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STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

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June 21, 2012

12-NWP-098

Thomas Fletcher, Assistant Manager  
Office of River Protection  
United States Department of Energy  
P.O. Box 450, MSIN: H6-60  
Richland, Washington 99352

Re: Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement)  
Change Package M-45-12-04

Dear Mr. Fletcher:

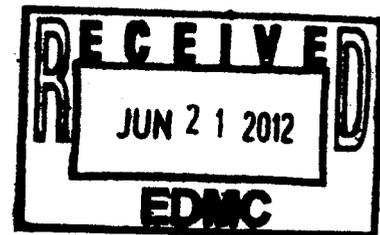
A copy of the Tri-Party Agreement Change Control Package M-45-12-04 signed by Thomas Fletcher and Jane Hedges is enclosed. This change package establishes three new interim milestones and target dates for Interim Measures Investigation Work at 241-TX Farm, 241-U Farm, and 241-SX Farm. Joni Grindstaff picked up the original, signed document at our office on June 21, 2012.

If you have any questions, you may call John Price at 509-372-7921 or [jpri461@ecy.wa.gov](mailto:jpri461@ecy.wa.gov).

Sincerely,

Lois Dahmen  
Administrative Assistant  
Nuclear Waste Program

dbm  
Enclosure



cc w/enc electronic:

Woody Russell, USDOE-ORP  
Steve Weil, USDOE-RL  
Joanne Grindstaff, USDOE-RL

Terry Noland, MSA  
Judy Vance, MSA

cc w/enc:

Dennis Faulk, EPA  
Stuart Harris, CTUIR  
Gabriel Bohnee, NPT  
Russell Jim, YN

Susan Leckband, HAB  
Administrative Record: M-15  
Environmental Portal  
USDOE-RL Correspondence Control



<b>Change Number</b> M-45-12-04	<b>Federal Facility Agreement and Consent Order</b> <b>Change Control Form</b> <small>Do not use blue ink. Type or print using black ink.</small>	<b>Date</b> 6/20/2012												
<b>Originator</b> T. W. Fletcher, DOE-ORP		<b>Phone</b> (509) 376-3434												
<b>Class of Change</b> <input type="checkbox"/> I - Signatories <input checked="" type="checkbox"/> II - Executive Manager <input type="checkbox"/> III - Project Manager														
<b>Change Title</b> Revise milestone M-045-92 to initiate vadose zone sampling & treatment testing and to defer further interim barrier work.														
<b>Description/Justification of Change</b>  This change will establish three new interim milestones and three new target dates for Interim Measures Investigation Work at 241-TX Farm, 241-U Farm, and 241-SX Farm. Improving our understanding of the vadose zone contamination below the tanks farms and conducting further development of vadose zone treatment technologies, allows for the investigation of potential vadose zone treatment prior to, or in lieu of, construction of proposed interim barriers identified in Milestone M-045-92. The proposed investigation will be described in plans under new interim milestones M-045-20 and M-045-21. Results of the investigation will be used to establish future actions under new interim milestone M-045-22.  Continued on page 2														
<b>Impact of Change</b>  This change defers the scope and deliverables under Milestone M-045-92 for fiscal year 2013 and provides a revised tentative schedule for interim barrier construction for FY15 and beyond. This change also provides new interim milestones and target dates for an interim measures investigation work plan, a sample and analysis plan, and a decision on subsequent work. Future actions and due dates will be determined based on the results of the work plan scope.														
<b>Affected Documents</b>  The HFFACO, as amended, and Hanford Site internal planning, management, and budget documents (e.g., River Protection Project System Plan, Baseline Control documents, and related work authorizations and directives).														
<b>Approvals</b>  <table border="0"> <tr> <td>   _____  DOE </td> <td>   _____  Date </td> <td> 6/20/12  _____  Date </td> <td> <input checked="" type="checkbox"/> Approved    <input type="checkbox"/> Disapproved </td> </tr> <tr> <td colspan="2"> N/A </td> <td> _____  Date </td> <td> <input type="checkbox"/> Approved    <input type="checkbox"/> Disapproved </td> </tr> <tr> <td>   _____  EPA Ecology </td> <td> _____  Date </td> <td> 6/21/12  _____  Date </td> <td> <input checked="" type="checkbox"/> Approved    <input type="checkbox"/> Disapproved </td> </tr> </table>			 _____ DOE	 _____ Date	6/20/12 _____ Date	<input checked="" type="checkbox"/> Approved <input type="checkbox"/> Disapproved	N/A		_____ Date	<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved	 _____ EPA Ecology	_____ Date	6/21/12 _____ Date	<input checked="" type="checkbox"/> Approved <input type="checkbox"/> Disapproved
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N/A		_____ Date	<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved											
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M-045-92

Hanford Federal Facility Agreement and Consent Order (HFFACO), Milestone M-045-92, requires, in part, the following:

"If negotiated, complete installation of 4 additional interim barriers at a rate of one per year, with the first being completed by October 31, 2012. Prior to beginning construction and at least sixteen months before construction is to be complete, DOE will submit to Ecology a final design and monitoring plan for each interim barrier. The design and monitoring plans will be consistent with those developed for WMA T and TY unless DOE and Ecology agree otherwise. Ecology will authorize construction upon approval of these submittals."

This change package addresses the following interim milestones under M-045-92:

Construct Barrier 1	10/31/12
Construct Barrier 2	10/31/13
Barrier 3 Design/Monitoring Plan	06/30/13
Construct Barrier 3	10/31/14
Barrier 4 Design/Monitoring Plan	06/30/14
Construct Barrier 4	10/31/15

At the time that the M-045-92 milestone was developed, there was a recognized need to address mobile contamination that had already been released to the soil from tank farm operations. Several factors were considered in developing this milestone:

- Other than soil removal, no promising vadose zone remediation technology was available.
- Mobile contaminants from tank farm sources were believed to migrate through the vadose zone at about 2-3 feet per year, and were thus expected to have reached around 80-100 feet below ground surface.
- Reduction of surface water infiltration was expected to reduce continued migration potential for existing contamination.

Since that time, additional progress has been made and information gained:

- Initial vadose zone desiccation testing has shown that it may be possible to remove both water and some mobile contaminants from the vadose zone.
- Characterization in the 200 West area has shown that plumes of contamination can be held up over the Cold Creek unit, limiting migration to the ground water. The contamination is in soil containing high concentrations of water.

The observation that mobile contaminants are associated with moisture plumes indicates a possible need to remove moisture already in the vadose zone, not just prevent additional infiltration. The potential for mobile contaminant removal technology offers opportunities to remediate the contamination, rather than just slow its migration to groundwater.

This emerging understanding has led to the proposed work plan for vadose sampling and testing, followed by a decision point, before proceeding with additional barrier construction. The Work Plan will include an Implementation Schedule that addresses the tasks described below. A separate Sampling and Analysis Plan will be provided to address the laboratory analysis of the soil samples to be obtained in 241-TX Farm.

- 1) Perform vadose zone characterization in 241-TX farm, limited to direct push logging and sampling at approximately 12 locations. An average of 3 soil samples will be collected and analyzed at each location. The purpose of this characterization activity will be to evaluate the potential need for an interim surface barrier or other interim measure.
- 2) Perform additional vadose zone characterization in 241-U farm, limited to surface geophysical exploration (SGE) employing the deep electrodes that are already in place in 241-U farm. The purpose of this characterization activity will be to evaluate the potential need for an interim surface barrier or other interim measures.
- 3) Perform initial field testing of soil desiccation/contaminant removal technology in or near SX tank farm to determine if the technology has potential to remediate identified contamination. The initial test is limited to lengthening 2 or 3 existing drywells to be completed within the soil contamination plume, or installing new drywells using direct push technology, and performing a proof of principle test of soil desiccation/contaminant removal.

This change package establishes three target dates for the submittal of secondary documents that will provide the results of characterization and field testing.

The first target date is for a secondary document to be delivered at the completion of the scope in item 1, above. This document will be used for purposes of milestone M-045-56, i.e., to support annual discussions for the specific purpose of assessing the adequacy of information, and the potential need to establish additional Agreement interim measures.

The second target date is for a secondary document to be delivered at the completion of the scope in item 2. This document will also be used for purposes of milestone M-045-56, to support annual discussions for the specific purpose of assessing the adequacy of information, and the potential need to establish additional Agreement interim measures.

The third target date is for a secondary document to be delivered at the completion of the scope in item 3. This document will consider the following options, and will make a recommendation:

- A. If further soil desiccation/contaminant removal work is appropriate for tank farm contamination, recommend defining a larger scale remediation test and/or other interim measures.
- B. If further soil desiccation/contaminant removal work is not appropriate for tank farm contamination, perform the additional barrier construction and design per the revised schedule in M-045-92, to include:
  - a. Construction of 2 barriers at SX farm per the previously approved design
  - b. Design and construction of barrier 3
  - c. Design and construction of barrier 4

Upon review of the third secondary document delivered at the completion of the scope in item 3, DOE and Ecology will meet to discuss the recommendations, and decide whether to pursue the barrier design and construction per the revised schedule in M-045-92, or to establish new milestones in lieu of the barrier design and construction work.

Specific changes to Tri-Party Agreement Appendix D are displayed with double underline to indicate addition of text and by ~~strikeout~~ to indicate deletion of text.

<p>M-045-92</p>	<p><del>DOE and Ecology will establish, no later than March 31, 2010, selection criteria for installation of additional interim barriers at additional WMAs (beyond the T-106 and TY barriers). DOE and Ecology will meet yearly to review the monitoring data, agree to changes in monitoring (if needed) and assess the performance of the demonstration barrier.</del></p> <p><del>DOE shall submit to Ecology for approval, a final design and monitoring plan for TY farm interim barrier by March 31, 2010. Installation of the barrier will be completed by September 30, 2010.</del></p> <p><del>By December 31, 2010, complete negotiations to schedule the remaining 4 additional barriers, unless DOE and Ecology agree that monitoring data does not support continued installation of interim barriers.</del></p> <p><u>negotiated, After the determination identified in Milestone M-045-22, complete installation of four (4) additional interim barriers, according to the following schedule (unless Ecology and USDOE have determined to continue vadose zone testing and DOE has submitted a change request for M-045-92):</u></p> <ul style="list-style-type: none"> <li>• <u>by October 31, 2015, construct barriers 1 and 2 in 241-SX farm, per the design and monitoring plans already approved by Ecology under milestones M-045-92.</u></li> </ul> <p><u>Construct the remaining two (2) barriers per the following revised schedule:</u></p> <ul style="list-style-type: none"> <li>• <u>Barrier 3 Design/Monitoring Plan 06/30/15</u></li> <li>• <u>Construct Barrier 3 10/31/16</u></li> <li>• <u>Barrier 4 Design/Monitoring Plan 06/30/16</u></li> <li>• <u>Construct Barrier 4 10/31/17</u></li> </ul> <p><del>at a rate of one per year, with the first being completed by October 31, 2012. Prior to beginning construction and at least sixteen months before construction is to be complete, DOE will submit to Ecology a final design and monitoring plan for each interim barrier.</del></p> <p>The design and monitoring plans will be consistent with those developed for WMA T and TY unless DOE and Ecology agree otherwise. Ecology will authorize construction upon approval of the final design and monitoring plans.</p>	<p><del>9/30/2016</del>  <u>10/31/17</u>      Or As      Indicated In      the Descriptive      Text Of This      Milestone</p>
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<p><u>M-045-20</u></p>	<p><u>Submit to Ecology for review and approval as a primary document, an interim measures investigation work plan for vadose zone characterization at 241-TX Farm and 241-U Farm, and soil desiccation/contaminant removal proof-of-principal testing at 241-SX Farm.</u></p> <p><u>The Work Plan shall be an "Other Work Plan", in accordance with TPA Action Plan Section 11.6 and include an implementation schedule.</u></p> <p><u>A draft TPA change control form will be submitted with due dates replacing TBDs with due dates for M-045-22, M-045-22-T01, M-045-22-T02 and M-045-22-T03.</u></p> <p><u>A sampling and analysis plan for the soil samples to be obtained at 241-TX Farm will not be included with this work plan, as it will be provided under interim milestone M-045-21.</u></p> <p><u>The scope of the work plan shall encompass and be limited to, the following activities:</u></p> <ol style="list-style-type: none"> <li><u>1. Describe the plan to perform initial direct push soil investigation in the 241-TX tank farm for purposes of evaluating potential need for an interim barrier or other interim measure</u></li> <li><u>2. Describe the plan to perform electrical resistivity investigation in the 241-U tank farm for purposes of evaluating potential need for an interim barrier or other interim measure</u></li> <li><u>3. Describe the plan for initial proof of principal testing of contaminant removal testing at the 241-SX tank farm for purposes of determining whether more extensive testing is warranted</u></li> </ol>	<p><u>December 31, 2012</u></p>
<p><u>M-045-21</u></p>	<p><u>Submit to Ecology for review and approval as a primary document, a Sampling and Analysis Plan (SAP) for the soil samples to be obtained as part of the initial direct push soil investigation in the 241-TX Tank Farm (as described in the Work Plan submitted under M-045-20).</u></p>	<p><u>March 31, 2013</u></p>
<p><u>M-045-22</u></p>	<p><u>DOE and Ecology will review the report generated in M-045-22-T03 and determine whether to continue with soil desiccation/contaminant removal testing and other interim measures. If DOE and Ecology agree to modify the remaining work in Milestone M-045-92, to construct two (2) barriers at SX farm, and design and construct interim surface barriers 3 and 4. DOE will propose a modification to Milestone M-045-92.</u></p> <p><u>Due date to be established in TPA change control form submitted for M-045-20.</u></p>	<p><u>TBD</u></p>

<p><u>M-045-22-T01</u></p>	<p><u>Submit to Ecology as a secondary document the results of the vadose zone characterization in the 241-TX Farm per the schedule in M-045-20.</u></p> <p><u>Due date to be established in TPA change control form submitted for M-045-20.</u></p>	<p><u>TBD</u></p>
<p><u>M-045-22-T02</u></p>	<p><u>Submit to Ecology as a secondary document the results of the vadose zone characterization in the 241-U farm per the schedule in M-045-20.</u></p> <p><u>Due date to be established in TPA change control form submitted for M-045-20.</u></p>	<p><u>TBD</u></p>
<p><u>M-045-22-T03</u></p>	<p><u>Submit to Ecology as a secondary document the results of the initial field testing of soil desiccation/contaminant removal technology in SX tank farm, per the schedule in M-045-20.</u>  <u>Include a recommendation for further soil desiccation/contaminant removal for tank farm contamination or for performing interim barrier construction.</u></p> <p><u>Due date to be established in TPA change control form submitted for M-045-20.</u></p>	<p><u>TBD</u></p>