



REPLY TO  
ATTENTION OF

## DEPARTMENT OF THE ARMY

BUFFALO DISTRICT, CORPS OF ENGINEERS  
1776 NIAGARA STREET  
BUFFALO, NEW YORK 14207-3199

Special Projects Team

30 APR 2008

SUBJECT: Report on the Documentation and Data Gaps Relevant to the Containment of  
Radioactive Residues in the IWCS

Dr. Joe Gardella  
SUNY Buffalo  
Department of Chemistry  
Natural Sciences Complex  
Buffalo, NY 14260-3000

Dear Dr. Gardella:

I'm writing to provide an initial response from the Corp's technical team on Dr. Boeck's Report on the Documentation and Data Gaps Relevant to the Containment of Radioactive Residues in the IWCS. Our team has reviewed and discussed the report and prepared some items for consideration which are enclosed.

We have incorporated his concerns into the preparation for the May 2008 public meeting. Our second meeting in August is intended to focus more closely on specific topics and scientific details in response to public input received. We also expect to prepare and publish responses to questions and topics of interest from the community received throughout the period of public meetings.

William E. Kowalewski P.E., P.M.P  
LOOW-NFSS Program Manager

Cc: Dr. Boeck

Enclosure

US Army Corps of Engineers  
Initial Responsiveness Summary  
To  
Report on the Documentation and Data Gaps  
Relevant to the Containment of Radioactive Residues in the IWCS

**Bottom Line Up Front:** The Corps appreciates the thorough analysis and acknowledges that the Interim Waste Containment Structure (IWCS) is not a permanent storage solution. Potential solutions (i.e. alternatives) will be further evaluated in the Feasibility Study (FS), so this community input will be taken into consideration when evaluating these FS alternatives.

**Items for Consideration:** The Geophysical Survey of the IWCS indicates no short-term competency issues (e.g. cap settling, cutoff wall/dike failure, seismic vulnerabilities, etc.) within the IWCS. The Corps acknowledges that there are limitations associated with this survey methodology. These limitations were leveraged to the extent possible by integrating other geophysical survey methods. This investigation was not a stand alone integrity assessment, but used as an additional weight of evidence in our integrity investigation.

Groundwater modeling (which assumed no cutoff wall/dike existed) indicates that the sand lenses on-site are both vertically and laterally discontinuous and leaching beneath Building 411 will occur (i.e. uranium will leach above background levels) within a 200 year timeframe. High groundwater levels in the LWBZ will slow downward transport by "seasonally perching" the IWCS material, as driven by upward pressures in the GLC (from the alluvial sand and gravel and fractured Queenston shale bedrock units). A weak vertical (downward) gradient through the GLC was assigned in the numerical model to conservatively accounts for this seasonal hydrodynamic effect (i.e., the downward gradient assumed all year long); again we're forcing transport in the model due to the "buttoned up" or contained nature of the IWCS.

Historical trends in Environmental Surveillance Program (ESP) data indicate only seasonal variation of uranium in groundwater near the IWCS (i.e. no continuously increasing trends that would indicate a source term such as an IWCS breach). Additionally, lower water-bearing wells did not indicate site contamination from the IWCS was present during the RI. All this RI/ESP data speaks to the short-term viability of the IWCS as maintained and monitored.

It's understood that the sealing of subsurface pipelines associated with the former LOOW water treatment plant is a concern to the community. However, the pipe seal competence is likely a longer term issue since hydraulic heads are not expected to force movement for 200-300 years. Additionally, the piping to the Central Drainage Ditch (CDD) is truncated by the cut-off wall that is down to ~305 ft in elevation. The Building 411 foundation fill described in the cut-off wall log is not a sand lens. The layback and fill around 411 is indicative of slab concrete foundation and not vertical excavation with piles (steel would have been too precious at that time to spend on un-needed piles - the GLC would have molded around them with time and vertical gradients vary with season, with 2/3 of the year being upward or equilibrated). Additionally, wick drains were installed in the bays to dewater the residues to the extent possible and the encapsulation of the buried buildings should not produce significant structural differentials and cracking since they are removed from aerial exposure and somewhat in dynamic equilibrium with ambient geology.

Lastly, contamination from seepage of the IWCS has not been identified in the Central Drainage Ditch, or upper and lower groundwater-bearing zones, further indicating that legacy piping is truncated within the IWCS; and any remnant external piping should not affect the long-term competency of the cell.

The team looks forward to more closely focusing on items that the Radiation Committee has included in their assessment as it relates to the short and long-term effectiveness in the Feasibility Study.