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LETTER AND COMMENTS REGARDING SIMULATION OF GROUNDWATER FLOW IN
VOLATILE ORGANIC COMPOUND CONTAMINATED AREA- A DISCUSSION OF MODELING
CONSIDERATION APRIL 2011 NWIRP BETHPAGE NY
05/16/2011
NORTHROP GRUMMAN



Northrop Grumman Corporation
Aerospace Systems
Battle Management & Engagement Systems

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May 16, 2011

Mr. Stephen Terracciano, Chief
Coram Program Office
U. S. Geological Survey
New York Water Science Center
2045 Route 112, Building 4
Coram, New York 11727-3085

Re: April 2011 Report "Simulation of Groundwater Flow in a VOC-Contaminated Area near Bethpage, New York – A Discussion of Modeling Considerations"

Dear Mr. Terracciano:

Northrop Grumman has reviewed the above-referenced report, which was distributed by the USGS during the April 6, 2011 Southeast Nassau Water District Committee Meeting. This report was a follow up to the USGS' preliminary review of the Bethpage model presented in a December 23, 2010 memo, entitled "Preliminary Review of Model used for Comprehensive Feasibility Study". We responded point by point in our February 10, 2011 comments on the preliminary review memo, and the final report has touched on some of our concerns. However, we also requested that the USGS provide specifics, technical facts, and relevant context in its final model report to back up the broad findings and conclusions regarding the model that were presented in the December 23rd memo. Unfortunately, the final report provides few additional technical details and data interpretation to support the conclusions it repeats from the preliminary review. Because we have already provided detailed responses to the USGS' preliminary model review memo in our February 10, 2011 letter, we do not intend to repeat our technical comments in this response. That being said, we feel there are a couple of key points to be made:

- The final report repeats the general conclusion from the December 23rd memo that uncertainties associated with the use of the model and outpost wells have led to under-prediction of impacts at downgradient supply wells. The report repeats this conclusion using the same anecdotal evidence presented in the preliminary review. As we indicated in our February 10 letter, we do not agree with the USGS' assessment and repeat that, with one exception, the supply wells monitored by the outpost wells have not been impacted by site-related VOCs, nor is there any data or information that indicates that any supply well has been provided with less than a 5-year warning.
- The final report states a lack of confidence in the model without making a solid technical argument for that lack of confidence. It goes on to condition that additional confidence in the model may be achieved by completing a number of suggested activities including incorporation of a parameter estimation modeling package, conducting transient-state calibration and uncertainty evaluations, and collecting substantially more local and regional hydrogeological data. This proposed additional work would, no doubt, represent a lengthy and costly endeavor, without any reasonable assurances that the results would yield substantial improvements to our current understanding of hydrogeological conditions or greater model confidence.
- The final report continues to underemphasize the fact that uncertainty associated with long-term predictions of impacts at distant locations is inherent and not unexpected in any modeling effort,

Mr. Stephen Terracciano

May 16, 2011

Page 2

especially one in such a large and complex setting. The report also continues to downplay the fact that uncertainty in evaluating future impacts can be effectively addressed by means other than complex modeling exercises, such as using outpost wells to collect water quality data.

- The report does not give any examples from the author's experience where making model changes similar to those suggested has actually improved predictions based on a comparison of model results to actual field data.

The development, refinement, and use of the Bethpage model over its 15-year lifespan have been consistent with the model's intended purposes to facilitate groundwater remediation designs and to aid in evaluation of potential downgradient impacts. The model has been applied not as the only tool, but as one of the tools for remedial decision making on this project. Accordingly, it has been purposefully used in conjunction with, and in consideration of, extensive monitoring data, local experience, and professional judgment in making appropriate remedial decisions in concert with the New York State Departments of Environmental Conservation (NYSDEC) and Health (NYSDOH).

Sincerely,



Kent Smith,
ESH&M Manager
Northrop Grumman Systems Corporation

cc: Nicole Bujalski, EPA
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