Mr. John E. Kieling, Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

Subject: Transmittal of the Hazardous Waste Facility Permit Attachment C6 Audit Plan and Notification of Assigned Auditors for CBFO Recertification Audit A-19-26 of the Advanced Mixed Waste Treatment Project

Dear Mr. Kieling:

This letter transmits the audit plan for Carlsbad Field Office (CBFO) Recertification Audit A-19-26 of the Advanced Mixed Waste Treatment Project (AMWTP) at the Idaho National Laboratory (INL) for transuranic waste characterization activities involving contact-handled waste. The audit will be conducted as required by the Waste Isolation Pilot Plant Hazardous Waste Facility Permit. The audit will be held at the Sawtelle Facility in Idaho Falls, Idaho and at the AMWTP INL site near Idaho Falls, during the time of September 23 - 26, 2019. The audit plan identifies the audit team members, as required by the Permit.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Should you have any questions concerning this notification, please contact Mr. Anthony Stone, Senior Quality Assurance Specialist, at (575) 234-7475.

Sincerely,

[Signature]

Kirk D. Lachman, Acting Manager
Carlsbad Field Office

Enclosure
cc: w/enclosure

R. Murray, EM-43
D. C. Gadbury, CBFO
C. Fesmire, CBFO
M. Brown, CBFO
D. Miehls, CBFO
M. Stapleton, CBFO
A. Stone, CBFO
H. Cruickshank, CBFO
P. Theisen, SNL
R. Maestas, NMED
D. Biswell, NMED
M. McLean, NMED
T. Runyon, CTAC
P. Martinez, CTAC
C. Castillo, CTAC
R. Castillo, CTAC
D. Stegman, CTAC
D. Harvill, CTAC
G. White, CTAC
J. Haschets, RES
R. Chavez, RES
A. Urquidez, RES
CBFO QA File
CBFO M&RC

*ED denotes electronic distribution
CARLSBAD FIELD OFFICE
AUDIT PLAN

Audit Number: A-19-26

Organization to be Audited: Advanced Mixed Waste Treatment Project (AMWTP)

Organizations to be Notified:
- Fluor Idaho
- New Mexico Environment Department (NMED)
- U.S. Environmental Protection Agency (EPA)
- Defense Nuclear Facilities Safety Board (DNFSB)

Date and Location:
- September 23 – 26, 2019
- AMWTP Idaho National Laboratory (INL) Site near Idaho Falls, and AMWTP Sawtelle Street, Idaho Falls, Facility

Audit Team:
- Dennis Miehls: CBFO QA Representative
- Dustin Stegman: Audit Team Leader, CBFO Technical Assistance Contractor (CTAC) (Program Status)
- Cindi Castillo: Auditor, Co-Team Leader, CTAC (Program Status)
- Harley Kirschenmann: Auditor, CTAC (Organization/QA Program, Procurement, Graded Approach)
- Katie Gentry: Auditor, CTAC (C6 QA, Quality Improvement, Corrective Actions, Non-Conformances Management & Independent Assessments)
- B.J. Verret: Auditor, CTAC (Container Management, M&TE, Instrumentation)
- Charlie Riggs: Auditor, CTAC (C6 QA, Document Control, Records)
- Porf Martinez: Auditor, CTAC (RTR)
- Prissy Yanez: Auditor, CTAC (VE)
- Kirk Kirkes: Auditor, CTAC (AK)
- Steve Shafer: Auditor-in-Training, CTAC (AK)
- David Guerin: Auditor, CTAC (NDA/PDP)
- Tim Boswell: Auditor, CTAC (C6 QA, Training)
- Joe Lopez: Auditor/Technical Specialist, CTAC (C6 QA, WWIS/WDS, SQA)
- Randy Fitzgerald: Technical Specialist for AK and Auditor-in-Training, CTAC
- Paul Gomez: Technical Specialist, CTAC (PL V&V)
- Dick Blauvelt*: Technical Specialist, CTAC (AK, Load Mgmt.)
- Rhett Bradford: Technical Specialist, CTAC (VE)
- Shelly Martinez: Technical Specialist, CTAC (RTR)
- Jim Oliver: Technical Specialist, CTAC (NDA/PDP)
- Michel Hall: Technical Specialist, CTAC (NDA/PDP)

*Indicates team member working via teleconference.
Audit Scope:

The audit team will evaluate the continued adequacy, implementation, and effectiveness of the technical and QA activities performed by AMWTP for characterization of contact-handled (CH) transuranic waste Summary Category Group (SCGs) S3000, homogeneous solids, S4000 soils/gravel and S5000 debris wastes.

The audit team will also verify that a technical review of the generator site’s processes has been performed and any issues identified during the technical review have been resolved per DOE/WIPP-16-3564, Generator Site Technical Review Procedure.

A new request from the CBFO Office of the National TRU Program (ONTP) is included in the scope of the audit. This audit will include a review and walk-down of the current revision of AMWTP procedure TPR-8040, Boxline Operations. This pertains to Squeezants with sorbent that were re-introduced into the boxline and processed again for super-compaction. Idaho did not submit this change of process to CBFO for approval or notification; therefore, CBFO is requesting an evaluation of this activity.

A list of the equipment and processes to be evaluated is attached to this plan (Attachment 1); including previous regulatory approvals.

Governing Documents/Requirements:

Evaluation of the overall program adequacy, implementation, and effectiveness of AMWTP documents will be based on the current revisions of the following documents:

- CBFO Quality Assurance Program Document, DOE/CBFO-94-1012
- Waste Isolation Pilot Plant Hazardous Waste Facility Permit NM4890139088-TSDF
- Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant, DOE/WIPP-02-3122
- Waste Isolation Pilot Plant Documented Safety Analysis, DOE/WIPP-07-3372 (Chapter 18)

Programmatic and technical checklists will be developed from the current revisions of the following documents:

- Certification Plan for INL Transuranic Waste, PLN-5198
- Quality Assurance Project Plan, PLN-5199
- Related AMWTP QA and technical implementing procedures
A post-audit conference is scheduled for 3:00 p.m., Thursday, September 26, 2019, at the AMWTP Sawtelle St. Facility, in Idaho Falls, Idaho.

All meeting locations will be identified on the daily audit schedule.

Approved By: Dustin Stegman, OTAC
Audit Team Leader

Date: 8-12-19

Approved By: Donald C. Gadbury, Director
CBFO Office of Quality Assurance

Date: 8-14-19

Dennis S. Wichels

Date: 8-14-19
Activities to be Audited:

**General**
- Results of Previous Audits
- Changes in Programs or Operations
- New Programs or Activities Being Implemented
- Changes in Key Personnel

**C6-1 through C6-4 and general QA program elements, as applicable**
- Organization/QA Program
- Nonconformances
- Personnel Qualification and Training
- Measuring and Test Equipment (M&TE)
- Software Version Installation
- Records
- Quality Improvement
- Work Processes
- Procurement
- Audits/Assessments

**Technical Activities**
- Project-level Data Validation and Verification (PL/V&V)
- Enhanced Acceptable Knowledge (AK), including waste certification, Chemical Compatibility Evaluation Memorandum, Basis of Knowledge, AK Assessments, AK Briefings, and Interface Waste Management Documents List
- Real-time Radiography (RTR)
- Visual Examination (VE)
- Boxline operations, including Squeezants re-introduced into the boxline and processed for super-compaction
- Nondestructive Assay (NDA), including Performance Demonstration Program
- Container Management
- WIPP Waste Information System/Waste Data System (WWIS/WDS)
- Including, but not limited to, Statistical Approach to Material at Risk

**Schedule of Audit Activities:**

A pre-audit conference is scheduled for 8:30 a.m., Monday, September 23, 2019, at the AMWTP Sawtelle St. Facility, in Idaho Falls, Idaho.

The audit team leader will meet with AMWTP management (as needed) to discuss audit concerns and audit progress at 8:30 a.m., Tuesday, September 24 through Thursday, September 26, 2019, at the AMWTP Sawtelle St. Facility, in Idaho Falls, Idaho.
### Previously Approved Processes and Equipment to be Evaluated During the A-19-26 AMWTP Recertification Audit

<table>
<thead>
<tr>
<th>WAPP #</th>
<th>Site Equipment #</th>
<th>Equipment Description</th>
<th>Components</th>
<th>Software</th>
<th>NDA Calibrated Range, Operating Range and TMU</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NONDESTRUCTIVE ASSAY</strong></td>
<td></td>
<td></td>
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<tr>
<td>WIPP #</td>
<td>Site Equipment #</td>
<td>Equipment Description</td>
<td>Components</td>
<td>Software</td>
<td>NDA Calibrated Range, Operating Range and TMU</td>
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</tr>
<tr>
<td>9RBAS1</td>
<td>Z-212-100</td>
<td>Retrieval Box Assay System (RBAS) DAS-105- PDP Registration #AM30/AMN5 Method described in TPR-6095</td>
<td>Broad Energy Germanium (BEGe) gamma detectors, 84 six foot helium-3 tubes used in passive neutron coincidence counting modality and the active neutron differential flux modulation, Cf-252/Cs-137 Add-A-Source (AAS) correction source, 14 MeV neutron generator, Fast Neutron Detector Packs (FNDP)</td>
<td>PSC RBAS.exe, PSC RWARS software package</td>
<td>The calibration of the RBAS was verified and documented in PSC-5431-CCR-001, Calibration Confirmation Report. The determination of TMU for the RBAS unit is documented in BK-5112-TMU-001, AMWTP Retrieval Box Assay System Total Measurement Uncertainty Report.</td>
</tr>
<tr>
<td>WIPP #</td>
<td>Site Equipment #</td>
<td>Equipment Description</td>
<td>Components</td>
<td>Software</td>
<td>NDA Calibrated Range, Operating Range and TMU</td>
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</tr>
<tr>
<td>Not provided in NTP scope.</td>
<td>Z-295-100</td>
<td>In-situ Object Counting System (ISOCS)</td>
<td>Broad Energy Germanium (BEGe) gamma detector</td>
<td>NDA 2000, Canberra's Genie 2000, Multi-Group Analysis (MGA), Multi-Group Analysis - Uranium (MGA-U)</td>
<td>Drum Assay. The calibration of the ISOCS was verified and documented in 10000008684, ISOCS Calibration, Confirmation and Verification Report. The determination of TMU for the ISOCS is documented in 10000008683, Total Measurement Uncertainty for ISOCS.</td>
</tr>
<tr>
<td>Not provided in NTP scope.</td>
<td>Z-295-101</td>
<td>In-situ Object Counting System (ISOCS)</td>
<td>Low Energy Germanium (LEGe) gamma detector</td>
<td>NDA 2000, Canberra's Genie 2000, Multi-Group Analysis (MGA), Multi-Group Analysis - Uranium (MGA-U)</td>
<td>Drum Assay. The calibration of the ISOCS was verified and documented in 10000008684, ISOCS Calibration, Confirmation and Verification Report. The determination of TMU for the ISOCS is documented in 10000008683, Total Measurement Uncertainty for ISOCS.</td>
</tr>
</tbody>
</table>
### Previously Approved Processes and Equipment to be Evaluated During the A-19-26 AMWTP Recertification Audit

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<tr>
<th>WIPP #</th>
<th>Site Equipment #</th>
<th>Equipment Description</th>
<th>Components</th>
<th>Software</th>
<th>NDA Calibrated Range, Operating Range and TMU</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Z-295-200</td>
<td>In-situ Object Counting System (ISOC5) ISOC5 - PDP Registration AM010/AMG5 Method described in TPR-8182 Location: WMF-635</td>
<td>Broad Energy Germanium (BEGe) gamma detector</td>
<td>NDA 2000 Canberra's Genie 2009 Multi-Group Analysis (MGA) Multi-Group Analysis: Uranium (MGA-U)</td>
<td>Box Assay The calibration of the ISOC5 was verified and documented in 10000008684 ISOC5 Calibration, Confirmation and Verification Report. The determination of TMU for the ISOC5 is documented in 10000008683, Total Measurement Uncertainty for ISOC5</td>
</tr>
<tr>
<td></td>
<td>Z-295-201</td>
<td>In-situ Object Counting System (ISOC5) ISOC5 - PDP Registration AM011/AMG6 Method described in TPR-8182 Location: WMF-635</td>
<td>Low Energy Germanium (LEGe) gamma detector</td>
<td>NDA 2000 Canberra's Genie 2000 Multi-Group Analysis (MGA) Multi-Group Analysis: Uranium (MGA-U)</td>
<td>Box Assay The calibration of the ISOC5 was verified and documented in 10000008684 ISOC5 Calibration, Confirmation and Verification Report. The determination of TMU for the ISOC5 is documented in 10000008683, Total Measurement Uncertainty for ISOC5</td>
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### NON-DESTRUCTIVE EXAMINATION

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### VISUAL EXAMINATION

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</thead>
</table>

**Note:** Method described in TPR-8103. Location: WMF-634. This procedure has been cancelled; therefore will not be evaluated during the audit.
<table>
<thead>
<tr>
<th>WIPP #</th>
<th>Site Equipment #</th>
<th>Equipment Description</th>
<th>Components</th>
<th>Software</th>
<th>NDA Calibrated Range, Operating Range and TNU</th>
</tr>
</thead>
<tbody>
<tr>
<td>9VE3</td>
<td>N/A</td>
<td>Newly Generated Waste Visual Examination Closure (VNC)</td>
<td>N/A</td>
<td>Waste Tracking System (WTS)</td>
<td>N/A</td>
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<tr>
<td></td>
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<td><em>Method described in TPR-8103. Location: WMF-634. This procedure has been cancelled; therefore will not be evaluated during the audit</em></td>
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<tr>
<td>9VE6</td>
<td>N/A</td>
<td>Newly Generated Waste Visual Examination Closure (VNC)</td>
<td>N/A</td>
<td>Waste Tracking System (WTS)</td>
<td>N/A</td>
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<tr>
<td></td>
<td></td>
<td>Method described in TPR-8041. Location: WMF-676</td>
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<tr>
<td>9VE7</td>
<td>N/A</td>
<td>Box Line Visual Examination (VEB) – Box to drum repackaging</td>
<td>N/A</td>
<td>Waste Tracking System (WTS)</td>
<td>N/A</td>
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<tr>
<td></td>
<td></td>
<td>Method described in TPR-8041. Location: WMF-676</td>
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<tr>
<td>9VE8</td>
<td>N/A</td>
<td>Box Line Visual Examination (VEB) – Drum to new drum repackaging</td>
<td>N/A</td>
<td>Waste Tracking System (WTS)</td>
<td>N/A</td>
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<tr>
<td></td>
<td></td>
<td>Method described in TPR-8041. Location: WMF-676</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9VE12</td>
<td>N/A</td>
<td>Visual Examination: ARP Packaging Stations (VEA and VEP). Newly-generated waste from retrieval of buried waste at the IHL</td>
<td>N/A</td>
<td>Waste Tracking System (WTS)</td>
<td>N/A</td>
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<tr>
<td></td>
<td></td>
<td>Method described in TPR-7997. Location: ARP/SPR</td>
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<tr>
<td>N/A</td>
<td>N/A</td>
<td><strong>Boxline operations, including Squeezants re-introduced into the boxline and processed for super-compaction</strong></td>
<td>N/A</td>
<td>Waste Tracking System (WTS)</td>
<td>N/A</td>
</tr>
</tbody>
</table>

*TPR-8103 was included in the CBFO NTP Scope dated August 8, 2019; however, this procedure has been cancelled.

**TPR-8040 activities have not previously been included in NTP scopes; this is an initial review.
<table>
<thead>
<tr>
<th>Characterization Process</th>
<th>CH S3000 Homogenous solids</th>
<th>CH S4000 ARP Soils/Gravel</th>
<th>CH S5000 Debris</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Newly Generated</td>
<td>Newly Generated</td>
<td>Newly Generated</td>
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<tr>
<td>Acceptable Knowledge</td>
<td>*TBA</td>
<td>TBA</td>
<td>TBA</td>
</tr>
<tr>
<td>Certified Program Acceptable Knowledge Assessments</td>
<td>*TBA</td>
<td>TBA</td>
<td>TBA</td>
</tr>
<tr>
<td>Certified Program Enhanced Chemical Compatibility Evaluation</td>
<td>*TBA</td>
<td>TBA</td>
<td>TBA</td>
</tr>
<tr>
<td>Basis of Knowledge Evaluating Oxidizing Chemicals in TRU Waste</td>
<td>*TBA</td>
<td>TBA</td>
<td>TBA</td>
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<tr>
<td>Load Management</td>
<td>*TBA</td>
<td>TBA</td>
<td>TBA</td>
</tr>
<tr>
<td>Data Generation and Project Level Validation &amp; Verification</td>
<td>*TBA</td>
<td>TBA</td>
<td>TBA</td>
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<tr>
<td>Visual Examination</td>
<td>*TBA</td>
<td>TBA</td>
<td>TBA</td>
</tr>
<tr>
<td>Nondestructive Assay⁴</td>
<td>*TBA</td>
<td>TBA</td>
<td>TBA</td>
</tr>
<tr>
<td>Real-time Radiography</td>
<td>*TBA</td>
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<td>TBA</td>
</tr>
<tr>
<td>WIPP Waste Information System/Waste Data System</td>
<td>*TBA</td>
<td>TBA</td>
<td>TBA</td>
</tr>
</tbody>
</table>

* *TBA* – to be audited (as stated in CBFO NTP’s scope letter).
## Previous Regulatory Approvals (NMED and/or EPA)

<table>
<thead>
<tr>
<th>Characterization Process(^2,^3)</th>
<th>CH S3000</th>
<th>CH S4000 ARP</th>
<th>CH S5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homogenous solids</td>
<td></td>
<td></td>
<td>Debris</td>
</tr>
<tr>
<td>Newly Generated</td>
<td>Retrievably Stored</td>
<td>Newly Generated</td>
<td>Retrievably Stored</td>
</tr>
</tbody>
</table>

\(^1\) Nondestructive Assay (NDA) of S3000 waste is authorized for assaying using ONLY I-WAS units Z-211-152 and Z-211-103.

\(^2\) Characterization Processes in this Table may not be completely listed above.

\(^3\) The NMMED will not be reviewed during this audit A-19-26 since it has not been implemented at AMWTP.

- Load Management approved for the following waste streams: Mound Site, Rocky Flats, Environmental Technology Site, Bettis Atomic Power Laboratory, Argonne National Laboratory-East, Idaho National Laboratory, including the Materials and Fuel Complex and pre-1980 INL-excavated Subsurface Disposal Area waste; and waste stream's approved through the Accelerated Retrieval Project S3000 and S5000 Waste from the Subsurface Disposal Area.

- Any new load management of any new or unapproved waste stream. Any new waste category.

- EPA Tier 1 approval allowing the assembly of CH debris waste payloads at AMWTP to include some compacted containers (pucks) that cannot be directly measured dated May 13, 2015.

- EPA Tier 1 approval adding the Retrieval Box Assay System (RBAS) NDA system dated October 19, 2015, Docket No: A-98-49; II-A4-200.

- EPA Tier 1 approval adding the ISOCs NDA dated March 8, 2016, Docket No: A-98-49; II-A4-221.

- EPA Tier 1 approval adding the Dual Characterization to the certified program was inspected May 15-16, 2016 is pending approval.

### Notes:
- EPA Tier 1 approval adding ANL and MFC waste dated February 27, 2013, Docket No: A-98-49; II-A4-169.
- EPA Tier 1 approval allowing the assembly of CH debris waste payloads at AMWTP to include some compacted containers (pucks) that cannot be directly measured dated May 13, 2015.
- EPA Tier 1 approval adding the ISOCs NDA dated March 8, 2016, Docket No: A-98-49; II-A4-221.
- EPA Tier 1 approval adding the Dual Characterization to the certified program was inspected May 15-16, 2016 is pending approval.