



SC DHEC Update

South Carolina Nuclear Advisory Council
April 25, 2019

Barnwell Disposal Facility License Appeal Update



DHEC Inspections

- Onsite inspector
 - Inspects 100 % of shipments
- Weekly Site Visits
- License Inspections
 - Twice a year



Groundwater and Surface Water Monitoring Program

- Chem-Nuclear - 180 sample locations
 - On-site wells
 - Off-site wells
 - Mary's Branch Creek
 - 4 times per year
- DHEC samples at least 21 of those locations
 - DHEC splits samples with Chem-Nuclear



2018 Annual Trending Report

- 27 locations
- 3 – upward trend
- 20 – downward trend
- 4 – no trend
- Trend Data – most recent 5 year period

Tritium levels are closely monitored at the surface water compliance point to be sure they do not exceed regulatory limits

Report indicates Tritium levels are stable at compliance point and well below the regulatory limit.

Annual Update Newsletter



The Chem-Nuclear Site in Barnwell County has a routine groundwater and surface water monitoring program. Four times each year, groundwater samples are collected from monitoring wells and from locations in Mary's Branch Creek. The information gathered is used to help understand changes in contaminant concentrations within the groundwater plume.

The most recent results for tritium are from samples collected during the second quarter of 2018 (April to June). The highest concentration of tritium continues to be found on site at monitoring well WM-0110 where it was 8,150,000 pCi/L (April). The concentration where the groundwater plume enters Mary's Branch Creek (WC-0002) was 157,000 pCi/L (April).

Surface Water

The surface water "point of compliance" is the point where regulatory limits apply. For the Chem-Nuclear Site this is location WC-0008, measured at Mary's Branch Creek. In April, the level of tritium measured at WC-0008 was 36,300 pCi/L. This is less than the regulatory limit of 500,000 pCi/L and the same as the level measured in April 2017 (35,000 pCi/L). Maps are available at www.scdhec.gov/environment/land-management/radioactive-waste.

The most recent quarterly sampling results (July 2018) indicates the presence of five volatile organic compounds (VOC) present in the creek. Chloroform (4.09 µg/L), 1,1-dichloroethane (2.14 µg/L), trichloroethylene (1.49 µg/L), 1,1,2,2-tetrachloroethane (2.97 µg/L) and 1,4-dioxane (272 µg/L) were detected at the concentrations indicated. The concentrations of 1,4-dioxane at WC-0002 and WC-0008 are slightly higher than concentrations in 2017 and are similar to those measured in previous years. The regulatory limit for chloroform is 80 µg/L. The regulatory limit for trichloroethylene is 5 µg/L. Regulatory limits have not been established for 1,1-dichloroethane, 1,1,2,2-tetrachloroethane or 1,4-dioxane.

Trends in Ground Water and Surface Water Data

The Chem-Nuclear Site submits an annual trending report each year in September discussing changes in tritium concentrations in groundwater and surface water and changes to the size and shape of the groundwater plume. DHEC reviews the report for accuracy and completeness. In the 2018 annual trending report, 27 monitoring locations (both groundwater and surface water) were evaluated for changes in tritium concentrations. The tritium data indicate that four monitoring locations show no evidence of a trend either up or down, three locations show

an upward trend, and twenty locations show a downward trend over the most recent five-year period (third quarter 2013 to second quarter 2018).

Data collected from monitoring well WM-0110, the most contaminated well discussed above, show that tritium concentrations have decreased over the last five years. Although concentrations in individual monitoring wells change, the overall size and shape (footprint) of the groundwater plume remains stable.

Tritium concentrations at WC-0008 (the surface water point of compliance on Mary's Branch Creek) remain stable from the same time last year, and data show the overall trend in tritium concentrations at WC-0008 has decreased over the five year period. Visit www.scdhec.gov/environment/land-management/radioactive-waste to see the 2018 annual trending data.

Waste Volumes

Since July 2008, the Chem-Nuclear Site only accepts waste from the three member states of the Atlantic Compact – Connecticut, New Jersey and South Carolina. The table below shows the total waste volume for each fiscal year (FY) disposed of from the Atlantic Compact member states since 2008.

FISCAL YEAR	VOLUME (FY)	FISCAL YEAR	VOLUME (FY)
2008-2009	12,865.57	2013-2014	8,319.89
2009-2010	34,458.36	2014-2015	11,127.06
2010-2011	11,333.01	2015-2016	8,354.93
2011-2012	10,277.64	2016-2017	6,674.06
2012-2013	8,737.25	2017-2018	16,363.41

DEFINITIONS

Groundwater – The water found beneath the Earth's surface, usually in aquifers, which supply wells and springs.

Picocuries Per Liter (pCi/L) – A unit of measure of radioactivity.

Plume – An area where contamination is detected (or is measurable).

µg/L – A unit of measure for one millionth of a gram per liter or one part per billion (ppb).

Volatile Organic Compounds (or Chemicals) (VOCs) – Chemicals that evaporate readily when exposed to air and are widely used to clean things.

- Published December of each year
- Provides Surface and Groundwater data
- Provides site map and sample locations
- Provides annual waste disposal volumes

License Appeal Update

- March 27, 2019 – After oral argument in April 2018, SC Supreme Court issued decision on license renewal appeal from Sierra Club (in litigation since 2004).
- Supreme Court focused on two subsections of R.61-63: (1) minimize migration of water onto disposal units, and (2) minimize migration of waste or waste contaminated water out of disposal units.
- Court found the record lacked sufficient evidence/consideration of methods to minimize rainwater from falling into open disposal trenches and seeping into groundwater.
- Court clarified they were not requiring complete prevention of rainfall onto disposal trenches, but migration of water should be minimized.
- Court did not require any specific actions by Chem-Nuclear or DHEC to achieve compliance.
- DHEC will be meeting with the facility to discuss our next steps to comply with the Supreme Court's decision.

SRS Liquid Waste Update

2019 Suspension Agreement

- DHEC, EPA & DOE agreed to extend the suspension of the liquid waste milestones as a result of ongoing issues (April 16)
 - Programmatic changes in the SRS liquid waste services requirements, which led to the cancellation of the liquid waste services solicitation for a new operations contractor.
 - Startup of SWPF delayed, scheduled to begin hot commissioning by 12/31/2019
- Will initiate discussion for the negotiation of the milestones within 30 days of DOE issuing notice to proceed with new LW contract

SRS Agreed to:

- Remain committed to the focus on waste removal from **high risk** Type I & II tanks
- Continue accelerating F Tank Farm operational closure
- Accelerating other environmental projects listed in FFA



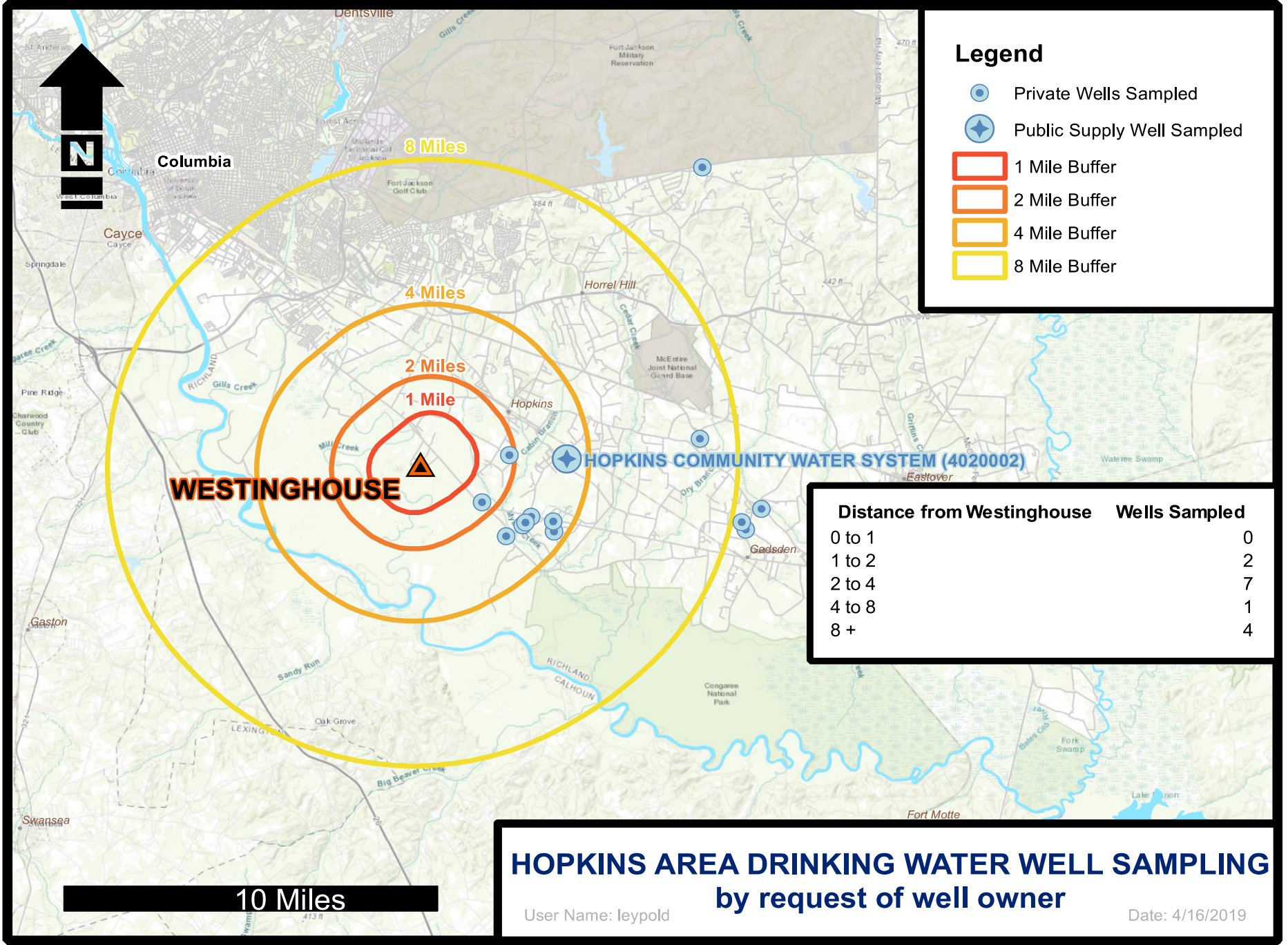
Westinghouse Nuclear Fuels Agreement

DHEC's Response (June 2018 Release)

- Notified of leak inside process building – investigation begins
 - DHEC and NRC oversight
- Parallel track and priority – addressing community concerns

Community Response

- Participated in several community organized public meetings
- Offered private well sampling in Hopkins/Lower Richland communities
 - Analyzed for a full suite of potential contaminants – including indicators of impact from a release from the facility
 - Results: 13 private wells and 1 community system
 - All (except 1 – naturally occurring radium)below EPA drinking water standards
 - No direct impacts from the facility
 - Richland County has also conducted well testing



Legend

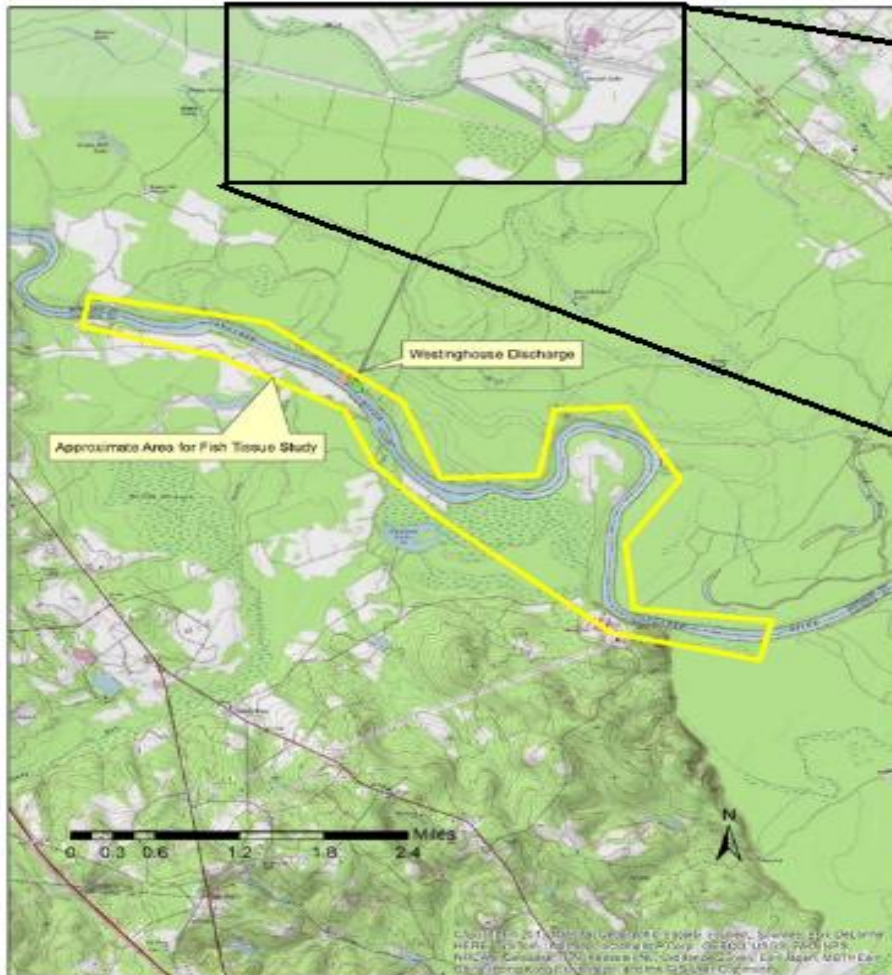
- Private Wells Sampled
- ★ Public Supply Well Sampled
- 1 Mile Buffer
- 2 Mile Buffer
- 4 Mile Buffer
- 8 Mile Buffer

Distance from Westinghouse	Wells Sampled
0 to 1	0
1 to 2	2
2 to 4	7
4 to 8	1
8 +	4

HOPKINS AREA DRINKING WATER WELL SAMPLING
 by request of well owner

User Name: leypold Date: 4/16/2019

Upcoming Fish Tissue Study - requested by community



Combination map showing facility in relation to Congaree River and Fish Study Area

Consent Agreement

- Executed between DHEC and Westinghouse Nuclear Fuels - effective February 26, 2019
- Provides a unified approach to reporting, investigating and remediating any chemical or radionuclide releases from site operations to groundwater, surface water, soils or sediments, both historically and if a future release is discovered.
- Remedial Investigation workplan due end of April

CONTACT US

Myra C. Reece

Director of Environmental Affairs

803-898-4102

803-667-1113

reecemc@dhec.sc.gov

Stay Connected