Department of Energy
Savannah River Operations Office
P.O. Box A
Aiken, South Carolina 29802

OCT -1 2019

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Federal Remediation Section
Division of Site Assessment, Remediation and Revitalization
Bureau of Land and Waste Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Mr. Jon Richards
Acting Savannah River Site Remedial Project Manager
Superfund Division
U. S. Environmental Protection Agency, Region 4
61 Forsyth Street, SW
Atlanta, Georgia 30303

Dear Ms. Fulmer and Mr. Richards:

SUBJECT: RCRA Facility Investigation / Remedial Investigation (RFI/RI) Letter Work Plan in Support of the D-Area Groundwater Operable Unit (D-Area Upgradient Sources) SEMS Number: 63

The U.S. Department of Energy (USDOE) conducted a Core Team meeting with the U.S. Environmental Protection Agency (USEPA) and the South Carolina Department of Health and Environmental Control (SCDHEC) on August 29, 2019 to discuss the development of a Resource Conservation and Recovery Act Facility Investigation/Remedial Investigation (RFI/RI) Work Plan for the D-Area Groundwater (DAG) Operable Unit (OU). The groundwater in D-Area has been contaminated with volatile organic compounds (VOCs), metals, and radionuclides from surface or facility sources associated with the D-Area OU (DAOU). The DAOU is comprised of multiple waste units and facilities associated with the former operation of the 484-D Powerhouse and the production and rework of heavy water moderator for reactor operations. Most of the sources of the groundwater contamination associated with the DAOU have been addressed under the remedial and/or removal actions. Although the 484-D Powerhouse is no longer active, the building has not undergone demolition and any needed remedial activities. The Core Team determined that additional scoping of the DAG OU was needed due to the size and complexity of the unit, the large amount of data for review, and the uncertainty associated with potential contaminants of concern associated with the remaining DAOU surface units. However, the Core Team agreed at the August 29, 2019 scoping meeting that additional monitoring wells located within the DAG OU footprint would provide a better understanding of the nature and extent of contaminant plumes during development of the final DAG OU RFI/RI Work Plan.

The purpose of the this RFI/RI Letter Work Plan is to initiate the installation of new monitoring wells within the DAG OU footprint. The details of the additional monitoring wells are provided in this letter including well locations, depths, screen zones, and targeted contaminant plumes. The proposed monitoring wells will expand the existing understanding of the nature and extent of contamination for the DAG OU and provide additional groundwater characterization for use in the final DAG OU RFI/RI Work Plan.

D AREA HISTORY AND BACKGROUND

Savannah River Site (SRS) encompasses 803 square kilometers (km^2) (310 square miles [mi^2]) of South Carolina coastal plain uplands along the Savannah River in Aiken, Barnwell, and Allendale counties. SRS is owned by the USDOE and produced special nuclear materials for the U.S. Department of Defense between 1952 and 1988.

D Area is located in the southwest quadrant of the SRS, approximately (~) 914-meters (m) (3,000-feet [ft]) east of the nearest site boundary, the Savannah River. The DAG OU, which is located in the Savannah River Floodplain and Swamp watershed, encompasses groundwater beneath D Area, west and southwest to the Savannah River.

Groundwater in D Area has been monitored under the Core Team-approved *Monitoring Work Plan for the D-Area Groundwater Operable Unit (U)* (WSRC-RP-2003-4150, Revision 1, June 2004) since 2004. During this period, the monitoring effort has focused on three specific contaminated plumes (i.e., VOCs, metals, and tritium) in the groundwater that appear to emanate from source areas and commingle downgradient as the plumes approach the wetlands/Savannah River (Figure 1). The USDOE has submitted groundwater monitoring reports or data summary letters annually to the SCDHEC and the USEPA documenting the monitoring results. The reports/letters serve as the basis for the proposed well locations targeting the three identified contaminant plumes.

D Area Groundwater Plumes

Commingled plumes of VOCs (trichloroethylene [TCE], tetrachloroethylene [PCE]), tritium, and metals (beryllium and other metals) are present in the groundwater at D Area with concentrations above maximum contaminant levels (MCLs) or Regional Screening Levels (RSLs). Groundwater flow in the Upper Three Runs Aquifer (UTRA) and the underlying Gordon Aquifer (GA) is both to the west and southwest towards the Savannah River. A flow and transport groundwater model was developed in 2002 to provide a baseline for D Area groundwater understanding, and to show nature and extent of existing

groundwater contamination. The model supported the development of the *Monitoring Work Plan for the D-Area Groundwater Operable Unit (U)* (WSRC-RP-2003-4150, Revision 1, June 2004) which prescribed annual and semi-annual monitoring of wells and surface water stations. Annual and semi-annual monitoring of wells and surface water stations have provided long-term trend data of the TCE, tritium, and metals plumes that have been reported in groundwater monitoring reports or data summary letters annually since 2004. The current monitoring network includes 82 monitoring wells and 12 surface water stations over an area of approximately 242.8 hectares (600 acres) (Figure 2). This network supports the monitoring of the highest concentrations of the various plumes and relative geometry of each plume as described below.

VOC Plume: The VOC plume has been identified and mapped from the DAOU Bubble Towers Subunit southwest under the 484-17D D-Area Coal Storage Area (DCSA), 488-4D Ash Landfill and portions of the 488-D, 488-1D, and 488-2D Ash Basins, and westward into the D Area wetlands. The VOC plume comprises an area of approximately 150 hectares (370 acres).

Metals Plume: The low-pH and metals plumes extend to the southwest from the D-Area Rubble Pile, 484-17D DCSA, and 489-D Coal Pile Runoff Basin. Acidification has resulted in the leaching of metals from both the coal and the natural minerals in the underlying soils, leading to a metals groundwater plume in the UTRA. The underlying soils remain acidified and continue to contribute to the low-pH and metals groundwater plumes. Metals generally exceed their respective MCLs or RSLs. Beryllium is the most dominant contaminant and its plume correlates with the low-pH plume.

Tritium Plume: The tritium plume extends from the DAOU Moderator Processing Facility to the southwest towards the 488-D Ash Basin and 488-4D Ash Landfill and towards the west into the wetlands and comprises an area of approximately 53.4 hectares (132 acres).

Proposed New Monitoring Wells

Seventeen (17) new monitoring wells are proposed to bound the various plumes vertically and horizontally (Table 1). This includes eight UTRA wells and nine GA wells. Figure 3 shows the locations of the proposed monitoring wells. The data gathered from the 17 new monitoring wells will expand the understanding of the nature and extent of groundwater contamination and aid in the development of the final, comprehensive RFI/RI Work Plan for the DAG OU. The 17 new monitoring wells will be included in a Sampling and Analysis Plan (SAP) to be submitted with the final RFI/RI Work Plan. The SAP and final RFI/RI Work Plan may include additional monitoring wells and sampling criteria as data needs are determined by the Core Team.

Table 1 includes the locations, targeted plume, depths and screen zones for the proposed monitoring well locations discussed in this RFI/RI Letter Work Plan.

Table 1. PROPOSED ADDITIONAL MONITORING WELLS FOR D-AREA GROUNDWATER OPERABLE UNIT

Station_ID	Aquifer	Plumes Monitored	Easting (UTM NAD 27)	Northing (UTM NAD 27)	Comment	Estimated Total Depth (ft)	Estimated Screen Zone (ft mean sea level)	Screen Length (ft)	Well Diameter (inches)
DCB026D	GA	Tritium, VOC	430786.3411	3673710.411		90	34-44	10	2
DCB030C	UTRA	Metals, VOC	430702.8815	3672675.074		40	72-82	10	2
DCB030D	GA	Metals, VOC	430705.0165	3672673.088		80	32-42	10	2
DCB035D	GA	Metals, VOC	431336.1296	3673241.014		85	35-45	10	2
DCB045D	GA	VOC, Tritium	431032.3573	3673921.145		105	30-40	10	2
DCB083C	UTRA	Metals	431344.4925	3672942.721		50	68-78	10	2
DCB083D	GA	Metals	431343.7175	3672937.295		90	28-38	10	2
DCB084C	UTRA	Metals	431521.3269	3672858.707		40	78-88	10	2
DCB084D	GA	Metals	431517.697	3672854.876		85	33-43	10	2
DCB085A	UTRA	Metals	431046.4308	3672573.015		22	92-102	10	2
DCB085C	UTRA	Metals	431049.066	3672575.65		40	74-84	10	2
DCB085D	GA	Metals	431051.9941	3672578.285		80	34-44	10	2
DCB086C	UTRA	VOC	431325.8307	3674420.077		62	84-94	10	2
DCB087A	UTRA	Metals	431223.0341	3673635.645	Installed after the 2019 DCSA Neutralization is complete.	32	102-112	10	2
DCB087D	GA	Metals	431227.2798	3673632.149	Installed after the 2019 DCSA Neutralization is complete.	105	30-40	10	2
DRW001D	GA	VOC	431502.7318	3674033.2		115	31-41	10	2
DWP003C	UTRA	Metals, VOC, Tritium	429816.4025	3673154.913		35	62-72	10	2

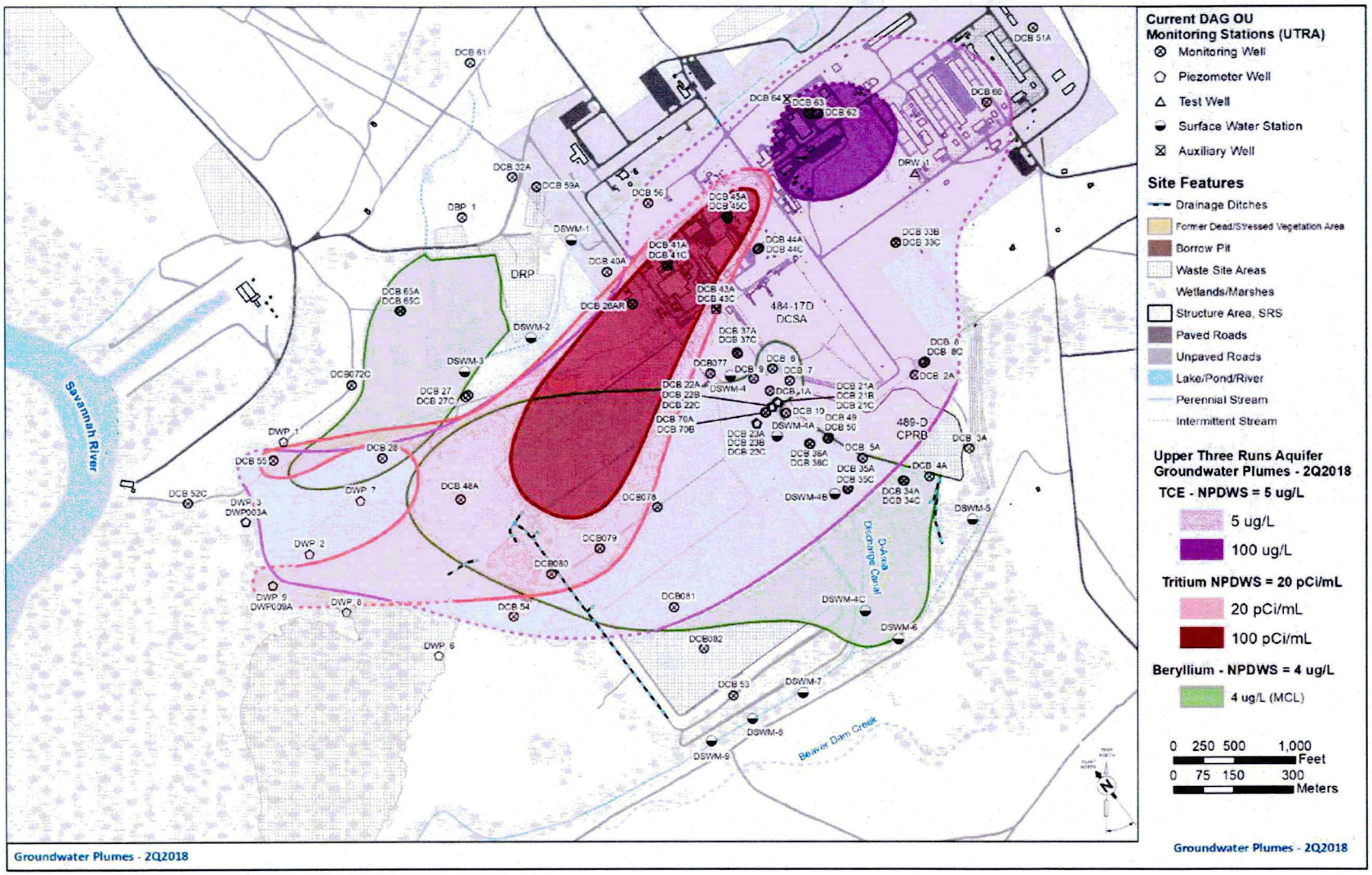

Figure 1. D Area Groundwater Plumes – Second Quarter 2018 (2Q2018)

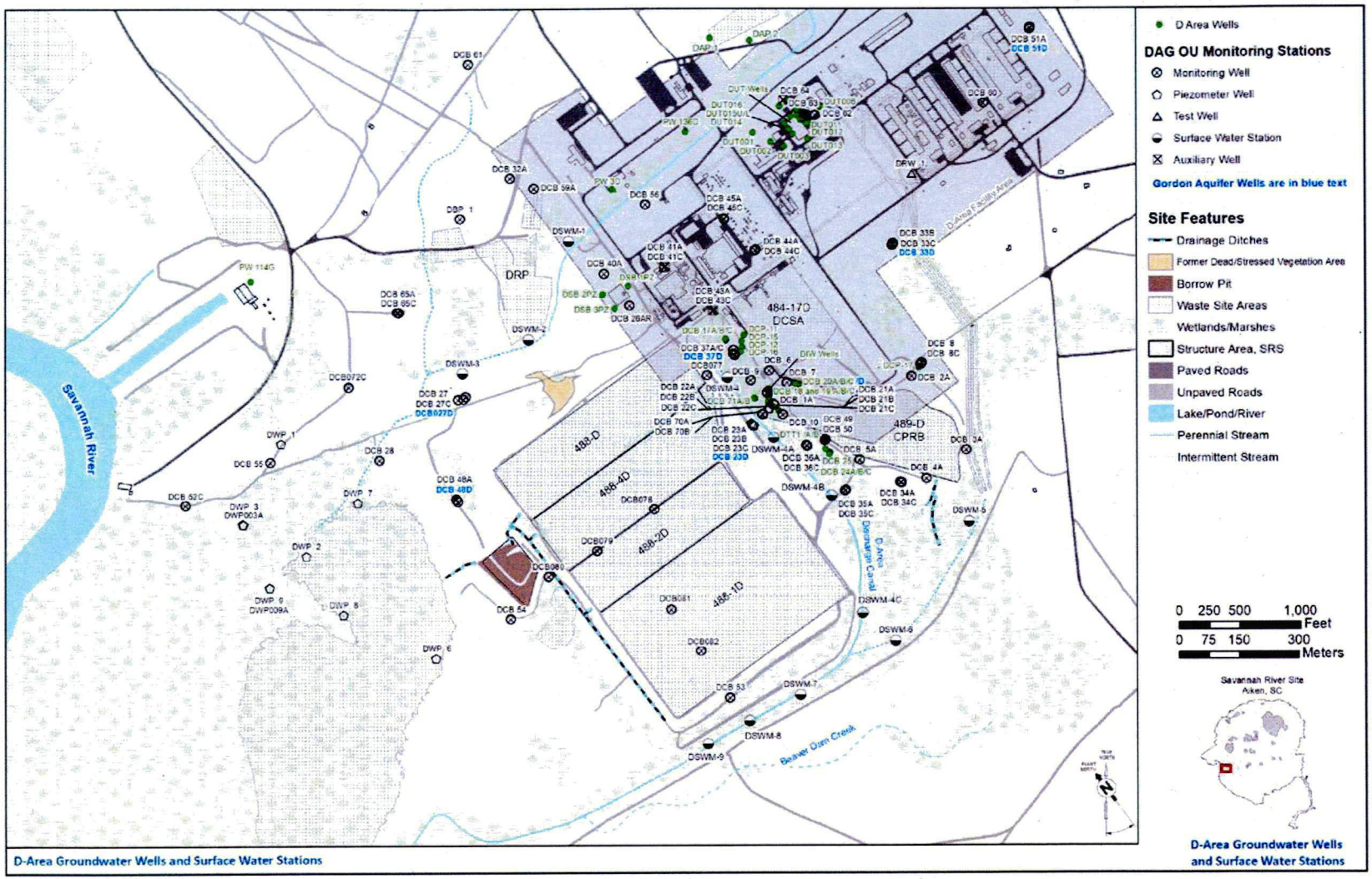

Figure 2. Current DAG OU Monitoring Network

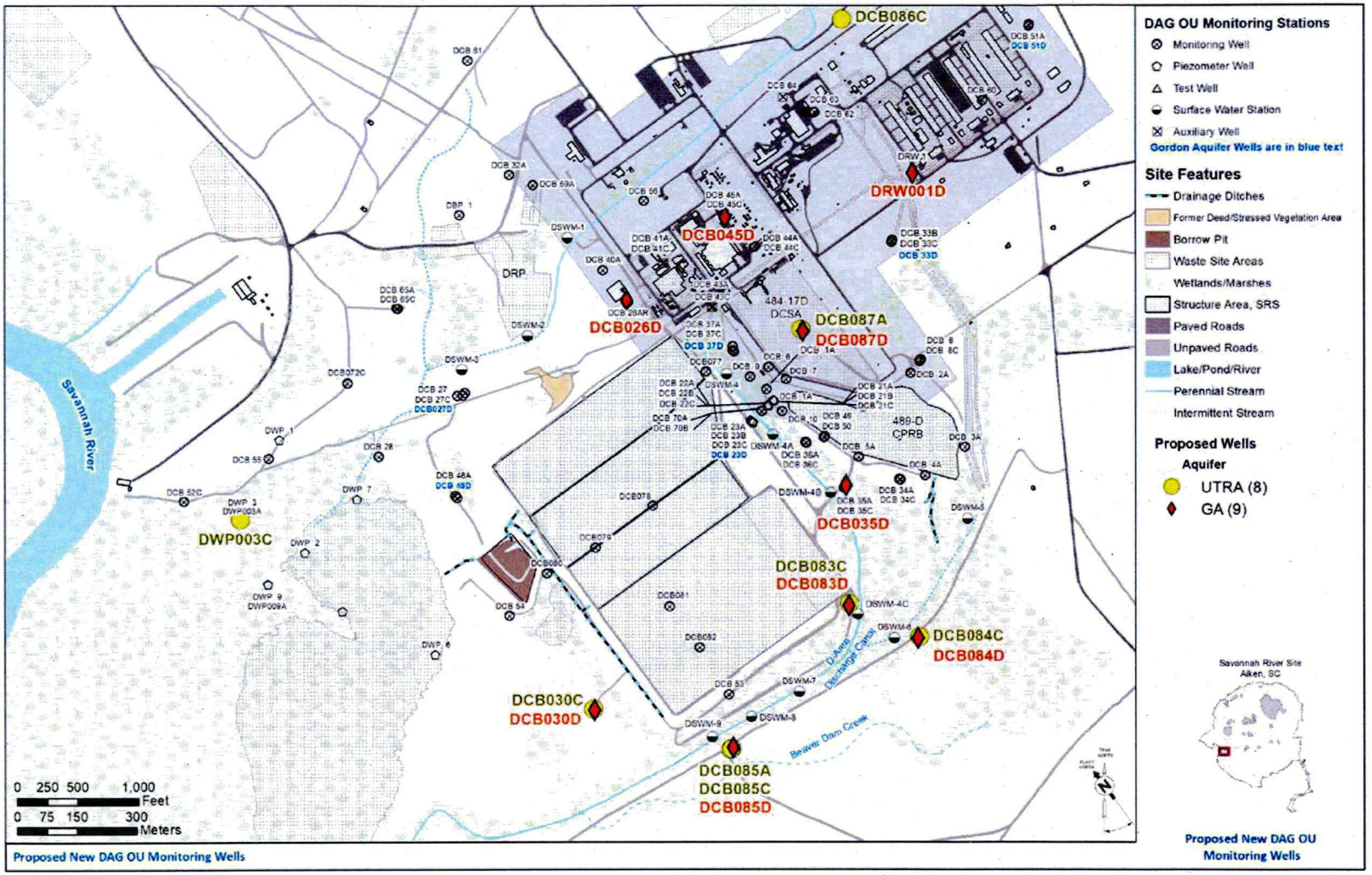

Figure 3. Proposed Additional Monitoring Wells for DAG OU

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Please review this letter and provide your comments within thirty (30) days of receipt. The effort and time that the South Carolina Department of Health and Environmental Control and the U. S. Environmental Protection Agency have given on the subject operable unit are greatly appreciated.

Comments or questions from your staff may be directed to me at (803) 952-8365 or the DOE Federal Project Director, Ms. Karen Adams, at (803) 952-7871.

Sincerely,

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IACD-19-185

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