RW5 and RW6) and will be extended with one additional well

(RW7) to address VOC contamination in excess of 150 µg/L. Scheduled startup of the Phase II System is late 2022. The Phase II and Phase II Extension System are intended to reduce impacts to downgradient public water supplies and the aquifer south of Southern State Parkway. Treatment for 1,4-dioxane removal will be incorporated into the design and construction of this system.

Phase III Southern Plume Intercept Treatment System

The Phase III Southern Plume Intercept Treatment System (Phase III System) would add up to four recovery wells and one or two treatment systems to intercept, as practicable, the OU2 plumes to their approximate current footprint (see Figure 2).

Public Water Supplies

The Navy is aiming to reduce 1,4-dioxane concentrations in public water supply wells by over 90%, and is expecting final concentrations of 1,4-dioxane to be less than 0.1 µg/L following treatment.

SUMMARY

While the addition of 1,4-dioxane treatment is a modification to the Navy OU2 ROD, it's addition complies with the remedial action objectives from the Navy OU2 ROD, such that it "eliminates, to the extent practicable, site-related contaminants from the affected public water supplies and to prevent, to the extent practicable, the future contamination of public water supplies through implementation of off-site groundwater remediation".

The Navy will continue to monitor groundwater at each of the monitoring wells and will adjust treatments as necessary to comply with appropriate guidelines. During operation of the remedy, the Navy will conduct regular evaluations of the RE108 Phase I and Phase II System components to ensure the OU2 plumes are being intercepted and remediated as anticipated by this ESD. These evaluations will be summarized in the five-year review. Generally, decreasing concentrations are used to provide evidence of aquifer cleanup. In some cases, increasing trends may be warranted to show capture of distal portions of the plumes.

As part of these evaluations, in the event that sufficient capture of the OU2 plumes do not occur, the Navy may modify the pumping rates of individual extraction wells and consider the use of additional extraction wells in the area (e.g., Navy RE137 and select NYSDEC wells).

While planned testing at extraction well RE137 will be conducted primarily to further evaluate capture zone and monitoring well trend analyses, and support groundwater modeling, it will also provide significant mass removal of trichloroethene and other VOCs, during its operation, with initial removal estimates 100 to 200 pounds per month. Bag filtration for particulate removal, AOP for destruction of trichloroethene and most VOCs, and granular activated carbon for removal of residual VOCs and hydrogen peroxide will be used to treat the extracted water prior to recharge in the nearby basin.

Current preliminary modeling indicates that four new recovery wells (RW8, RW9, RW10, and RW11) planned for Phase III will improve interception and significantly reduce migration of the deep western and shallow eastern portions of the OU2 plumes.

Operation of the Phase II and Phase II Extension System is intended to shorten the time required for operation of the Phase III System. Similarly, the Phase III System is intended to reduce impacts to downgradient public water supplies and the aquifer south of Southern State Parkway and accelerate aquifer restoration.

During these evaluations, additional monitoring wells may be needed to measure specific portions of the plumes. System optimization would normally consist minimizing the removal of clean water, although this evaluation must also consider capture of all the plumes, even portions of it that may be remote from the recovery wells.

SUPPORT AGENCY COMMENTS

NYSDEC provided initial comments on a draft version of this ESD on January 6, 2021. NYSDEC stated “The actions outlined in the ESD are consistent with the objectives of the Department’s AROD and represent remediation of a significant portion of Navy’s responsibility for the Navy Grumman plume”. NYSDEC may provide additional comment on this ESD during the public comment period.

STATUTORY DETERMINATIONS

The remedy as changed pursuant to this ESD complies with CERCLA §121 and the National Contingency Plan, remains protective of human health and the environment, and complies with applicable or relevant

and appropriate requirements identified in the Navy OU2 ROD.

PUBLIC PARTICIPATION

This ESD is a part of the administrative record for NWIRP Bethpage. An information repository is located at the Bethpage Public Library and online at the following address:

<https://go.usa.gov/DyXF>

The Navy has published a notice describing the ESD and the availability of the administrative record file through Anton Media Group and provided information to community Restoration Advisory Board members.

PUBLIC COMMENT PERIOD

A 30-day public comment period is being held from March 3, 2021 until April 2, 2021. Written comments may be submitted to the Navy Public Affairs Officer (see contact information on this page). All comments must be received no later than (postmark by) April 2, 2021 to be considered, addressed, and documented in the administrative record.

FOR MORE INFORMATION

Copies of all official environmental program documents are available for review at an information repository located at Bethpage Public Library, 47 Powell Avenue, Bethpage, NY 11714, (516) 931-3907. Parties interested in obtaining a copy of this document can call, email or write to the address below.

Additional information on the NWIRP Bethpage Environmental Restoration Program (ERP) is available online at <https://go.usa.gov/DyXF>

For more information on the NWIRP Bethpage ERP, please contact: Public Affairs Officer,
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