



*Many Voices Working for the Community*

# Oak Ridge Site Specific Advisory Board

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June 9, 2011

John Eschenberg  
Assistant Manager for Environmental Management  
DOE-Oak Ridge Office  
P.O. Box 2001, EM-90  
Oak Ridge, TN 37831

Dear Mr. Eschenberg:

## **Recommendation 201: Recommendation on the Liquid Low-Level Waste Pipelines Northern Characterization Study Area**

At our June 8, 2011, meeting the Oak Ridge Site Specific Advisory Board approved the enclosed recommendation regarding the Liquid Low-Level Waste Pipelines Northern Characterization Study Area.

The Board recommends that DOE take the following actions regarding the cleanup of contaminated soils north of Tank W1-A:

- Remove the out-of-service lines wherever they are exposed by soil excavation.
- Assure that appropriate actions are taken to minimize the potential for release of contaminants during cleanup of the soils and out-of-service lines north of Tank W-1A.
- Minimize the time delay between execution of the two projects to reduce the potential of recontamination of the Tank W-1A site from up gradient releases from the piping system.

We look forward to receiving your response to this recommendation by September 8, 2011.

Sincerely,

A handwritten signature in black ink, appearing to read "Ron Murphree".

Ron Murphree, Chair, PE, CPE  
rm/rsg

Enclosure

**Recommendation 201: Recommendation on the Liquid Low-Level Waste Pipelines Northern Characterization Study Area**

cc/enc:

Dave Adler, DOE-ORO

Cate Brennan, DOE-HQ

Fred Butterfield, DOE-HQ

Pat Halsey, DOE-ORO

Connie Jones, EPA Region 4

Local Oversight Committee

Myron Iwanski, Anderson County Mayor

Melissa Nielson, DOE-HQ

John Owsley, TDEC

Mark Watson, Oak Ridge City Manager

Ron Woody, Roane County Executive



## **Oak Ridge Site Specific Advisory Board Recommendation 201: Recommendation on the Liquid Low-Level Waste Pipelines Northern Characterization Study Area**

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### **Background**

In the central campus of Oak Ridge National Laboratory is the Liquid Low-Level Waste Pipeline Northern Characterization Study Area. This irregular-shaped area is immediately adjacent to the Tank W-1A removal area and between the tank removal area and Building 3019.

Pipes in the Liquid Low-Level Waste Pipelines (LLLWP) transferred waste from Buildings 2026, 3019, and 3019B to the North and South Tank Farms. Tank W-1A was part of the North Tank Farm. The other tanks were cleaned out and grouted in place in the 2000 timeframe.

In 2005 the Bethel Valley Groundwater Engineering Study identified soil contamination in the Northern Characterization Study Area. It was suspected that the waste line to Tank W-1A may have leaked causing radiological contamination in the soil.

The waste lines in the characterization area include:

- Two inactive 3-inch diameter stainless steel LLLW pipes
- Two inactive 6-inch diameter Chemware® LLLW pipes (glass-lined vitrified clay pipe) encased in concrete
- One active 15-inch diameter vitrified clay process pipe encased in concrete.

In 2010 a separate study, the LLLWP Northern Characterization Study, was conducted to identify additional soils as having transuranic contamination or other contamination triggers noted in the Bethel Valley Record of Decision.

The project objectives for the Northern Characterization Study were to provide sufficient data and information to determine if soil along the LLLW and process waste lines in the area immediately north of the North Tank Farm poses a risk to groundwater. From the study 108 soil samples were submitted for definitive offsite laboratory analysis. Modeling results indicated that drivers for risk to groundwater include soil with remediation level concentrations of:

- Strontium 90, 170 picoCuries/gram
- Uranium 233/234, 174 picoCuries/gram
- Uranium 238, 143 picoCuries/gram

The distribution of strontium-90 is the most widespread of the contaminants. The highest concentrations of strontium and uranium are on the north side of a minipile wall adjacent to the Tank W-1A Chemware® infill pipe.

The Environmental Management (EM) Committee of the Oak Ridge Site Specific Advisory Board (ORSSAB) was briefed on the Tank W1-A Removal Action, the planned cleanup of the liquid low-level waste pipelines and soils immediately to the north of Tank W-1A, and efforts to capture and treat the plume associated with Tank W-1A on March 16, 2011. These actions signal the beginning to the end of a serious and long-standing contamination problem in the Oak Ridge National Laboratory (ORNL) central campus.

**Discussion**

Tank W-1A removal and associated cleanup does not appear to follow the normal sequence of cleanup, beginning at the source of contamination and working down gradient, but rather starts at the release point. While the failure of the inlet line to Tank W-1A appears to be the source of contamination around the tank, the sampling evidence suggests that the up gradient out-of-service transfer lines also leaked at discrete locations leading back to Building 3019. These out-of-service transfer lines will be exposed, in part, by the operation to remove contaminated soils. The plan presented to the EM Committee is to grout the out-of-service pipelines in place, with the exception of a 15-inch pipeline that is still in use in support of the continuing mission in Building 3019. The ORSSAB believes that it would be prudent to remove the unused pipelines wherever they are exposed by excavation of soils. This would prevent potential recontamination of the soils by leakage of the pipelines and inadvertently encountering the lines during later excavation, and would bring this stage of the cleanup to a final completion, leaving the area available for development by ORNL.

**Recommendation**

The Oak Ridge Site Specific Advisory Board recommends that DOE take the following actions regarding the cleanup of contaminated soils north of Tank W1-A:

- Rather than grout and leave the out-of-service lines in place, remove the out-of-service lines wherever they are exposed by soil excavation.
- Assure that appropriate actions are taken to minimize the potential for release of contaminants during cleanup of the soils and out-of-service lines north of the tank.
- Minimize the time delay between execution of the two projects to reduce the potential of recontamination of the Tank W-1A site from up gradient releases from the piping system.