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ENVIRONMENTAL

Mr. Steven M. Scharf, P.E.
Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway, 11th Floor
Albany, New York 12233-7015

Subject:
Revised Soil and Soil Vapor Sampling Work Plan, Plant 2 SVE System, Northrop Grumman Corporation - Bethpage Facility. Site #1-30-003A.

Date:
10 July 2003

Contact:
Carlo San Giovanni

Extension:
(631) 391-5259

Dear Mr. Scharf:

ARCADIS has prepared this revised work plan on behalf of the Northrop Grumman Corporation (NGC) to explain our current plans for collecting soil vapor and soil samples to assess levels of residual subsurface soil vapor concentrations and whether the remedial objectives (i.e., shut-down criteria) have been reached. The plan described herein reflects the work scope proposed in our June 20, 2002 letter to NYSDEC with amendments that include additional activities and supporting documentation requested by the NYSDEC in their letter, dated June 20, 2003.

Soil Sampling Program

The sampling program will involve the collection of soil vapor samples from former Operable Unit 1 Remedial Investigation (RI) Soil Gas Locations SG-4C and SG-4D and collection of soil vapor and soil samples from two proposed vertical profile borings (VPBs) (SB-1 and SB-2) located within the former trichloroethene (TCE) storage tank area (Figure 1). The following sections describe the methodology for soil vapor and soil sample collection and analysis.

Soil Vapor Sampling

At each of the proposed soil vapor sampling locations (SG-4C, SG-4D, SB-1 and SB-2), soil vapor probes will be inserted two feet below land surface (ft bls) using a Geoprobe rig. The soil vapor probe consists of a stainless steel cylinder with a removable tip at the bottom. Once the probe is driven to a depth of two feet below grade, the probe is pulled back approximately 2 to 4 inches separating the tip from the probe and creating a clear pathway to the soil vapor. A Teflon tube is then inserted down the center of the stainless steel cylinder. The annulus between the Teflon tubing and the stainless steel cylinder and the intersection of the stainless steel cylinder with the ground are then sealed with clay to create an airtight seal around the probe. Prior to the collection of the sample, the probe will be purged, by removing approximately three volumes of air with a diaphragm pump connected to the Teflon

tubing. Once the purging is completed, the pump is removed and the tubing is connected to a laboratory-supplied Summa canister. The SUMMA canister, which is under a vacuum and is equipped with a laboratory-supplied flow controller that will be set by the lab to "draw in" a sample at a rate of 100 milliters per minute or less, will be opened and the vacuum will draw the soil vapor into the canister. Once the canister is full (i.e., the canister has reached zero pressure as measured by a pressure gauge) the canister will be sealed and labeled with the identification of the soil vapor point. The on-site ARCADIS representative will be present while the sample is being collected, and will record the date, time sampling began, time sampling was completed, and the vacuum pressure reading at approximately five minute intervals during sampling, or other appropriate interval.

After each sample is collected, the soil vapor probe will be removed from the ground and decontaminated by washing with soap and distilled/deionized water. Dedicated Teflon tubing will be used at each sample location. A Chain of Custody Form will then be completed and samples will be shipped overnight to the laboratory. Samples will be analyzed for the Target Compound List (TCL) of volatile organic compounds (VOCs) via USEPA Method TO-14S (GC/MS - SIM).

Soil Sampling

Prior to drilling the VPBs SB-1 and SB-2, the background level of organic vapors in ambient air will be determined using a photoionization detector (PID) and soil vapor samples will be collected from VPBs SB-1 and SB-2 using the same methods described above.

VPBs SB-1 and SB-2 will be drilled to the water table (approximately 50 ft bls), and soil samples will be collected continuously during the drilling of each VPB (either via Geoprobe or hollow stem auger drilling method). During VPB drilling, soil samples will be collected in VOC sample containers appropriate for laboratory analysis with a separate volume of soil set aside for headspace analysis using a PID. Upon completion of the VPBs, the PID readings will be evaluated, and a soil sample interval(s) will be selected from each VPB for laboratory analysis from the depth interval exhibiting the highest PID reading(s). In the event that multiple, vertically separate intervals exhibit elevated headspace concentrations, one sample representative of each zone of elevated PID readings (the term "elevated" is defined as a minimum of one order of magnitude above the background value) will be selected for analysis. In the event that PID readings are inconclusive, three soil samples from each VPB will be submitted for laboratory analysis from the three depths that correspond to sample intervals in the original RI soil borings that exhibited elevated VOC concentrations (i.e., 0-2 ft bls, 8-10 ft bls, and 18-20 ft bls). Soil samples will be sealed in laboratory provided containers, packed in an ice filled

cooler and transported to the lab. Chain-of-custody protocols will be observed during the handling of the samples. Soil samples will be analyzed for the TCL VOCs via USEPA Method 8260.

Report Preparation and Development of Closure Strategy

At the completion of the sampling program, a letter report will be prepared and submitted to the NYSDEC that summarizes the analytical results. The data presented in the report will be used in conjunction with the current soil vapor extraction system (SVE) system performance monitoring and groundwater quality data to support recommendations for either continued operation of the SVE system or for termination of SVE system operation and initiation of post-closure monitoring, leading to permanent closure of the system. It is NGC's intent to begin this work as soon as possible. As requested in the NYSDEC letter dated February 7, 2000, we will provide NYSDEC two weeks prior notice before implementing the sampling program to provide NYSDEC the opportunity to collect duplicate samples.

If you have any questions please do not hesitate to contact us.

Sincerely,

ARCADIS G&M, Inc.

David E. Stern
Project Hydrogeologist

Carlo San Giovanni
Project Manager

Michael Wolfert
Project Director

Enclosures

Copies:
Larry Leskovian, Northrop Grumman
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Acad Version : R15.06
User Name : pinnacle
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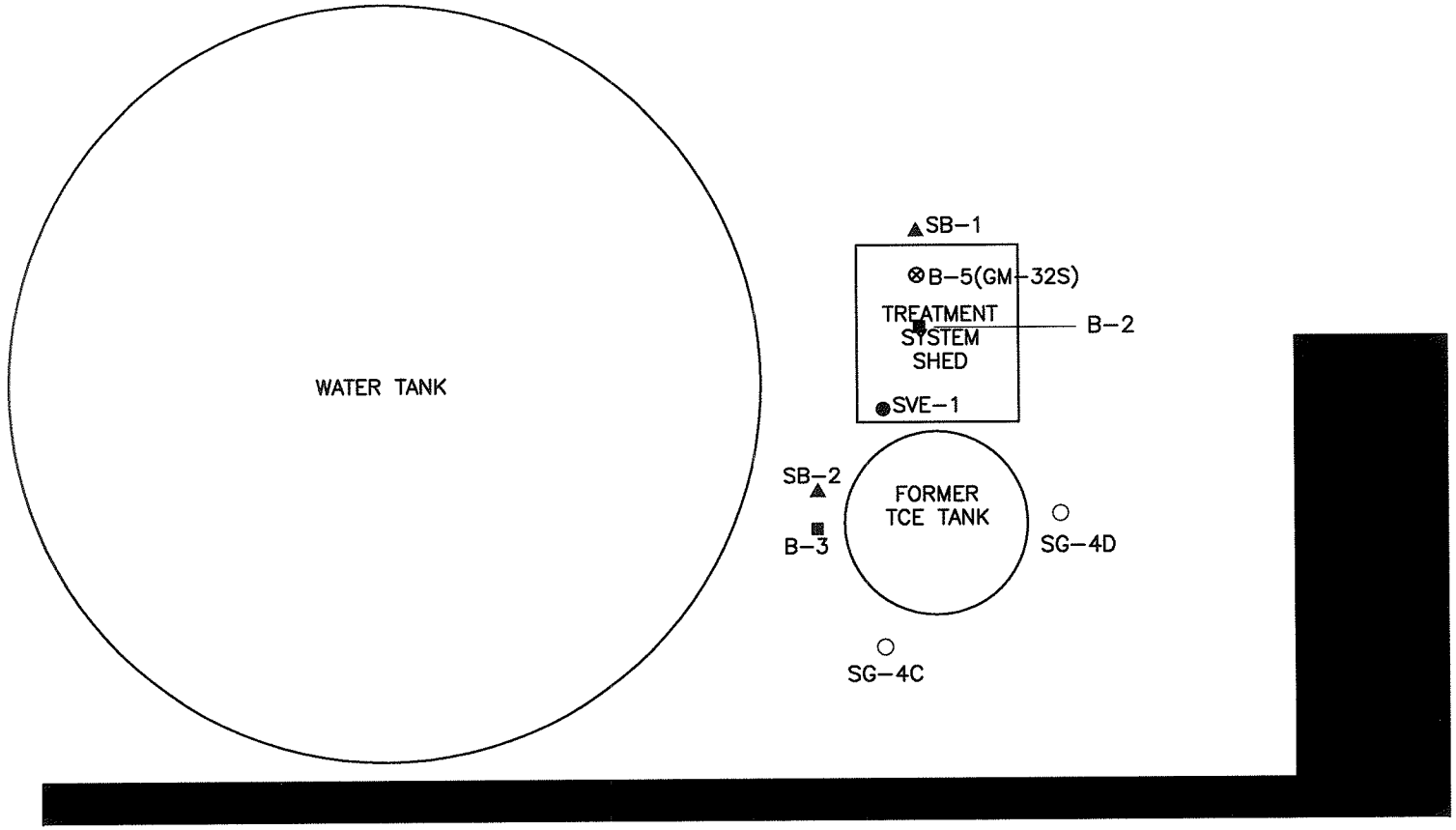
LEGEND

- ● EXISTING SOIL VAPOR EXTRACTION WELL
- ⊗ PREVIOUSLY INSTALLED SOIL BORING/MONITORING WELL
- ▲ PROPOSED SOIL VAPOR SAMPLING/VERTICAL PROFILE BORING LOCATION
- ○ PROPOSED SOIL VAPOR SAMPLING LOCATION
- ■ PREVIOUSLY DRILLED SOIL BORING



NOTE: ALL LOCATIONS SUBJECT TO FIELD VERIFICATION.

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SCALE IN FEET

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