Ms. Sue Robbins
North Carolina Department of Environmental Quality
Inactive Hazardous Sites Branch
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Wilmington, North Carolina 28405

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ENVIRONMENTAL

Subject:

Work Plan for Remedial Investigation Addendum – Phase 4
Ansell Protective Products, Inc., 2906 Anaconda Road, Tarboro, Edgecombe County, NC
NONCD0001273

Date:
April 4, 2016

Contact:
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Our ref:
NC101062.0021

ARCADIS G&M of North Carolina, Inc.

NC Engineering License # C-1869
NC Surveying License # C-1869

Dear Ms. Robbins:

On behalf of Ansell Protective Products, Inc. (Ansell), Arcadis G&M of North Carolina, Inc. (Arcadis) has prepared this work plan detailing the additional proposed work to further delineate constituents of potential concern in soil and groundwater at the facility referenced above (the "Site"). The layout of the Site, depicting locations of existing monitoring wells and previous soil and groundwater borings, is presented as **Figure 1**.

BACKGROUND

Results of the previous remedial investigations indicated that three areas of elevated tetrachloroethene (PCE) concentrations were present below the building: in the southwestern portion of the building within the vicinity of an identified floor pit and curbed containment area; in the southeastern portion of the building in the vicinity of a floor scale; and in the northwestern area of the building below the warehouse. The majority of the identified PCE mass was present below the water table within the combined soil and groundwater matrix. PCE concentrations also appeared to be migrating with the groundwater flow direction toward the east and northeast. Results from the most recent investigation were submitted to the North Carolina Department of Environmental Quality (NCDEQ) Inactive Hazardous Sites Branch (IHSB) on November 4, 2015 (Arcadis 2015).

PROPOSED ACTIVITIES

Additional Delineation Below the Building

Arcadis will supervise a driller licensed in the state of North Carolina to advance seven additional soil borings (soil boring locations 47 through 53) in the vicinity of previous borings SSB-44 and SSB-36 in the southeastern portion of the building, and one boring (46) in the vicinity of SSB-41 in the northwestern portion of the building to further delineate PCE in soil and groundwater below the building (see **Figure 1**). Soil borings will be advanced with a direct-push technology (DPT) drill rig with a 2-inch diameter continuous soil core bit. Soil borings will be advanced to approximate depths of 15 feet (ft) below ground surface (bgs) and approximately 5 ft below the water table. Continuous soil cores will be collected, logged, and screened with a photo-ionization detector (PID) for the presence of volatile organic compounds (VOCs). Up to four soil samples will be collected from each soil core for laboratory analysis of VOCs by United States Environmental Protection Agency (USEPA) Test Method 8260B. Depths of soil samples will be based on the results of the PID screening. Additionally, Arcadis will collect up to eight soil samples for analysis of physical properties including grain size distribution, pore space, and non-aqueous phase liquid (NAPL) within the pore space by American Petroleum Institute (API) Test Method API RP 40 by PTS Laboratories.

After completion of each of the soil borings described above, the driller will advance a screened casing (screened from 10 to 15 ft bgs) into the bore-hole and will extract the drill bit outer casing to expose the screen. Depth to groundwater will be gauged in each boring using an electronic depth sounder. Arcadis will insert clean polyethylene tubing down the inside of the casing and will collect a grab groundwater sample using a peristaltic pump. Groundwater samples will be placed in laboratory-supplied sample bottles and will be hand delivered to ENCO Laboratory, a North Carolina certified laboratory for analysis of VOCs by USEPA Test Method 8260C SIM ID, which includes low-level detection limits (2 micrograms per liter [µg/L]) for 1,4-dioxane. After completion of groundwater sampling, the borings will be abandoned by filling each boring with cement grout to the bottom of the concrete slab and the top 6 inches will be completed with concrete, flush with the existing floor surface.

Soil cuttings generated during the investigation from suspected source areas (soil boring locations 47 through 53 on **Figure 1**) will be containerized in 55-gallon drum(s). Arcadis will collect a 4-point composite sample of the waste soil for analysis of total VOCs by USEPA Test Method 8260B, as well as toxicity characteristic leaching procedure (TCLP) extraction for VOC analysis by USEPA Test Method 8260B. If the soil contains VOCs at concentrations below the preliminary industrial health-based soil remediation goals (PSRGs), then the soils will be spread on the ground at the Site. If VOC concentrations in soil are greater than the PSRGs, then the drum(s) will be removed for proper disposal off-site. All soil generated from soil borings located away from suspected source areas will be spread on the ground surface of the Site.

Geologic Investigation to Determine Depth of Confining Unit

Arcadis will supervise drilling of one soil boring west of the building to confirm the depth of the Yorktown confining layer which is estimated to be at a depth of approximately 40 ft bgs. Continuous soil cores will be collected from 30 ft bgs and logged to a depth extending approximately 10 ft into the confining layer or until boring refusal. The boring will be advanced with a DPT drill rig. In the event that the DPT drill rig is unable to reach the required boring depth, the drillers will advance an 8-inch diameter hollow-stem auger to the desired depth and will collect continuous soil samples below the final depth of the DPT boring. This boring will be advanced in an area of low PCE concentrations (near previous boring HP-1) to avoid potentially drawing impacted groundwater into deeper aquifer zones (see **Figure 1**).

Monitoring Well Installations

Arcadis will supervise the installation of four shallow/deep monitoring well pairs (MW-16 through MW-21, MW-24, and MW-25), along the eastern and northern sides of the building to further assess the distribution of dissolved VOC concentrations in downgradient groundwater. Additionally, a deep monitoring well (MW-23) will be installed adjacent to previously installed well MW-22 along the eastern side of the building. Proposed monitoring well locations are depicted on **Figure 1**. The driller will advance a 10-inch diameter hollow-stem auger to the designated well depths of approximately 15 to 20 ft bgs for the shallow wells and 35 to 40 ft bgs for the deep wells. The driller will place 4-inch diameter stainless-steel well casing with a 10 ft screened section at the bottom of each bore hole with a 4-inch solid riser from the top of screen to the ground surface. The drill rods will be slowly withdrawn from the ground as sand pack is added to the well annulus to depths of approximately 2 ft above the top of the screen. An approximately 2-foot thick layer of bentonite will be added to the top of the sand layer and the remainder of the well annulus will be filled with concrete grout. An approximately 12-inch diameter steel manhole vault will be cemented into place at each well head flush with the ground surface.

In addition to the proposed exterior wells, Arcadis will supervise the installation of two additional shallow wells inside the building (see SSW-05 and SSW-06 on **Figure 1**) to further assess side-gradient and down-gradient VOC concentrations below the building. The interior wells will be installed by advancing a 2-inch diameter DPT probe to 15 ft bgs and installing a pre-packed 1-inch diameter polyvinyl chloride (PVC) well casing screened from 10 to 15 ft bgs in a similar manner to the interior wells installed during the previous investigation phase (SSW-01 through SSW-04). The wells will be finished with a 4-inch diameter manhole vault cover cemented flush with the existing concrete floor. Development of the monitoring wells will be completed to remove sediments by purging water from the wells with a pump while agitating the water column. Groundwater purged from the monitoring wells will be discharged to ground surface in the vicinity of the monitoring well from which the groundwater was purged.

Abandonment of Wells

Arcadis will supervise the abandonment of the two existing large-diameter wells WSW-1 and WSW-2 located near the southeastern corner of the Site building. The driller will abandon the two wells in accordance with the North Carolina bored well abandonment requirements; however the provision for disinfecting the well prior to abandonment will not be performed as these two wells were not potable

water supply wells. The top 3 ft of the well casings will be removed, soil around the former casings will be excavated, the wells will be filled with cement grout or bentonite to within 1 ft of ground surface, and excavated soil will be placed on top of the grout/bentonite to match the surrounding surface grade. The driller will then submit a record of abandonment to the North Carolina Groundwater Section within 30 days of the well abandonment.

Groundwater Monitoring

After installation and development of the additional proposed wells identified above, Arcadis will collect two rounds of groundwater samples from all 16 Site wells installed during the current and previous Remedial Investigations (AMW-01S/D through AMW-5S/D and SSW-01 through SSW-06), from four previously-installed Site wells (MW-4S/D and MW-5S/D), and from four off-site wells in downgradient areas (MW-7S/D and MW-8S/D). Locations of off-site wells MW-7S/D and MW-8S/D are depicted on **Figure 2**. Prior to sampling, Arcadis will gauge depth-to-groundwater in each well. Depth-to-groundwater measurements will be used to develop groundwater contours and estimated flow directions. Groundwater samples will be collected from the monitoring wells using a peristaltic pump and disposable polyethylene tubing. The bottom of the tubing will be set at approximately the mid-point of the well screen. Groundwater quality parameters (temperature, pH, dissolved oxygen, specific conductivity, and oxidation-reduction potential) will be monitored during the purging activities. The monitoring wells will be purged under low-flow conditions until the groundwater quality parameters stabilize, at which point Arcadis will collect groundwater samples in laboratory-supplied bottles. Sample bottles will be placed in a cooler on ice and hand delivered to ENCO Laboratories in Cary, North Carolina for analysis of VOCs by USEPA Test Method 8260C SIM ID, which has a lower reporting limit for 1,4-dioxane than the standard Test Method 8260B.

Investigation Report

After completion of the additional Site investigation and the two rounds of groundwater sampling described above, Arcadis and Ansell will prepare a report detailing the results from the investigation as well as well installation and abandonment records for submital to the NCDEQ IHSB. Depth-to-groundwater measurements will be used to calculate groundwater elevations and to generate a groundwater potentiometric surface map for the shallow aquifer zone at the Site. Analytical data will be tabulated and also presented visually on Site layout figures. The report will include an evaluation of the data as well as recommendations for further action.

Should you have any questions or require additional information, please contact Ryan Gerber with Arcadis at (919) 415-2265.

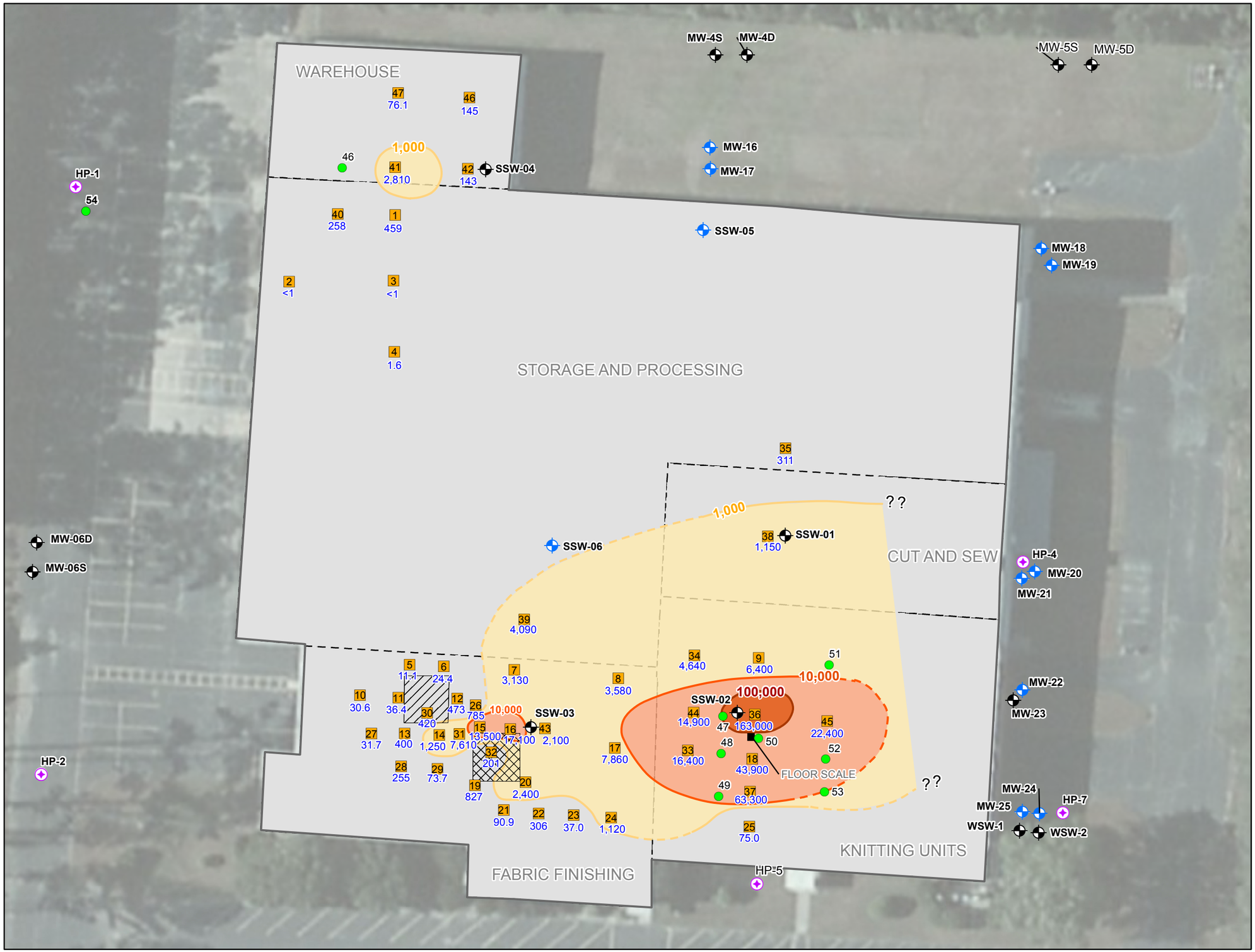
Sincerely,
Arcadis G&M of North Carolina, Inc.

Ryan Gerber, PE
Project Engineer

Copies:
Aaron Gustkey – Ansell
Katy Brantingham – Arcadis
Eric Killenbeck – Arcadis
Katie Noonan – Arcadis

Enclosures:
Figure 1 Site Layout Depicting Proposed Locations for Additional Investigation
Figure 2 Site Layout with Existing Monitoring Well Network

FIGURES



LEGEND:

- 1 — PHASE 3 SOIL AND GROUNDWATER BORING LOCATION
- 459 — GROUNDWATER BORING PCE CONCENTRATION (µg/L)
- PROPOSED MONITORING WELL
- MONITORING WELL
- PREVIOUS HYDROPUNCH LOCATION
- PROPOSED PHASE 4 SOIL BORING LOCATION
- BUILDING
- FLOOR PIT
- CURBED CONTAINMENT

PCE ISO CONCENTRATION IN SHALLOW GROUNDWATER

- 100,000 µg/L
- 10,000 µg/L
- 1,000 µg/L
- ? — UNKNOWN ISOCONCENTRATION CONTOURS IN DOWNGRADIENT ZONES.

NOTE:
1) "SSB" removed from the boring identifications
2) PCE - Tetrachloroethene
3) µg/L - micrograms per liter
4) Dashed plume boundary indicates inferred locations.

0 50 100
SCALE IN FEET

SOURCE: ESRI BASEMAPS IMAGERY, 2014

Ansell

ANSELL HEALTHCARE, INC.
TARBORO, NORTH CAROLINA

SITE LAYOUT DEPICTING PROPOSED LOCATIONS FOR ADDITIONAL INVESTIGATION

ARCADIS

FIGURE 1

User: Kives Location: On-Site Citrix
Path: Z:\GISPROJECTS_ENV\Ansell Healthcare\MXD\Fig1_AnsellHealthcare_ProposedAdditionalMWs.mxd

N

LEGEND:

- MONITORING WELL
- ANSELL PROPERTY LINE
- FENCE
- POND/CREEK

0 300 600

SCALE IN FEET

SOURCE: ESRI BASEMAPS IMAGERY, 2014

Ansell

ANSELL HEALTHCARE, INC.
TARBORO, NORTH CAROLINA

SITE LAYOUT WITH EXISTING MONITORING WELL NETWORK

ARCADIS

FIGURE
2

User: jrapp Location: On-Site Citrix
Path: Z:\GISPROJECTS_ENV\IngersollRand\PA_Athens\MapDocs\20141210\Fig1_2_AnsellHealthcare_SiteLayout_v2.mxd