Responses to Letters from Southwest Research and Information Center (SRIC) to the U.S. Environmental Protection Agency (EPA) Dated June 16, 2009, July31, 2009, May 27, 2010, and to a Letter from Citizens Against Radioactive Dumping (CARD) to EPA

DOE would like to first clarify the definitions of "WIPP-bound" waste and "Potential" waste. It is important to understand that the categories of "WIPP-bound" waste and "Potential" waste affect the inventory for performance assessment, but do not (in any way) affect the waste streams that can be physically shipped to and emplaced in WIPP, which are regulated by the WIPP waste acceptance criteria.

"WIPP-bound" waste is the portion of the TRU waste inventory that is included in performance assessment calculations, based on acceptable knowledge and other available information (such as preliminary characterization data). "WIPP-bound" waste includes the waste streams that DOE anticipates will meet the WIPP waste acceptance criteria, selected waste streams that are awaiting a formal defense determination, and waste streams that are awaiting an EPA site audit prior to shipment. The "common denominator" for WIPP-bound waste streams is that there is sufficient information for DOE to anticipate that the waste streams will meet the WIPP waste acceptance criteria, and the waste is therefore included in the inventory for performance assessment calculations.

"Potential" waste is the fraction of the reported TRU waste inventory that lacks sufficient information (either regulatory or physical) to determine if these waste streams can meet the WIPP waste acceptance criteria. "Potential" waste streams are therefore excluded from performance assessment. "Potential" waste may become "WIPP-bound" waste once all regulatory and physical constraints have been resolved. When the status of a waste stream changes from "Potential" to "WIPP-bound", the change is documented in the Annual TRU Waste Inventory Reports published by DOE.

These definitions affect the inventory for performance assessment. These definitions do not affect the DOE's commitment that only TRU waste which has met all the WIPP waste acceptance criteria will be shipped to and physically emplaced in the WIPP.

1. **Comment Summary:** Stakeholders believe DOE should make the Comprehensive Inventory Database (CID) available to the public.

   References: SRIC letters to EPA dated June 16, 2009, July31, 2009, and May 27, 2010; CARD Letter to EPA

   DOE's Response: The U.S. Department of Energy (DOE) will not provide the CID for public use. As explained during a meeting on April 30, 2008 with the U.S. Environmental Protection Agency (EPA), the New Mexico Environmental Department (NMED), and

interested stakeholders, the CID will not be made available to the public for a number of reasons:1) the database is operated on a SQL server and is not compatible with other systems, 2) the data and relationships that can be deduced from the data in the CID are easily misrepresented without an in-depth knowledge of the data and how they are related, and 3) DOE has determined that the CID contains specific data, such as the curie amounts of all radionuclides and the specific storage locations of the radionuclides, that when combined could have a direct impact on national security. DOE has therefore classified all of the CID data and its associated documentation as official use only (OUO), and the CID cannot be distributed to the public use for these reasons.

As an alternative to public distribution of the CID, DOE has provided SRIC an Excel spreadsheet containing the TRU waste inventory data found in the Waste Profile Forms in Appendices A, B and C of the Annual TRU Waste Inventory Report (ATWIR). This TRU waste inventory data in spreadsheet format was provided to SRIC and EPA for the ATWIR-2008 and ATWIR-2009. DOE has also agreed to provide additional TRU waste inventory data requested by any stakeholder, with the provision that it will be screened for national security issues before it is released to the public.

The EPA has reviewed the CID and the related information, performed audits of the inventory development process, and reviewed the inventory information for CRA-2009. DOE has provided answers to all of EPA's CRA-2009 completeness questions regarding inventory, and the lack of the public availability of the CID is not a completeness issue.

2. **Comment Summary:** Stakeholders believe that the Annual TRU Waste Inventory Report-2008 (ATWIR-2008) is inaccurate, unreliable and incomplete in dealing with the defense determination.

References: SRIC letters to EPA dated June 16, 2009, July31, 2009, and May 27, 2010

DOE's Response: The DOE believes that the Annual TRU Waste Inventory Report-2008 (ATWIR-2008) does accurately and clearly deal with the defense determination issue. Waste streams that do not have an established defense connection are identified in the ATWIR-2008 as either "Likely Defense Related" or "Pending Defense Determination". The definitions provided in the CID data dictionary of these two categories are: "Likely Defense Related - *No Defense Determination has been issued or initiated, but one is anticipated*" and "Pending Defense Determination - *A Defense Determination has been initiated but not yet issued*". The difference between these two categories is primarily the information available to anticipate the outcome of the defense determination process. In either case, DOE confirms its commitment that no waste will be emplaced in the WIPP unless it has met all the WIPP's waste acceptance criteria, including a formal defense determination when required.

“Likely Defense Related” is assigned to waste streams that DOE anticipates will be defense related, although a comprehensive acceptable knowledge (AK) review is not complete at this time. Since these waste streams are anticipated to pass the defense determination, the DOE includes these waste streams in the category of WIPP-bound waste. Waste streams that are “Likely Defense Related” are included in performance assessment (PA). If a waste stream fails to pass its defense determination, it would be removed from the inventory of WIPP-bound waste in the next update of the Annual TRU Waste Inventory report.

Waste streams designated as “Pending Defense Determination” are assigned to the category “Potential” TRU waste pending a formal defense determination. Insufficient information is available through AK to evaluate the status (defense or not) of these waste streams. Waste streams that are “Pending Defense Determination” are not included in the inventory for PA because the likelihood of them being determined to be defense related is lower than for the waste streams designated as "Likely Defense Related".

The Nuclear Radiation Development Site, Inc (ND) and the West Valley Demonstration Project (WV) are the only two sites that have waste streams that are identified in the ATWIR-2008 as a “Potential” TRU waste stream based on the lack of a defense determination. A formal defense determination for the waste streams from these two sites has been requested and is currently in process. All other waste streams identified as “Potential” TRU waste streams in the SRIC letters are categorized as “Potential” TRU waste because of insufficient characterization data or because the waste streams need treatment and/or repackaging to comply with the Land Withdrawal Act and the WIPP’s waste acceptance criteria. As stated above, no waste will be emplaced in the WIPP unless it has met all regulatory and disposal regulations, including formal defense determinations when required.

The only discrepancy in the ATWIR-2008 report is with the two Framatome waste streams, FR-MOX-T01 and FR-MOX-MT02. The ATWIR-2008 identified these two waste streams as “Pending Defense Determination”. However, these waste streams should have been classified as “Likely Defense Related” because DOE anticipated them to be defense related and because a formal defense determination had not been initiated. This misclassification of the two Framatome waste streams does not affect PA for the CRA-2009 because these two waste streams were identified as WIPP-bound and in any case were included in the inventory for the PA for CRA-2009.

DOE has provided answers to all of EPA’s CRA-2009 completeness questions regarding inventory. As in the CCA and CRA-2004, waste categorized as “Potential” TRU waste has not been included in the inventory used for PA in CRA-2009 and subsequent Performance Assessment Baseline Calculations. The Annual TRU Waste Inventory Report-2008 (ATWIR-2008) provides accurate information related to the defense determination of individual waste streams at the time of its publication, so there is no completeness issue associated with the ATWIR-2008.

3. **Comment Summary:** Stakeholders believe some sealed sources are prohibited at the WIPP.

   References: SRIC letters to EPA dated June 16, 2009, July31, 2009, and May 27, 2010;

   CARD Letter to EPA

   DOE's Response: Sealed sources may be disposed at the WIPP, provided they meet all the requirements of the WIPP waste acceptance criteria. This is a requirement of both the EPA compliance certification and the Hazardous Waste Facility Permit.

   The SRIC letter dated July 31, 2009 states: "Appendix A includes waste stream MC-W002 which contains lithium sources". In the Annual TRU Waste Inventory Report- 2008 (ATWIR-2008), waste stream MC-W002 is identified in Appendix C which is the appendix that contains "Potential" TRU waste and is not found in Appendix A which is WIPP-bound TRU waste. Since sealed sources are not explicitly identified as an excluded waste form at WIPP, the classification of MC-W002 is not a completeness issue.

4. **Comment Summary:** Stakeholders believe that the Annual TRU Waste Inventory Report-2008 should contain all waste DOE intends to ship to the WIPP during the period after CRA-2009 and before the third compliance recertification application is submitted in 2014.

   References: SRIC letters to EPA dated June 16, 2009, July31, 2009, and May 27, 2010;

   CARD Letter to EPA

   DOE's Response: The 2008 inventory used for PA is a snapshot in time with a cutoff date of December 31, 2007. The data reported in this inventory addresses the TRU waste currently stored and projected at the TRU waste sites along with the waste that has been emplaced at the WIPP. The Annual TRU Waste Inventory Report reflects the best estimate of the known TRU waste inventory at the time of the data cutoff, including DOE's expectations for "Likely Defense Related" waste streams (see the response to Comment 2). Beyond the judgment for "Likely Defense Related" waste streams, the Annual TRU Waste Inventory Report does not try to anticipate future changes in WIPP-bound waste streams. It is not possible to anticipate future changes to the inventory because decisions by the generator sites, by the DOE, or by the regulators of the WIPP can have a significant impact on the inventory of WIPP-bound waste. For example, a generator site may process a WIPP-bound waste stream into low level waste or a waste stream may not be determined to be defense-related, thereby removing waste streams from the WIPP-bound inventory. The DOE captures these inventory changes through its updates to the Annual TRU waste Inventory Report. DOE believes this stakeholder issue is outside the scope of CRA-2009 because inventory changes are captured on an annual basis and should therefore not be a completeness issue for CRA-2009.

5. **Comment Summary:** Stakeholders believe that waste prohibited at the WIPP and contained in Appendix C of the Annual TRU Waste Inventory Report-2008 (ATWIR-2008) should be removed completely from the report.

   References: SRIC letter to EPA dated July31, 2009

   DOE's Response: The Land Withdrawal Act defines the types of waste that can be disposed at the WIPP, and DOE has no intention of disposing of prohibited waste in the WIPP. Waste that is identified as "Potential" TRU waste is discussed in ATWIR-2008, Section 4 and the Waste Profile Forms for these waste streams are found in Appendix C of the same report. Waste streams are identified as "Potential" TRU waste when there is not enough information available to determine whether or not the waste can meet all the WIPP's waste acceptance criteria for disposal at the WIPP. DOE believes that the list of "Potential" TRU waste streams in the annual inventory reports assists in maintaining transparency and communication with stakeholders and EPA, and should not be removed from the report.

   "Potential" TRU waste streams are not included in the inventory for performance assessment (PA). Since "Potential" TRU waste streams are not included in the PA for CRA-2009, this is not a completeness issue.

6. **Comment Summary:** Stakeholders believe that DOE's recent decision to ship high carbon tetrachloride waste containers from the Idaho National Lab (INL) to the WIPP in Ten Drum Overpacks (TDOPs) should be considered as part of CRA-2009

   References: SRIC letter to EPA dated May 27, 2010 CARD Letter to EPA

   DOE's Response: The shipment of TDOPs from Idaho to the WIPP will not have a significant impact on the performance assessment (PA) for CRA-2009. The hydrologic models and porosity surface for PA represent the waste as randomly distributed throughout the repository. The potential impacts from alternate waste forms and alternate packaging containers were analyzed by the PA for the Planned Change Request for the Advanced Mixed Waste Treatment Project (Hansen et al., 2004). Based on that PA, DOE concluded that explicit representation of the specific features of the waste and its associated packaging is not warranted in PA since PA results are relatively insensitive to the effects of such features. DOE also concluded that total releases are essentially unchanged by the use of different porosity surfaces for alternate waste forms and their containers.

   Although total releases may be insensitive to the use of alternate waste containers, the inventory does consider the types and numbers of waste containers.

   More specifically, the inventory reported in the Performance Assessment Inventory Report (PAIR) considers the types and numbers of waste containers when determining the mass of container materials and emplacement materials.

The container materials reported in the PAIR are based on the masses of iron, cellulose, plastic, rubber and lead for each container type. The only container material that increases when waste is shipped in the TDOP relative to 55-gallon drums is the mass of iron because the TDOP does not contain any cellulose, rubber, plastic or lead materials. Increasing the mass of iron has no significant impact on PA because the WIPP already complies with the minimum mass of iron required in the repository. In addition, the mass of iron is generally not depleted in each realization for PA, so adding more iron will not cause significant changes to the PA for CRA-2009 (Nemer and Clayton 2008, pg 123).

The PAIR also uses container types when determining the mass of emplacement materials, such as plastic slip sheets. The emplacement materials used in the WIPP are made from cellulose, plastic and rubber (CPR). The TDOP doesn't use emplacement materials when it is emplaced in the WIPP, so the mass of CPR materials decreases when 55-gallon drums are replaced with TDOPs. However, this is a small difference that will not have a significant effect on PA.

The SRIC letter dated May 27, 2010 questions if the number of TDOPs would exceed the physical space available at the WIPP because of inventory scaling. The inventory is scaled to ensure that it completely fills the repository. The calculation of the scaling factors for CH TRU waste and RH TRU waste are documented in the PAIR. This scaling factor is only applied to the projected waste in the inventory. Since the Idaho waste streams referred to the SRIC letter contained no projected waste, scaling does not increase the number of TDOPs in the repository.

DOE believes that the shipment of TDOPs from Idaho to the WIPP has no effect on the PA used for CRA-2009 and is not a completeness issue.

DOE References:

Hansen, C.W., L.H. Brush, M.B. Gross, F.D. Hansen, B.-Y. Park, J.S. Stein, and T.W. Thompson. 2004. Effects of Supercompacted Waste and Heterogeneous Waste Emplacement on Repository Performance. Sandia National Laboratories, Carlsbad, NM. ERMS 533551.

Nemer, M.B., and D.J. Clayton. 2008. *Analysis Package for Salado Flow Modeling, 2009*

Compliance Recertification Application Calculation. ERMS 548607. Carlsbad, NM: Sandia National Laboratories.

Comment Summary: Stakeholders believe there should be a written report concerning the movement of well heads at the WIPP.

References: CARD Letter to EPA

DOE's Response: DOE has provided many written reports on the geohydrology of the Culebra formation, including the changes of well heads near the WIPP site. This written information includes Appendix HYDRO-2009 and Appendix TFIELD-2009 in the 2009 Compliance Recertification Application (CRA-2009) and Attachment TFIELD to Appendix PA in the 2004 Compliance Recertification Application (CRA-2004). These reports and their supporting references provide extensive documentation of the DOE studies concerning the Culebra flow model and the changing hydrologic heads in the Culebra on and near the WIPP site.

On June 30, 2009 Rick Beauheim of Sandia National Laboratories provided a briefing based on many years of hydrogeologic studies at the WIPP site. A copy of the power point slides used for this presentation has been provided to the EPA and the public. The technical content of this briefing is based on the written documentation and supporting references identified in the first paragraph of this response.

DOE disagrees with the CARD contention that there is not a "written report concerning movement of well heads at the WIPP", and this is therefore not a completeness issue.

7. **Comment Summary:** Stakeholders believe that Section 194.27 of CRA-2009 is incomplete because it does not accurately reflect current information regarding the Disturbed Rock Zone (DRZ) conceptual model.

References: SRIC letter to EPA dated June 16, 2009

DOE's Response:

The current conceptual models for the DRZ and for cuttings/cavings were found to be adequate for implementation in PA by the Conceptual Models Peer Review Panel (Wilson et al., 1996). No new deficiencies or scientific concerns have been identified in these two conceptual models since the original peer review. There is therefore no need to expand the description of peer reviews in Section 27 of the CRA-2009, and this is not a completeness issue.

DOE Reference:

Wilson, C., Porter, D., Gibbons, J., Oswald, E., Sjoblom, G., and F. Caporuscia, 1996. *Conceptual Models Peer Review Report.* Prepared for the U.S. Department of Energy, Carlsbad Area Office, Office of Regulatory Compliance. July 1996.

8. **Comment Summary:** Stakeholders believe DOE should include the suspension of shipments from Idaho and Los Alamos in the CRA-2009 application.

References: SRIC letter to EPA dated June 16, 2009

DOE's Response: The timing of waste shipments from the generator sites to the WIPP is not an input for performance assessment or the CRA documentation. The suspensions of shipments from specific sites are operational issues and are not a completeness issue for CRA-2009.