

5090 OPTE3/18 September 9, 2016

Mr. James B. Harrington NYS Department of Environmental Conservation 625 Broadway, 14th Floor Albany, NY 12233-7012 Delivered by email to <u>derweb@dec.ny.gov</u>

Dear Mr. Harrington:

SUBJECT: COMMENTS ON REMEDIAL OPTIONS REPORT, GRUMMAN AEROSPACE-BETHPAGE FACILITY

This letter and the enclosed technical comments are submitted on behalf of the Department of the Navy (DON) in response to the August 20, 2016 New York State Department of Environmental Conservation (NYSDEC) solicitation for public comment on the July 2016 "Remedial Options Report Regarding Full Containment of Grumman Plume (Bethpage)" (hereinafter "ROR").¹ The ROR concerns groundwater contamination emanating from the Northrop Grumman (NG) Bethpage Facilities, the Naval Weapons Industrial Reserve Plant (NWIRP), the NG-Steel Los Plant 2, and the Bethpage Community Park-Former Grumman Settling Ponds.² The ROR concludes that the only option that could be implemented is hydraulic control by extracting and capturing the contaminated groundwater through one of the three options outlined in the report. However, as shown in the DON's enclosed technical comments and as discussed below, the hydraulic containment approach is flawed. Hydraulic containment is unlikely to work, would waste enormous amounts of drinkable water, would be incredibly expensive, and could severely damage Long Island's sole-source aquifer.

Before turning to the DON comments on the ROR, it is worth reviewing the origins of the report. In June 2014, the New York legislature passed a bill that would require NYSDEC to prepare "a report detailing the options of intercepting and remediating a groundwater plume of contaminants, including but not limited to PCE and TCE, emanating from the former [NWIRP] and the Grumman Aircraft Engineering Corporation facilities in Bethpage." The report was to "focus on the utilization of hydraulic containment and state of the art remediation practices to remove these contaminants without utilizing well head treatment, which is a measure of last resort only." The legislation was not intended to task NYSDEC with surveying all possible remediation strategies and selecting the *best* one. Rather, NYSDEC was to be charged with

¹ The Bethpage Plume comprises three major plumes identified by the conceptual site model: Shallow Plume (to depths of 100-300 feet bgs); Deep Western Plume; and Deep Eastern (OU-3) Plume. In addition, "hotspots" of high concentrations of contamination have been identified in an area designated as "GM-38" and in an area at Bethpage Water District (BWD) Plant #6.

² The ROR does not acknowledge that there are multiple other sources of the groundwater contamination in the Bethpage Plume including, but not limited to, the Hooker-Ruco Superfund Site, American Drive-In Cleaners and other dry cleaners, gasoline stations, maintenance shops, print shops, and commercial building with air conditioning units.

looking at only one remediation method – hydraulic containment. In December, 2014, Governor Cuomo signed the bill into law as Chapter 543 of the Laws of 2014.

As an initial matter, the ROR glosses over the extensive appropriate groundwater response actions that have been taken by the DON since the 1990s. Among other things, the DON has installed groundwater monitoring wells and vertical profile borings; sampled and provided data to update the groundwater models; and investigated, designed, installed, and operated a treatment system for the GM-38 hotspot area. The U.S. also paid for wellhead treatment for South Farmingdale Water District, New York American Water and BWD supply wells. In 2011, the DON assembled a team of national experts (including representatives from academia, industry, NYSDEC, EPA, USGS, local water districts, and NG) to evaluate the effectiveness of the ongoing remedy and recommend potential future steps for optimizing the remedy. In 2012, DON prepared the peer-reviewed "Study of Alternatives for Management of Impacted Groundwater at Bethpage," (hereinafter "Alternatives Report") that found that hydraulic containment was not feasible. The DON has worked, and continues to work, in close partnership with NYSDEC and all other stakeholders to implement timely response actions that are protective of the water supply for residents in the area.

Further, the ROR disregards the significant problems inherent in employing a hydraulic containment approach in relation to the Bethpage plume. As stated in a letter submitted to Governor Cuomo in November 2014 (copy enclosed), there are fundamental problems with the approach that the bill required to be studied. The DON explained:

As you are aware, the Bethpage contamination plume is large and complex. Strategies for clean-up of the plume have been carefully chosen based upon input from a group of highly qualified engineers and scientists, including personnel from U.S. Environmental Protection Agency (EPA), U.S. Army Corps of Engineers (USACE), NYSDEC, New York State Department of Health, U.S. Geological Service (USGS), and Nassau County Department of Health, as well as technical representatives from affected and potentially affected water districts. In 2012, DON (with concurrence from NYSDEC, EPA, USACE, and USGS) completed an analysis of remediation technologies, including an evaluation of full Full containment was found to be technically and plume containment. practicably infeasible due to the highly porous nature of Nassau County's geology and the tremendous amount of groundwater pumping that occurs in the region. A full containment approach would also require condemnation of many family residences or commercial properties to install wells, pipelines, treatment systems, and treated groundwater disposal locations (wells or ponds) without necessarily improving human health protection. [Emphasis added]

The ROR does not acknowledge, let alone rebut, the peer-reviewed 2012 Alternatives *Report* conclusion that full containment of the Bethpage Plume is infeasible and would be essentially unworkable. Nor does the ROR identify any new data or other information that shows any reason why these expert opinions are no longer valid or that would suggest that hydraulic containment is the only effective remedy for the Bethpage Plume. To the contrary, as noted in technical comments and herein, the analysis of alternatives presented in the ROR makes it abundantly clear that the full hydraulic containment options will do much more harm than good.

5090 OPTE3/18 September 9, 2016

As such, the ROR reinforces the soundness of the conclusions reached in the 2012 *Alternatives Report*.

Briefly, here are a few broad points in the Navy's enclosed comments on the ROR that are worth repeating and highlighting in this letter:

a. The ROR significantly overstates the "scientific and engineering surety" associated with hydraulic capture, given the reports issued by the independent National Resource Council ("NRC") that identify the uncertainties of using hydraulic capture and pump-and-treat systems to restore impacted aquifers, or even to conclusively stop a plume from migrating. As consistently pointed out by independent experts, a hydraulic containment effort is simply unlikely to succeed to stop a plume of this size and complexity from migrating.

b. The ROR identifies hydraulic containment that would require the pumping of all of the groundwater flowing across the entire width and depth of the line of interception. The ROR acknowledges that all three hydraulic containment alternatives evaluated in the report would therefore result in the needless loss of 730 billion gallons of groundwater that would be extracted and pumped either off-shore or into Massapequa Creek. Absent from the ROR, however, is a detailed discussion of how such an enormous loss of water would affect the overall sole source aquifer beyond the Bethpage Plume. First, pumping 100% of the groundwater crossing the line of interception would deprive multiple communities at the southern portion of the plume (Massapequa and others) of drinkable water. Second, the proposed high rate of pumping from deep in the aquifer would be expected to increase the vertical downward migration of shallow groundwater contaminants (including fertilizers, pesticides, dry cleaner solvents, and petroleum spills) into the public water supplies. Third, the enormous extraction of freshwater would likely be replaced, in part, by saltwater, creating an even greater problem with the drinking water. In other words, pursuing this hydraulic containment plan would likely have devastating impacts on the very population it is designed to protect: the residents who rely upon Long Island's sole source aquifer for drinking water.

c. The ROR proposes a line of wells installed along the Southern State Parkway. To the extent that hydraulic capture provides some protection from groundwater contamination, the only water district that could enjoy such protection would be Massapequa water district, as hydraulic capture would provide no benefit to the upgradient water districts (north of the Southern State Parkway). Thus, the ROR fails to even satisfy the narrow requirements of Chapter 543 to "stop the migration of the Navy Grumman plume before it reaches the public water supply wells of the Massapequa water district and the South Farmingdale water district as well as the New York American Water Corporation well."

d. The ROR concludes that "the only options that could be implemented in this very large plume area in a highly urbanized location would be hydraulic control by extracting and capturing the contaminated groundwater." And yet, this conclusion is wholly unsupported in the ROR, which, due to the narrowness of the legislation directing NYSDEC to prepare the report, is devoid of any mention of other options. More tellingly, the conclusion concerning hydraulic control is completely undercut by the final paragraph of the ROR, which is worth quoting in full:

Direct use of the water after wellhead treatment has been proven to be an effective approach in other areas of the United States to achieve the [Remedial

Action Objectives] and protect human health and the environment. The treatment of this water would be no different to what has been done by many water purveyors for many decades, including many water purveyors in Nassau County. This approach would be safe and effective but would require considerable planning and cooperation between the stakeholders and water providers to implement. The primary advantage of this option would be the elimination of the need to 'dispose' of the treated water that after treatment would be suitable for drinking. This option is not consistent with Chapter 543 of the Laws of 2014 but would provide a long-term manageable solution, reduce the overall costs, and not result in a loss of Nassau County's precious water resources. [Emphasis added]

In other words, the current approach for addressing the Bethpage Plume – wellhead treatment and the other components of the existing selected remedy – is a proven, safe and effective approach that will avoid the needless expenditure of hundreds of millions of dollars and the loss of 730 billion gallons of water, as estimated in the ROR, that would result from the misguided hydraulic containment approach. In sum, the report is fundamentally flawed in that on the one hand, it acknowledges the effectiveness of wellhead treatment for impacted municipal water supply wells, but on the other hand, it does not explain why the options evaluated in the report are superior to the existing OU-2 remedy.

If you have any technical questions about the enclosed comments, please feel free to contact the DON Remedial Project Manager, Lora Fly at (757) 341-2012 or lora.fly@navy.mil.

Sincerely,

This M. Johnson

NINA M. JOHNSON North Integrated Product Team Environmental Business Line Team Leader By direction of the Commanding Officer

Enclosures:

1. DON technical comments on ROR

2. Assistant Secretary of the Navy (Energy, Installations & Environment) letter of November 13, 2014

Enclosure 1

Comments on the July 2016 Remedial Options Report, Grumman Aerospace-Bethpage Facility (NYSDEC Site Number 130003); Prepared by HDR

Overall, in both Executive Summary and the main report, there should be a more balanced discussion of the pros and cons of the prospects of plume interception at Bethpage. Lessons learned and described in many recent landmark studies on plume management and hydraulic control need to be applied and referenced, such as National Research Council (NRC) Alternatives for Managing the Nation's Complex Contaminated Groundwater Sites (2013) and Payne et al., Remediation Hydraulics (2008). Evaluation of the efficacy of approaches to plumes of similar complexity and size are also missing from the report. Also absent from the report is a detailed discussion of how the enormous loss of water for the options would affect the overall sole source aquifer beyond the Bethpage Plume. In sum, the report is flawed in that on the one hand, it acknowledges the effectiveness of wellhead treatment for impacted municipal water supply wells, but on the other hand, it does not explain why the options in the report are superior to the existing OU-2 remedy.

Executive Summary

- Page 1, second paragraph. The report states "Groundwater that emanated from Northrop Grumman Bethpage Facilities, the Naval Weapons Industrial Reserve Plant, the Northrop Grumman-Steel Los Plant 2, and the Bethpage Community Park-Former Grumman Settling Ponds contains hazardous chemical above the maximum contaminant level". This statement incorrectly implies that these sites are the only potential sources of the contaminants. The report should also identify other known sources of contamination from Hooker-Ruco Superfund Site and American Drive-In Cleaners, as well as acknowledge that there are numerous other sources including other dry cleaners, gasoline stations, maintenance shops, print shops, and commercial buildings with air conditioning units throughout the area.
- 2. Page 1, second paragraph. The report states that the plume(s) could impact "natural resources in its path", but does not identify these natural resources anywhere in the report. The report should clearly identify the natural resources that are being, or may be, impacted.
- 3. Page 1, fourth paragraph. The report overstates the level of scientific certainty ascribed to hydraulic capture for the purposes of restoration of impacted aquifers and for stopping a plume from migrating. The NRC (1994) report by an independent group of experts highlighted the uncertainties of using hydraulic capture and pump-and-treat systems to or even to conclusively stop a plume from migrating. A follow-on independent study by the NRC (2013) again reiterated the uncertainties of using hydraulic capture and pump-and-treat systems.

General Report Comments

Introduction

- Section 1.2.1.2, Page 6, first paragraph. The report incorrectly states that the NWIRP was established within the Northrop Grumman property during the early 1930's. Activities on Navy property that would later become the NWIRP did not start until the 1940s.
- 5. Section 1.2.2, Page 7/8, bullets. The description of the OU2 ROD remedy should also identify the following response actions that were implemented by the Navy: installed groundwater monitoring wells and vertical profile borings to characterize and monitor the plumes; sampled wells to update the groundwater models; investigated, designed, installed and operated treatment system for the GM-38 area; and paid for wellhead treatment for South Farmingdale Water District, New York American Water and Bethpage Water District supply wells. In addition, NG has conducted other activities
- 6. Section 1.3.2, Page 9, second paragraph. The report does not provide documentation that "The Creek and its tributaries eventually empty into the Great South Bay." While South Oyster Bay and Great South Bay are connected, South Oyster Bay also connects directly to the Ocean and therefore direct flow from one to the other should not be implied.

Remedial Action Objectives and ARARs

- Section 2.1, Page 14, Groundwater RAOs for Public Health Protection. The RAO "Prevent contact with contaminated groundwater" is not adequately defined. The RAO should identify the chemicals of concern, exposure pathway, and chemical concentrations with which contact is to be prevented.
- 8. Section 2.1, Page 14, Groundwater RAOs for Environmental Protection. The report does not state a basis for the two listed objectives. Neither objective appears to be based on the 2014 law (that prompted the report) or applicable regulations. In addition, the options developed do not specifically address these RAOs.
- 9. Section 2.1, Page 14, Groundwater RAOs for Environmental Protection, "Restore groundwater to pre-disposal/pre-release conditions" and T.O.G.S 1.1.1 paragraph. The "restoration of the groundwater aquifer to pre-disposal/pre-release conditions" is not a reasonable goal, and is different than restoring the groundwater aquifer to Class GA criteria (e.g., MCLs). Also, none of the options would "restore the groundwater." Rather they manage the migration of groundwater in the area of the Southern State Parkway.
- 10. Section 2.1, Page 14, Groundwater RAOs for Environmental Protection, "Prevent the discharge of contaminants to surface water" and T.O.G.S. 1.1.1 paragraph. The objective "Prevent the discharge of contaminants to surface water" is unclear. In particular, the specific contaminants, water bodies, and surface water quality values are not identified. Except for discharge to Massapequa Pond, treatment for VOCs would not likely be required for any of the plume VOCs due to the water classification of the other water

bodies. If treatment is required, it may only be required for certain groundwater extraction locations and during certain time periods, which may not occur for decades.

- 11. Section 2.1., Page 14, T.O.G.S. 1.1.1 paragraph. The report states that if no action is taken, contaminated groundwater that continues to migrate to the south-southeast towards existing public water supply wells is a potential public health exposure pathway. However, there is no true "no action" scenario, because under the current RODs, among other things, wellhead treatment has been implemented wherever necessary to prevent public health exposure. Further, because of dilution, implementation of either Option 2 or 3, both of which involve the use of the Cedar Creek Water Pollution Control Plant (CCWPCP), would more likely result in the discharge of more organic and nutrient contaminants to the surface water than a no action scenario.
- 12. Section 2.2, Page 15, fourth paragraph. T.O.G.S. 1.1.1 is not an ARAR. It is a guidance document and should be identified as a "To be considered".

Evaluation and Screening of General Response Action and Remedial Action Technologies

- 13. Section 3.1.4, Groundwater Disposal Options, Pages 17 to 18. Use of the water for public water supplies should be considered in addition to the disposal options presented. The proposed extraction and treatment system is anticipated to generate approximately 19 MGD of MCL-compliant water. There is likely sufficient treated water to supply most of the needs for the local water districts, including MWD, SFWD, and NYAW.
- 14. Section 3.1.4, Page 18, Discharge to Surface Water. The report states that NYSDEC has designated selected portions of Massapequa Creek as Class A surface water. However, this statement concerning the classification of the surface water is incomplete and misleading. The majority of Massapequa Creek, its tributaries, and South Oyster Bay are not listed as "Class A" waters. Class "C", "SA", and "SC" criteria are applicable and should also be referenced.
- 15. Section 3.1.4, Page 18, Infiltration Basin or Gallery and Well Injection paragraphs. Infiltration basins and injection wells are currently the primary methods for discharging large volumes of groundwater in the area for remediation, production water, and noncontact cooling systems. These options should be retained as primary discharge options for extracted groundwater.

Remedial Options 1, 2, and 3

16. Section 4, General Comment. Based on the location of the proposed line of extraction wells along Southern State Parkway, this system would provide no benefit to SFWD and NYAW supply wells north of Southern State Parkway. In fact, it will likely harm these supply wells by lowering the water table or by causing contaminates to migrate in the well sooner. The net result is that only four MWD supply wells may benefit from this system.

- 17. Section 4.2.1.1, Page 20, Section 4.2.2.1, Page 27, and Section 4.2.3.1, Page 32. This groundwater extraction system would eliminate groundwater flow from areas north of MWD. The report does not address whether there would be enough infiltration south of the capture zone to provide MWD with fresh water in the long term, or whether an alternative water supply would be required for MWD.
- 18. Section 4.2.1.1, Page 20, Section 4.2.2.1, Page 27, and Section 4.2.3.1, Page 32. This groundwater extraction system would also cause groundwater southeast and southwest of the extraction system to flow around the extraction system and would cause other area groundwater to flow toward MWD and NYAW wells. The quality of this water is uncertain and would need to be confirmed to be clean.
- 19. Section 4.2.1.1, Page 20, Section 4.2.2.1, Page 27, and Section 4.2.3.1, Page 32. Using the values provided in the report to calculate the flow rate, we could not replicate the 19 MGD estimate. The backup calculations for the groundwater extraction system were not provided. Specifically, the report calculation should be consistent with the natural groundwater flow through the area. The report provide two values for hydraulic conductivity that were "based on the analytical model" and that a "conservatively high hydraulic conductivity ... to account for the variability in aquifer hydraulic conductivity, the aquifer heterogeneity, and the use of a simplified 2-D analytical model that does not account for recharge". Based on the two values, the natural groundwater flow through the area was calculated: Using the hydraulic conductivity of 100 feet per day, a gradient of 0.002, a plume width of 10,000 feet, and an aquifer thickness of 900 feet, the calculated natural flow through the area is 1,800,000 cubic feet per day (CFD), or 13.5 million gallons per day (MGD). If one uses the average hydraulic conductivity of 67 feet per day, a gradient of 0.002, a plume width of 10,000 feet, and a plume thickness of 600 feet (350 feet for the shallow plume and 250 feet for the deep plume), the calculated natural flow through the area is 804,000 CFD or 6 MGD.
- 20. Section 4.2.1.1.2, Page 21, Section 4.2.2.1.2, Page 28, and Section 4.2.3.1.2, Page 34. The statement "The plume of deep groundwater containing CVOCs above the MCLs has been interpreted to be roughly 10,000 feet wide and 250 feet thick at the Southern State Parkway" is not supported by the available data, which indicates that the majority of the deep groundwater in this area does not exceed MCLs. While it is possible that some of the northern deep plumes may reach this area, the impacts may not be detectable for decades.

Remedial Option 1

21. Section 4.2.1.3, Page 22, Groundwater Treatment System, first paragraph. The report indicates that the extracted groundwater will average 35 ug/L of VOCs, presumably TCE. Except for those waters used for drinking water supplies, the NYS Surface Water Standard is 40 ug/L, indicating that the extracted groundwater could likely be discharged to portions of Massapequa Creek or South Oyster Bay, with limited or no treatment.

- 22. Section 4.2.1.3, Page 22, Equalization Tank. Since the groundwater from individual wells entering the treatment system would be expected to vary significantly over time, blending of clean water and VOC-impacted groundwater should be discouraged. Rather, clean water should bypass the treatment system and treatment should be reserved for the most contaminated groundwater. This would require dedicated piping from individual wells to the treatment system and by-pass piping.
- 23. Section 4.2.1.6, Page 24, first Paragraph. Based on the complexities of the project and the number of stake holders, the timeline is unrealistic. More than one year will be needed to complete the design, acquire property, and obtain permitting approvals.
- 24. Section 4.2.1.8.1, Page 25, Section 4.2.2.7.1, Page 31, and Section 4.2.3.7.1, Page 36. The report states that "Hydraulic control is used at numerous sites in Nassau County, New York and proven to be effective at stopping the migration of aqueous phase CVOCs in groundwater." The report does not identify any of these "numerous sites" where hydraulic capture has been successful or any relevant sites that are close to the size and requirements of the proposed Bethpage site, which would entail collecting approximately 7 billion gallons of water per year and is estimated to operate for 200 years.
- 25. Section 4.2.1.8.1, Page 25, Section 4.2.2.7.1, Page 31, and Section 4.2.3.7.1, Page 36. The effectiveness criteria do not address the impacts of hydraulic control on the water quality and quantity of fresh water in MWD and NYAW well fields, as well as other wellfields beyond the Bethpage Plume. In particular as to the impact on water quality, the proposed high rate of pumping from deep in the aquifer would be expected to increase the vertical downward migration of shallow groundwater contaminants, including fertilizers, pesticides, dry cleaner solvents, and petroleum spills, into the public water supplies. In addition, this pumping would be expected to increase the potential for salt water intrusion into the public water supplies south of the extraction system. As to the impact on water quantity, pumping 100% of the groundwater crossing the line of interception would deprive multiple communities at the southern portion of the plume (Massapequa and others) of drinkable water because, for the remedy to be effective, no groundwater must be able to pass the line of interception.
- 26. Section 4.2.1.8.4, Page 26, 4.2.2.7.4, Page 32, and Section 4.2.3.7.4 "Cons" should include probable loss of fresh drinking water supplies for MWD and NYAW.

Options 2 and 3

- 27. Section 4.2.2.2, Page 29 and Section 4.2.3.2, Page 34. The report "assumes" that the local trunk sanitary sewers lines are adequate to convey an additional 19 MGD of VOC-contaminated water to the CCWPCP. The report does not identify any evaluation that has been done that supports this assumption.
- 28. Section 4.2.2.2, Page 29 and Section 4.2.3.2, Page 34. The report states that a new double walled HDPE will be used to convey the water from each well to the sanitary sewer system. The report does not comment on the integrity of sanitary sewer

conveyance system or the potential for VOC-contaminated groundwater to leak into the aquifer at other locations.

- 29. Section 4.2.2.3, Page 29 and Section 4.2.3.3, Page 35. The introduction of high volumes of biologically clean water to the sewage treatment system would likely affect the hydraulic capacity of several components of the system; however, it is uncertain how this water would affect the anaerobic digestion and dewatering processes. Also, the introduction of large quantities of biologically clean water may adversely affect the efficiency of the biological wastewater treatment processes at CCWPCP.
- 30. Section 4.2.2.3, Page 29 and Section 4.2.3.3, Page 35. The groundwater extraction systems do not need to run continuously. The report does not address whether the upgrades at the CCWPCP could be reduced or eliminated if the groundwater extraction system operated during non-peak periods.
- 31. Section 4.2.2.3, Page 29 and Section 4.2.3.3, Page 35. The treatment systems at the CCWPCP are not well suited to treating VOC-impacted groundwater. The aeration process will remove a portion of the VOCs, but they are inefficient and will release VOCs to the air, without treatment. Based on the water classification for the CCWPCP discharge, treatment for VOCs is not likely to be required. Also, due to the potentially large release of VOCs to the atmosphere without treatment, the CCWPCP may not comply with air pollution control requirements.
- 32. Section 4.2.2.3, Page 29 and Section 4.2.3.3 Page 35. The report does not comment on the potential release of higher quantities of organics and nutrients through the discharge due to the higher flow rates.

Conclusions

- 33. Page 39, first paragraph. The Conclusions section of the report repeats the incorrect inference from the introduction that the Northrop Grumman Bethpage Facilities, the Naval Weapons Industrial Reserve Plant, the Northrop Grumman-Steel Los Plant 2, and the Bethpage Community Park-Former Grumman Settling Ponds are the only potential sources for hazardous chemical above the maximum contaminant level in the groundwater. The report should also identify other known sources of the contaminants such as Hooker-Ruco Superfund Site and American Drive-In Cleaners, as well acknowledge that there are numerous other sources including other dry cleaners, gasoline stations, maintenance shops, print shops, and commercial buildings with air conditioning units throughout the area.
- 34. Page 39, first paragraph. The statement "Further action is required to remediate the existing groundwater plume and the overall RAO would be to restore the groundwater to its pre-existing (pre-release) quality" is not based on the 2014 law or applicable regulations. These Options developed in the report do not specifically address these RAOs and they should be deleted from the report.

- 35. Page 39, first paragraph. While the implementation of one of the Options would likely eliminate potential impacts to municipal wells, it would likely accomplish this goal by eliminating a source of fresh water and result in the municipal supply wells being closed.
- 36. Page 39, first paragraph. The basis for the statement "Restoration would also serve to eliminate potential impacts to ... other natural resources within and down-gradient of the plume" is not discussed in the report, and that conclusion is unsupported. If the groundwater is not intercepted by public water supplies, it would discharge into South Oyster Bay and the ocean, where it would degrade naturally. Based on the New York State's classification of these waters, the water quality standard for TCE is 40 ug/L. The stated average VOC concentration is 35 ug/L which is less than the water quality standard.
- 37. Page 39, first paragraph. The report acknowledges that "during the time required to meet the RAO, continued wellhead treatment would be necessary to eliminate the groundwater pathway at the drinking water wells that already exhibit elevated concentrations of hazardous chemicals." Given that the report estimates a period of up to 200 years to meet the RAO, the report fails to note the logical inference that the options considered are in addition to the continuation of wellhead treatment, and not in lieu of it. At a minimum, the cost estimates of all options should take into account the costs of wellhead treatment. More fundamentally, the report should therefore explain how or why the options would in any way be superior to the existing wellhead contingency plan and other components of the OU-2 remedy that are ongoing. These considerations were addressed in the 2012 Alternatives Report.
- 38. Page 39, second paragraph and Pages 40-41. The report concludes the only option that could be implemented is hydraulic control by extracting and capturing the contaminated groundwater through one of the three options outlined in the report. However, the ROR also stated on Page 41 that wellhead treatment has been proven to be a safe and effective approach. This statement undermines why hydraulic control would even be considered. The ROR does not demonstrate any clear benefits to proceeding with full hydraulic control. The 2012 Alternatives Report also evaluated hydraulic control, and did not identify any clear advantage, and in fact, identified many concerns with attempting to implement it. Rather, continuing with the existing OU2 ROD remedy was identified as the most appropriate way to proceed.

Tables

- 39. Tables1. Table 2-1. T.O.G.S. 1.1.1 is not an ARAR, it should be identified as a "To be considered".
- 40. Table 2-2. Surface water criteria for "C" "SA", and "SC" should be added to this table and elsewhere in the report, as appropriate. These classifications are applicable for most of Massapequa Creek, South Oyster Bay, and the Ocean.

- 41. Table 2-2. If there is no standard, the lowest ARAR should not be entered as zero. It should be entered as "no standard".
- 42. Table 3-1, Infiltration basins are commonly used in the area to discharge large volumes of water and should be retained. NG is currently discharging approximately 6 MGD through two onsite basins, and the Navy is discharging approximately 1.4 MGD through one basin near its GM-38 Treatment System.

References

NRC, 1994. Alternatives for Groundwater Cleanup. A report prepared by the National Research Council. Published by the National Academies Press.

NRC, 2013. Alternatives for Managing the Nation's Complex Contaminated Groundwater Sites

Prepared by the Committee on Future Options for Management in the Nation's Subsurface Remediation Effort, Water Science and Technology Board, Division on Earth and Life Studies, National Research Council. Published by the National Academies Press.

Navy, 2012. Study of Alternatives for Management of Impacted Groundwater at Bethpage. Prepared by Naval Facilities Field Engineering Command Mid-Atlantic, January 2012.

Fred C. Payne, Joseph A. Quinnan, Scott T. Potter, 2008. Remediation Hydraulics. CRC Press.

Enclosure 2



DEPARTMENT OF THE NAVY OFFICE OF THE ASSISTANT SECRETARY (ENERGY, INSTALLATIONS AND ENVIRONMENT) 1000 NAVY PENTAGON WASHINGTON DC 20350-1000

November 13, 2014

The Honorable Andrew M. Cuomo Governor of New York State NYS State Capitol Building Albany, NY 12224

Dear Governor Cuomo:

I am writing on behalf of the Department of the Navy (DON) to convey my concern about New York Assembly Bill A9492, which has recently been passed and forwarded to your desk for consideration. The Bill requires a report by the New York State Department of Environmental Conservation (NYSDEC) focused "on utilization of hydraulic containment and state of the art remediation practices... without utilizing well head treatment" to address groundwater contamination migrating from properties previously owned by DON and Northrop Grumman in Bethpage, New York. A report, conducting the analysis required by the bill, has already been completed, and by requiring a new report to only look at solutions found to be technically infeasible, the bill disregards needed actions to protect human health.

As you are aware, the Bethpage contamination plume is large and complex. Strategies for clean-up of the plume have been carefully chosen based upon input from a group of highly qualified engineers and scientists, including personnel from U.S. Environmental Protection Agency (EPA), U.S. Army Corps of Engineers (USACE), NYSDEC, New York State Department of Health, U.S. Geological Service (USGS), and Nassau County Department of Health, as well as technical representatives from affected and potentially affected water districts. In 2012, DON (with concurrence from NYSDEC, EPA, USACE, and USGS) completed an analysis of remediation technologies, including an evaluation of full plume containment. Full containment was found to be technically and practicably infeasible due to the highly porous nature of Nassau County's geology and the tremendous amount of groundwater pumping that occurs in the region. A full containment approach would also require condemnation of many family residences or commercial properties to install wells, pipelines, treatment systems, and treated groundwater disposal locations (wells or ponds) without necessarily improving human health protection. The contamination plume is currently being addressed through a combination of source area remedies, hydraulic containment, and as a last resort, well head treatment of public water supplies to protect Nassau County residents. DON continues to work with agencies to identify opportunities to supplement wellhead protection with treatment and containment systems. In 2015, DON is determining where to install an additional mass removal treatment system. These efforts take place within the framework of a well-established regulatory process (CERCLA) that requires input from federal and state regulators, as well as the public, before decisions are reached and response actions are taken.

Finally, parties other than the DON also bear legal and financial responsibility for this groundwater contamination and State authorities should be directed at requiring them to contribute to the long-term solution as well.

Please be assured that the Navy recognizes and shares the public's concern about the Bethpage groundwater contamination. We will continue to work with all interested stakeholders to implement timely response actions that are protective of the water supply for residents in the area. The Navy is available to answer any questions you or the State legislature might have regarding this matter. If you have any questions, please feel free to call me, or have someone on your staff contact Richard Mach at (703) 614-5463 or richard.mach@navy.mil.

Sincerely. Donald R. Schregardus

Deputy Assistant Secretary of the Navy (Environment)

2