ANDREWS, TEXAS

January 29, 2016 VIA EMAIL AND FEDEX

Mr. Terrence Brimfield
Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Mail Stop: T-8D20
Rockville, MD 20852

References: (1) Texas Commission on Environmental Quality, Radioactive Material License No. R04100, Amendment 28, CN6006616890, RN101702439

(2) Letter from J. Scott Kirk (WCS) to Catherine Haney (NRC), re: Exemption Request to Possess Special Nuclear Materials in Excess of Critical Mass Limits Specified in 10 CFR 150.11, dated December 4, 2014

(3) Letter from J. Scott Kirk (WCS) to Terrence Brimfield (NRC), re: WCS Response to NRC Request for Additional Information (RAI) Resulting from an April, 29 2015 WCS and NRC Teleconference, dated June 4, 2015

(4) Email from Harry Felsher (NRC) to J. Scott Kirk (WCS), RAI's for December 2014 Exemption Request, dated November 10, 2015

(5) NRC Docket No. 70-7005

Subject: WCS Response to NRC Request for Additional Information (RAI) made November 10, 2015

Dear Mr. Brimfield:

Waste Control Specialists LLC (WCS) respectfully provides the following responses to the U.S. Nuclear Regulatory Commission's (NRC) Second Request for Additional Information (RAI) (Reference 4). These responses are intended to support approval of WCS' exemption request to possess Special Nuclear Materials (SNM) in excess of the critical mass limits specified in Title 10 of the Code of Federal Regulations (CFR), Part 150.11 (Reference 2). Note that this RAI is in addition to Reference 3.

Question No. 1: "Is it current WCS practice under the NRC 2014 Order for truck transportation vehicles with waste (i.e., vehicles from public roads) go directly to either the WCS Compact Waste Facility (CWF) or the WCS Federal Waste Facility (FWF)?"

WCS Response: *Yes, for trucks. No, for Rail. Commercial trucks are allowed to directly enter the CWF and FWF. Once at the CWF or FWF, waste is transferred off the commercial trucks onto a WCS vehicle (truck) for transport into the disposal cells. No commercial truck enter the disposal cell. Commercial rail is brought on to the WCS site (not the CWF/FWF) via a private (WCS) rail spur and offloaded onto a WCS vehicle (truck) at the Rail Pedestal Unloading Building (RPUB). The RPUB is not part of the CWF or FWF. The RPUB is a central location where rail shipments are received at the WCS site*

Note: To avoid confusion, the CWF and FWF are more than just a disposal cell (i.e. a large pit below grade where waste is disposed). They each have their own Staging Building, Decontamination Building, Waste Water Treatment Plant, roadways, and disposal cell. The CWF and FWF are independent of each other.

Question No. 2. If NRC issues a superseding order based on the WCS December 2014 Request and what WCS now wants, then:

2.a. Would truck transportation vehicles with waste go directly to either the WCS CWF or the WCS FWF?

WCS Response: Yes, the truck transportation vehicles would go directly to the CWF or FWF Facilities, but not directly to the disposal cell. *The process would remain the same as stated in #1. Commercial trucks bringing waste to the site will enter the CWF or FWF facilities but not the disposal cells. Railcars never enter either the CWF or FWF facilities or the disposal cells directly. They are offloaded onsite at a central location outside of the CWF or FWF (RPUB) and then transported to the CWF or FWF via WCS transport vehicle (truck).*

2.b. Would WCS want that superseding NRC Order to include both truck shipments of waste and rail shipments of waste?

WCS Response: Yes

2.c. What security would be used to protect the waste on a truck transportation vehicle or on a WCS onsite transfer vehicle (i.e., vehicle that stays inside the WCS site) that is waiting to be offloaded at either the WCS CWF, the WCS FWF, or other location at the WCS site? Do the security measures include immediate detection, assessment, and response to actual or attempted unauthorized

access to the waste that remains on either the truck transportation vehicle or the WCS onsite transfer vehicle?

WCS Response: WCS security plans would cover all on-site transfers, from the initial receipt of rail and truck shipments until final disposal. *WCS security currently has video and physical surveillance as well as physical barriers to detect, assess and deter actual or attempted unauthorized access to our facility. We are currently under no requirement for our security force to act as a response force. Security will call for local law enforcement support in the event of an actual or attempted unauthorized access.*

Question No. 3: "Provide maps and or diagrams with specific locations clearly noted where the activities occur of what WCS did (i.e., similar level of detail as to what NRC described above) before the State of Texas approved the change in the state license definition of "in transport" for each of the following situations:"

3.a. A truck shipment of waste from receipt through only disposal at either the WCS CWF or the WCS FWF.

WCS Response: *The response to this question will be accomplished through a video that follows a theoretical shipment and includes some narration. The video includes maps and photos. This video will be transmitted electronically via email and also provided in hardcopy by DVD via Federal Express.*

Prior to issuance of Amendment 20 of RML R04100 on May 15, 2013, where TCEQ approved the definition of "In Transport", WCS did not receive shipments on-site with packages (individually or collectively on a DOT-compliant conveyance) in excess of the critical mass limits.

3.b. A rail shipment of waste from receipt through only disposal at either the WCS CWF or the WCS FWF.

WCS Response: *Prior to issuance of Amendment 20 of RML R04100 on May 15, 2013, WCS did not receive rail shipments on-site with packages (individually or collectively on a DOT-compliant conveyance) in excess of the critical mass limits. In addition, WCS has not received any rail shipment since Amendment 20 that exceeds the critical mass limits in either individual packages or on a DOT-Compliant conveyance.*

Question No. 4: "Provide maps and or diagrams with specific locations clearly noted where the activities occur of what WCS does now (i.e., similar level of detail as to what NRC described above) after the State of Texas approved the change in the state license definition of "in transport" for each of the following situations:"

4.a. A truck shipment of waste from receipt through only disposal at either the WCS CWF or the WCS FWF.

WCS Response: *The response to this question will be accomplished through a video that follows a theoretical shipment and includes some narration. The video includes maps and photos. This is the same video as described in RAI # 3.a.*

On May 15, 2013, the TCEQ approved the definition of "In Transport" in Amendment 20 of RML R04100. The definition of "In Transport" authorizes receipt of a shipment containing packages that have a total quantity of SNM exceeding a critical mass, provided that the packages remain on a DOT-compliant conveyance and that each individual package contains less than a critical mass limit. The number of packages allowed on a shipment is controlled by the use of a Criticality Safety Index (CSI) – a number that is used by carriers under DOT/NRC regulations to limit the number of packages allowed on a truck or rail shipment.. Prior to receipt at the WCS site, site personnel will verify that each package has a CSI, and that the sum of CSI's for the shipment is appropriate for exclusive or non-exclusive use shipments. The effect of this definition is that SNM contained in DOT compliant containers, is not counted against SNM possession limits until it is removed from the transport container. When SNM is finally removed from shipping packages for disposal, individual removal operations are limited to individual containers or groups of containers not exceeding a critical mass limit.

Note that the key term in the process is what we refer to as "load management" – this term relies on the definition of "In Transport" that defines the point of compliance as the moment when a container of waste is physically removed from the commercial conveyance at the Land Disposal Facility. Until that point is reached, WCS does not possess the SNM in that individual container. Through a systematic process, WCS then only removes enough containers such that we do not exceed our above ground possession limits. Depending on the shipment this maybe 1, 2, 3, or more containers can be unloaded at once, it just depends on how many grams of SNM are in each individual container. When the cargo (waste) in a conveyance is accessed by WCS at the Land Disposal Facility, a WCS Inspector, checks the individual container number and determines how much SNM is in it based on the shipping papers. They then compare the SNM in that container against our possession limits. As verification, the container number is relayed to another independent WCS Inspector who verifies the same thing. If they concur, the WCS Inspector gives permission to Operations personnel to remove the container from the conveyance. At this moment WCS has taken possession of the SNM in that particular container. We keep possession of that SNM until all the waste acceptance activities have been successfully performed on that container, the container is transported to the

disposal cell and disposed of. Once the container has been documented as being disposed of, notification is provided to the WCS Inspector and the process of removing additional containers may continue following the same systematic process. It is important to note that at no time can WCS receive a single container of waste with SNM that exceeds the above ground possession limits specified in LC-5.F of RML R04100.

4.b. A rail shipment of waste from receipt through only disposal at either the WCS CWF or the WCS FWF.

WCS Response: *This is the same as 4a with the only difference is the location where the waste containers are initially transferred from the incoming conveyance (i.e. railcar, the point of compliance). In the scenario stated in 4a this may be in the Staging Building at the CWF or FWF at the land Disposal facilities and in this scenario with rail, this will happen at the RPUB.*

Question No. 5: "Provide maps and or diagrams with specific locations clearly noted where the activities occur of what WCS would do in the future (i.e., similar level of detail as to what NRC described above) now that the State of Texas approved the change in the state license definition of "in transport" and following the superseding NRC Order based on the WCS December 2014 Request and what WCS now wants for each of the following situations:"

5.a. A truck shipment of waste from receipt through only disposal at either the WCS CWF or the WCS FWF.

WCS Response: *WCS would not perform load management of containers being removed from a conveyance as described in 4a and 4b. Instead, WCS would rely on the already approved DOT regulations that allow a single shipment of multiple waste containers with SNM that collectively contain greater than the above ground possession limits (no single container greater than the possession limits) to be legally and compliantly shipped over the road to WCS. By mirroring this, WCS could unload the entire shipment at once and transport it to the disposal cell in the same configuration as it was shipped to WCS. For example, if a single shipment of waste shows up with 20 individual drums with SNM bearing waste that collectively have 1000 grams of U-235, WCS could unload all 20 drums at the same time and transport them into the disposal cell in the same manner. This would enhance safety and security of handling this waste at WCS since it would greatly reduce the number of iterations of waste being removed from the conveyance and transferred into the disposal cell. This would also greatly reduce the time to do so. Reducing the time, allows for the waste to be disposed of more efficiently and places the waste in an inherently safer and more secure location in the confines of our disposal cell at the land Disposal Facilities.*

In particular, the proposed exemption would require that on-site transfers be made in their original DOT or NRC certified transportation packages, and that on-site transfers do not exceed the number of packages specified in DOT regulations for non-exclusive use. These requirements assure nuclear (criticality) safety even in the event of severe accidents, by controlling the amount of SNM in an individual package, and by controlling the number of packages that could be transferred together.

Use of DOT/NRC requirements to assure nuclear safety is conservative in several important aspects. First, the quantity of SNM in an individual package is limited by criticality safety analyses performed in accordance with 10 CFR 71.55 for both normal transport and severe accident conditions. These analyses assume that the package is totally immersed in water - an improbable event for the WCS site. Second each individual package (with specific contents) is then assigned a criticality safety index (CSI) based on analyzing an array of packages that could be shipped together (10 CFR 71.59). Again these analyses assume that the array is totally immersed in water. Third, the number of packages that could be transferred together on-site is limited by requiring that the CSI's sum to 50 or less. This conforms to the limitations for non-exclusive use shipments under DOT/NRC regulations (10 CFR 71.59 and 49 CR 173.457).

5.b. A rail shipment of waste from receipt through only disposal at either the WCS CWF or the WCS FWF.

WCS Response: *This is the same as 5a with the only difference being the location where the waste containers are received and unloaded from the incoming conveyance. In the above scenario this may be in the Staging Building at the CWF or FWF and in this scenario with rail, this will happen at the RPUB.*

Question No. 6: "In general, what are the differences in what WCS currently does now versus what WCS would do differently in the future if NRC issues a superseding NRC Order based on the WCS 2014 Request and what WCS now wants for each of the following situations:"

6.a. A truck shipment of waste from receipt through only disposal at either the WCS CWF or the WCS FWF.

WCS Response: *No Load Management as described in 4a would be required. Shipments would be able to be handled at WCS in the same manner that they were shipped to WCS.*

If the NRC did not approve the exemption request then WCS would continue to receive a shipment of multiple packages of SNM-bearing waste on a DOT-compliant conveyance in accordance with the definition of "In Transport" while practicing "load management" as described in response 4a).. As such, the total

quantity of SNM present on the DOT-compliant conveyance may exceed the critical mass limits. The quantity of SNM in individual containers present on the DOT-compliant conveyance would not exceed the critical mass limits. At present, individual packages containing SNM only in quantities less than a critical mass would be removed from the DOT-compliant conveyance and transported to the disposal unit for final disposition of the waste. This process of" load management" ensures that individual containers containing SNM do not exceed the critical mass limits from the time the packages are removed from the DOT-compliant conveyance until the packages are placed in the disposal unit.

If the NRC approved the exemption request as proposed, then WCS would similarly continue to receive a shipment of multiple packages of SNM-bearing waste on a DOT-compliant conveyance. However, if approved, then WCS would transfer a specified number of packages from the receiving DOT-compliant conveyance onto a secondary conveyance based on the CSI limits, rather than the SNM limits specified in LC-5.F of RML R04100, for non-exclusive use shipments (i.e., the sum of CSI's would not exceed 50). For example, if the CSI sum allowed a total of 100 packages to be received on the initial DOT-compliant conveyance (non-exclusive use) then only 50 packages would be authorized to be transferred to the secondary conveyance for transport to the disposal unit at either the CWF or FWF. Once the transfer conveyance arrives at the disposal unit, the removal of individual packages would be limited such that the quantity of SNM in any individual package or group of packages opened at the same time would not exceed a critical mass limit. (See response to Question #5.a, for more detail).

6.b. A rail shipment of waste from receipt through only disposal at either the WCS CWF or the WCS FWF.

WCS Response: *No Load Management as described in 4a. Shipments would be able to be handled at WCS in the same manner that they were shipped to WCS.*

If the NRC did not approve the exemption request, then WCS could continue to receive SNM-bearing waste in multiple packages in a DOT-compliant rail conveyance at the RPUB in accordance with the current definition of "In Transport". However, WCS would only be allowed to remove a package(s) containing less than the critical mass limits from the DOT-compliant conveyance. Once a package(s) containing less than a critical mass is removed from the conveyance, then the package(s) would be transported to the disposal unit for final acceptance waste disposition. This process would be repeated until all the SNM-bearing packages were removed from the conveyance at the RPUB and disposed of in the disposal unit at either the CWF or FWF.

If the NRC approves the exemption request, then WCS would continue to receive multiple packages of SNM-bearding waste in a DOT-compliant conveyance by

rail at the RPUB. However, under this scenario, WCS would then be authorized to transfer the number of packages from the receiving DOT-compliant rail conveyance onto a secondary conveyance based on the CSI, rather than the limits specified in LC-5.F of RML R04100, for transport to either the CWF or FWF for final disposal. For example, if the CSI sum allowed a total of 50 packages to be received on the initial DOT-compliant conveyance at the RPUB, then only 50 packages would be authorized to be transfer to the secondary conveyance for transport to the disposal unit at either the CWF or FWF. Once the secondary conveyance arrives to the disposal unit, then removal of individual packages would be limited such that no individual package(s) exceeds the critical mass limits. (See response to Question #5.a, for more detail).

It's important to note that the above ground SNM limits specified in LC-5.F of RML R04100 only applies at the time that the packages containing SNM are removed from the conveyance. Furthermore, while the packages remain on the DOT-compliant conveyance, the number of packages authorized will be determined by the CSI sum (e.g., 50 packages as described above).

If you have any additional questions or need additional information, please contact me by email (skirk@valhi.net) or by phone at 972-450-4284.

Sincerely,

J. Scott Kirk, CHP
Vice President of Licensing and Regulatory Affairs

cc: Drew Persinko, NRC
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