

## LaFranzo, Michael

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**From:** LaFranzo, Michael  
**Sent:** Friday, February 03, 2017 7:15 AM  
**To:** Pallagi, Kenneth E. (pallagke@westinghouse.com)  
**Cc:** Smetanka, Joseph W (smeta1jw@westinghouse.com); Evers, William C. (everswc@westinghouse.com); Kunowski, Michael; Giessner, John; Smith, James; Lee, Peter; Bonano, Eugenio  
**Subject:** NRC submittal of Comments/Questions to Westinghouse/Hematite  
**Attachments:** NRC Questions to Hematite - LSA water-sediment-material intrusion - email attachment.docx

Ken,

As requested in the Public Meeting held today (February 2, 2017), the attached is a document summarizes NRC comments and questions associated with documents provided in your emails to NRC dated January 25, 2017 and February 1, 2017.

The comments and questions contained within the attachment should not be considered NRC's final points on this matter. The NRC reserves the right to ask additional questions or provide comments on the referenced documents submitted and any future documents associated with this topic. If there is any information contained within the NRC document that the licensee believes is unclear, you are encouraged to contact the NRC to gain clarification.

In accordance with Title 10 of the *Code of Federal Regulations* (CFR) 2.390 of the NRC's "Rules of Practice," a copy of this email, its attachment, and you're your emails and attachments referenced above will be made available electronically for public inspection in the NRC's Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC's website at <http://www.nrc.gov/reading-rm/adams.html>. It is our understanding that there is no personal privacy or proprietary information contained within the emails or attachments submitted to NRC.

Please contact the NRC if you have any questions. Thank you

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Westinghouse – Hematite  
Final Status Survey  
Proposed Comments/Questions on  
LSA Template from email dated January 25, 2017 and “Plausibility Matrix of Contaminated  
Items in an Excavation Prior to Backfill” dated February 2, 2017

NRC has reviewed the licensee's documents submitted via email dated January 25, 2017 and February 1, 2017. At this time, the NRC does not believe that the documents provided enough information to support the licensee's contention that radioactive material did not move by surface water flow from contaminated Land Survey Units (LSAs) to areas previously Final Status Surveyed (FSS'd). To clarify the licensee's position, the NRC is asking the licensee to provide the following information and answer the questions associated with a sample template provided below that will support the licensee's contention that each Land Survey Area (LSA) does not contain licensed material in sufficient quantities to preclude its release for unrestricted use. The goal is to provide for each LSA: the date when the FSS was completed; the date when the backfill was begun and when it was completed; and, for the time between FSS completion and backfill completion, an evaluation of what rain events occurred that could impact the FSS. The evaluation could be a resurvey or a determination of impact. A sample template is provided below.

1. The licensee should provide the date(s) when the FSS was performed for each LSA. (The NRC believes this item was addressed in the February 1, 2017 document);
2. The licensee should provide the date(s) when backfill was begun and completed for each LSA;
3. The licensee should provide site specific rainfall, at a minimum of inches per 24 hours and the source of this information
  - a. The NRC recognizes that not all rain events would cause the movement of licensed material;
  - b. In the licensee's response dated December 23, 2015 (ML15357A074) to the NRC Notice of Violation, the licensee stated that its Best Management Practices (BMPs) for water/sediment retention (as discussed in the Environmental Report submitted to the NRC) would be sufficient to contain storm water ground surface flow rates from rainfall of 0.9 inches in 24 hours. Although the NRC does not possess site specific rainfall data, NRC review of publically available rain fall data within 30 miles of the site show that for the January 2014 and August 2015 mentioned in the licensee's template, there were as many as 20 days of rain greater than 0.9 inches of which 3 days were greater than 2 inches;
  - c. Example: In the licensee's template, there were only two rain events referred to that the licensee implied could have impacted the reference LSA. Based upon information in Item 3.b., the licensee should have done an analysis of more than two rain events;
  - d. The licensee should provide information to document what it considers a rain event whereby isolation controls would fail and provide documented and objective based evidence to support each onsite rain event. If the licensee does



not possess site specific rain data, other methods of obtaining that information may be acceptable.

- e. If the licensee plans to use rain fall rates concerning BMPs other than described in Item 3.b., the licensee should provide information to show why the licensee's position had changed.
4. The licensee should provide information, for each LSA, concerning whether licensed material in adjacent LSAs could have moved into the reference LSA between the time the reference LSA FSS was performed and the time it was backfilled. For example, in the licensee's template, the reference LSA is 10-05 and LSAs 10-14, 10-13, 10-12, 10-06 and 10-06 are adjacent to it. The licensee should provide the conditions of each adjacent LSA that could impact the reference LSA, including:
  - a. Topography – Could each adjacent LSA impact the reference LSA through water transport? For example, if an adjacent LSA is higher in elevation than the reference LSA, contaminated water flow from the adjacent LSA could impact the reference LSA;
  - b. FSS and backfill time correlations – Could each adjacent LSA impact the reference LSA because of licensed material in the adjacent LSA? For example, if an adjacent LSA was FSS'd and backfilled prior to the FSS of the reference LSA, there would be no impact to the reference LSA from the adjacent LSA. The NRC would consider acceptable for each reference LSA, a table documenting for each adjacent LSA the relationship of FSS and backfill times to the reference LSA.
5. Site Specific Rain – For each reference LSA, what actions were taken by the licensee relating to, at a minimum, the last rain event as defined in Item 3, after FSS but prior to backfill of the reference LSA, to ensure that licensed material did not impact the reference LSA? The licensee should consider, at a minimum, each adjacent LSA's topography (Item 4.a.) and the FSS and backfill time correlations (Item 4.b.) related to the reference LSA.
6. Isolation Controls Effectiveness – For each reference LSA and adjacent LSA that could be impacted by a rain event as described (Item 5) and using information from (Item 3) and (Item 4), the licensee should provide information that isolation controls were adequate to prevent contaminated water/sediment entering the reference LSA. These could include, but are not limited to:
  - a. Photographs with sufficient resolution or other objective based evidence that isolation barriers were effective in preventing water/sediment/material from entering and, thus, impacting a reference LSA. The evidence should be more robust than the visual review that was discussed in the December 23, 2015 response to the NOV. This visual review (an in-person observation) by a licensee representative failed to identify 15 radiologically contaminated items that had been moved by stormwater from an adjacent contaminated LSA into the previously FSS'd LSA 02-01; these items were readily identified by the NRC inspector when he reviewed the area.
  - b. Photographs with sufficient resolution or other objective based evidence that contaminated water/sediment/material was not transported to the reference LSA

area if isolation barriers failed or if there is insufficient evidence that the barriers were successful. As in Item 6.a., the evidence should be robust.



**LaFranzo, Michael**

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**From:** Pallagi, Kenneth E. <pallagke@westinghouse.com>  
**Sent:** Thursday, February 02, 2017 3:21 PM  
**To:** LaFranzo, Michael  
**Cc:** Smith, James; Kunowski, Michael; Smetanka, Joseph W; Evers, William C.  
**Subject:** [External\_Sender] RE: Emails Sent to NRC - Proprietary in Nature

Mike,

I have reviewed the emails sent by myself to Jim Smith of the NRC on January 25, 2017 and February 1, 2017. These emails contained attachments that were provided to the NRC for the purpose of discussion regarding the path forward on areas identified as possibly being impacted by storm water events, post remediation, and not surveyed prior to backfill during the routine publicly noticed conference calls. I have not identified any Westinghouse proprietary information in the attachments to the emails.

Ken Pallagi  
Licensing  
Hematite Decommissioning project

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**From:** LaFranzo, Michael [mailto:Michael.LaFranzo@nrc.gov]  
**Sent:** Thursday, February 02, 2017 3:01 PM  
**To:** Pallagi, Kenneth E.  
**Cc:** Smith, James; Kunowski, Michael  
**Subject:** Emails Sent to NRC - Proprietary in Nature

Ken,

The NRC would like to send you the information presented by NRC and requested by you during the Public Meeting. In our document, we reference your January 25, 2017 email and attachment and would like to reference your February 1, 2017 email and/or attachment. Without this information, the document we developed is not complete.

Is there anything in the January 25, 2017 or February 1, 2017 emails and attachments that the licensee considers proprietary in nature that should be withheld from public disclosure?

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**LaFranzo, Michael**

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**From:** Smith, James  
**Sent:** Wednesday, February 01, 2017 10:28 PM  
**To:** Parks, Leah; Chapman, Gregory; LaFranzo, Michael; Smith, Theodore; Kunowski, Michael  
**Subject:** Fwd: Westinghouse HDP - NRC 02-02-2017 call - matrix  
**Attachments:** Backfill Survey Matrix 02-01-2017.pdf

Fyi

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**From:** "Pallagi, Kenneth E." <pallagke@westinghouse.com>  
**Subject:** [External\_Sender] Westinghouse HDP - NRC 02-02-2017 call - matrix  
**Date:** 01 February 2017 14:33  
**To:** "Smith, James" <James.Smith@nrc.gov>  
**Cc:** "Smetanka, Joseph W" <smetaljw@westinghouse.com>, "Evers, William C." <everswc@westinghouse.com>

Jim,

Please find attached the matrix I previously mentioned for discussions during tomorrow's call. My intent is to brief you and Headquarters personnel on the reviews we are conducting here at the site to address the plausibility (the non-plausibility) of contaminated items remaining in an excavation prior to backfill.

Thanks

Ken

Ken Pallagi  
Hematite Decommissioning Project  
Licensing

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Plausibility Matrix of Contaminated Items in an Excavation Prior to Backfill  
February 2, 2017

Survey Unit	Description	FSS Complete Date	Backfill Yes or No	Post Storm Event (7/2/2017) Investigation Determined to not be Necessary	Pre-Backfill 72 Hour Survey
LSA-01 South Site Waterways					
LSA-01-01	Site Creek/Joachim Creek	12/16/2015	No		
LSA-01-02	South Section of Site Creek	01/14/2016	No		
LSA-01-03	North Section of Site Creek	01/14/2016	No		
LSA-02 Site Pond					
LSA-02-01	North Section of Site Pond	09/29/2015	No	Violation issued for transfer of contaminated material from LSA 05-04 into LSA 02-01 during August 31, 2015 storm event. Corrective actions and FSS demonstrate area acceptable to restore water flow to Site Pond.	
LSA-02-02	Central Section of Site Pond	09/29/2015	No		
LSA-02-03	South Section of Site Pond	09/29/2015	Yes		N/A
LSA-03 West Open Land Area					
LSA-03-01	Area West of Site Pond	11/06/2015	Yes	N/A	Yes
LSA-03-02	Area Southwest of Site Pond	11/12/2015	Yes	N/A	Yes
LSA-04 Southwest Open Land Area					
LSA-04-01	Area between Buildings 230/231 and Site Pond	04/5/2016	No	N/A	Yes
LSA-04-02	Area East of North Section of Site Pond (west soil laydown area)	04/22/2016	No		
LSA-04-03	Area East of Central Section of Site Pond (west soil laydown area)	04/21/2016	No		
LSA-04-04	Area South of Building 231	04/12/2016	Yes Backfill limited to trench for SWTP Pipe		
LSA-04-05	Wooded Area South of Building 231	06/21/2016	No		
LSA-05 Barns and Cistern Open Land Area					
LSA-05-01	Site Spring Area adjacent to State Road P	03/09/2014	Yes	Backfill Immediately After FSS – NRC Surveyed (see page 18)	
LSA-05-02	Tile Barn and Red Room Roof	09/13/2013	Yes	Backfilled February 2014. Backfilled prior to first Storm event of April 3, 2014	
LSA-05-03	Wood Barn	11/07/2013	Yes	Backfilled February 2014. Backfilled prior to first Storm event of April 3, 2014	
LSA-05-04	Site Spring and Cistern	04/27/2016	Yes	N/A	Yes



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February 2, 2017

Survey Unit	Description	FSS Complete Date	Backfill Yes or No	Post Storm Event (7/2/2017) Investigation Determined to not be Necessary	Pre-Backfill 72 Hour Survey	
<b>LSA-06 North Open Land Area</b>						
LSA-06-01	Main Parking Lot	06/24/2016	No			
LSA-06-02	West Parking Lot	06/17/2016	No			
<b>LSA-07 North Central Open Land Area</b>						
LSA-07-01	Truck Scale Area	05/03/2016	No			
<b>LSA-08 Central Open Land Area</b>						
LSA-08-01	Process Building Area Section 1	03/15/2016	Yes	N/A	Yes	
LSA-08-02	Process Building Area Section 2	02/04/2016	Yes	N/A	Yes	
LSA-08-03	Process Building Area Section 3	03/18/2016	Yes	N/A	Yes	
LSA-08-04	Process Building Area Section 4	04/07/2016	Yes	N/A	Yes	
LSA-08-05	Process Building Area Section 5	04/12/2016	Yes	N/A	Yes	
LSA-08-06	Process Building Area Section 6	01/06/2016	Yes	N/A	Yes	
LSA-08-07	Process Building Area Section 7	01/07/2016	Yes	N/A	Yes	
LSA-08-08	Process Building Area Section 8	04/07/2016	Yes	N/A	Yes	
LSA-08-09	Process Building Area Section 9	04/28/2016	Yes	N/A	Yes	
LSA-08-10	Process Building Area Section 10	07/13/2016	No			
LSA-08-11	Process Building Area Section 11	12/16/2015	Yes	N/A	Yes	
LSA-08-12	Process Building Area Section 12	04/22/2016	Yes	N/A	Yes	
LSA-08-13	Process Building Area Section 13	04/21/2016	Yes	N/A	Yes	
LSA-08-14	Process Building Area Section 14	05/24/2016	Yes	N/A	Yes	
LSA-08-15	Process Building Area Section 15	07/18/2016	No			
LSA-08-16	Process Building Area Section 16	03/17/2016	Yes	N/A	Yes	
LSA-08-17	Process Building Area Section 17	01/19/2016	Yes	N/A	Yes	
<b>LSA-09 Rail Spur open Land Area</b>						
LSA-09-01	East Rail Spur Area	05/24/2016	No			
LSA-09-02	Central Rail Spur Area	07/05/2016	No			
LSA-09-03	West Rail Spur Area	05/24/2016	Yes	N/A	Yes	

Plausibility Matrix of Contaminated Items in an Excavation Prior to Backfill  
February 2, 2017

Survey Unit	Description	FSS Complete Date	Backfill Yes or No	Post Storm Event (7/2/2017) Investigation Determined to not be Necessary	Pre-Backfill 72 Hour Survey
<b>LSA-10 Burial Pits Open Land Area</b>					
LSA-10-01	Burial Pit Area Section 1	06/17/2015	Yes	<p>NRC Inspection on March 31, 2015 identified storm water transfer from Area 3 (Process Building Area) to Area 1 (Burial Pit Area). On April 1, 2015 earthen berm installed in area identified and Area 3 sloped such that storm water flows away from Area 1 and Area 2 (entire length). See response to violation HEM-15-93. Berm and sloping preclude transfer of radioactive material as verified by FSS survey.</p> <p><u>Time Line</u></p> <ol style="list-style-type: none"> <li>1) April 3, 2014 Storm event</li> <li>2) November 20, 2014 Westinghouse letter HEM-14-87 - NRC notified remediation complete in burial pit area and de-escalation of security plan</li> <li>3) January 9, 2015 FSS activities recommence</li> <li>4) February 2, 2015 GWS complete in LSA 10-01 and LSA 10-02</li> <li>5) February 11, 2015 GWS complete in LSA 10-12</li> <li>6) February 17, 2015 GWS complete in LSA 10-03 and LSA 10-14</li> <li>7) March 31, 2015, NRC Identifies issue</li> <li>8) April 1, 2015 Berm and slope established along length of Burial Pit Area (see NRC photo) (see HDP photos) <i>"The inspectors identified one violation of NRC requirements for failure to prevent water flow into an isolated area with a berm or equivalent that could cause cross contamination (VI007000036/2015002-002). The licensee took immediate corrective actions while the inspector was on site."</i> (See pages 9 and 10)</li> <li>9) April 2, 2015, NRC Inspector takes photographs which confirm establishment of berm/slope (See pages 11 and 12)</li> <li>10) April 15, 2015 HDP survey and soil samples in of LSA 10-03 confirm no contamination transfer. Confirms operability of berm.</li> <li>11) May 4-7, 2015 ORAU Survey</li> <li>12) ORAU Report 5184-SR-05-0, dated April 16, 2016 (ML16111B050), documented confirmatory survey activities for LSAs 10-03 and 10-04, and scan survey results for LSAs 10-01 and 10-02. ORAU data supports effectiveness of berm/slope</li> <li>13) June 17, 2015 FSS documentation activities completed</li> </ol>	
LSA-10-02	Burial Pit Area Section 2	06/17/2015	Yes		
LSA-10-03	Burial Pit Area Section 3	06/17/2015	Yes		
LSA-10-04	Burial Pit Area Section 4	06/17/2015	Yes		



Plausibility Matrix of Contaminated Items in an Excavation Prior to Backfill  
February 2, 2017

Survey Unit	Description	FSS Complete Date	Backfill Yes or No	Post Storm Event (7/2/2017) Investigation Determined to not be Necessary	Pre-Backfill 72 Hour Survey	
				<p>14) June 29, 2015 Backfill commenced in Area 1 (LSA 10-01, LSA 10-02, LSA 10-03, LSA 10-04 and LSA 10-12). By end of shift excavation floors covered. (See page 13)</p> <p>15) July 2, 2015 – Storm event with flooding. No impact determination as all LSA 10 survey units proven acceptable by FSS activities, backfill already in place, berm/slope in place and not compromised in adjacent Area 3</p> <p>16) Backfill commenced in Area 2 (LSA 10-13, LSA 10-14 and LSA 10-05 by July 30, 2015.</p> <p>17) Storm event August 31, 2015 no impact – backfill already in place</p>		
LSA-10-05	Burial Pit Area Section 5	02/13/2014	Yes	<p><u>Time Line</u></p> <p>1) Prior to FSS commencing in LSA 10-05 an earthen berm was installed between LSA 10-05 and LSA 10-12.</p> <p>2) January 19, 2014 GWS of LSA 10-05 complete</p> <p>3) February 13, 2014 FSS documentation activities complete for LSA 10-05</p> <p>4) February 2014, LSA 10-06, LSA 10-07 and LSA 10-10 backfilled</p> <p>5) April 3, 2014 storm event</p> <p>6) April 3, 2014 photograph shows berm between LSA 10-05 and LSA 10-12 uncompromised (See page 15)</p> <p>7) May 5 and 6, 2014 GWS conducted in LSA 10-05. 8 biased soil samples taken confirm radiological status of LSA 10-05</p> <p>8) November 20, 2014 Westinghouse letter HEM-14-87 - NRC notified remediation complete in burial pit area and de-escalation of security plan</p> <p>9) March 31, 2015, NRC Identifies issue</p> <p>10) April 1, 2015 Berm and slope established along length of Burial Pit Area (see NRC photo) (see HDP photos) <i>"The inspectors identified one violation of NRC requirements for failure to prevent water flow into an isolated area with a berm or equivalent that could cause cross contamination (VI007000036/2015002-002). The licensee took immediate corrective actions while the inspector was on site."</i> (See pages 9 and 10)</p> <p>11) April 2, 2015, NRC Inspector takes photographs which confirm establishment of berm/slope (See pages 11 and 12)</p> <p>12) April 15, 2015 HDP survey and soil samples in of LSA 10-03 confirm no</p>		

Plausibility Matrix of Contaminated Items in an Excavation Prior to Backfill  
February 2, 2017

Survey Unit	Description	FSS Complete Date	Backfill Yes or No	Post Storm Event (7/2/2017) Investigation Determined to not be Necessary	Pre-Backfill 72 Hour Survey	
				contamination transfer. Confirms operability of berm. 13) April 29, 2015 GWS complete in adjacent and LSA 10-14 (See page 17) 14) July 2, 2015 – Storm event with flooding. No impact on LSA's determination as all LSA 10 survey units proven acceptable by FSS activities, backfill already in place, berm/slope in place and not compromised in adjacent Area 3 15) Backfill commenced in Area 2 (LSA 10-13, LSA 10-14 and LSA 10-05 by July 30, 2015. 16) Storm event August 31, 2015 no impact – backfill already in place		
LSA-10-06	Burial Pit Area Section 6	01/10/2014	Yes	No storm events between FSS and backfill. Backfilled February 2014. Backfilled prior to storm event of April 3, 2014		
LSA-10-07	Burial Pit Area Section 7	01/10/2014	Yes	No storm events between FSS and backfill. Backfilled February 2014. Backfilled prior to storm event of April 3, 2014		
LSA-10-08	Burial Pit Area Section 8	09/02/2013	Yes	Backfill Immediately After FSS – NRC Surveyed		
LSA-10-09	Burial Pit Area Section 9	10/21/2013	Yes	Backfill Immediately After FSS – NRC Surveyed		
LSA-10-10	Burial Pit Area Section 10	02/20/2014	Yes	No storm events between FSS and backfill. Backfilled February 2014. Backfilled prior to storm event of April 3, 2014		
LSA-10-11	Burial Pit Area Section 11	05/21/2015	Yes	LSA 10-11 was portion of road. Average exaction of 1.3 feet to mainly remove the gravel road and vegetation. Therefore surface elevation remained above Burial Pit LSAs.		
LSA-10-12	Burial Pit Area Section 12	06/17/2015	Yes	<u>Time Line</u> 1) April 3, 2014 Storm event 2) November 20, 2014 Westinghouse letter HEM-14-87 - NRC notified remediation complete in burial pit area and de-escalation of security plan 3) January 9, 2015 FSS activities recommence 4) February 11, 2015 GWS of LSA 10-12 complete 5) March 31, 2015, NRC Identifies issue 6) April 1, 2015 Berm and slope established along length of Burial Pit Area (see NRC photo) (see HDP photos) <i>"The inspectors identified one violation of NRC requirements for failure to prevent water flow into an isolated area with a berm or equivalent that could cause cross contamination (VI007000036/2015002-002). The licensee took immediate corrective actions while the inspector was on site."</i> (See pages 9 and 10)		



Plausibility Matrix of Contaminated Items in an Excavation Prior to Backfill  
February 2, 2017

Survey Unit	Description	FSS Complete Date	Backfill Yes or No	Post Storm Event (7/2/2017) Investigation Determined to not be Necessary	Pre-Backfill 72 Hour Survey
				<p>7) April 2, 2015, NRC Inspector takes photographs which confirm establishment of berm/slope (See pages 11 and 12)</p> <p>8) April 15, 2015 HDP survey and soil samples in of LSA 10-03 confirm no contamination transfer. Confirms operability of berm.</p> <p>9) June 29, 2015 Backfill commenced in Area 1 (LSA 10-01, LSA 10-02, LSA 10-03, LSA 10-04 and LSA 10-12). By end of shift excavation floors covered. (See page 13)</p> <p>10) July 2, 2015 – Storm event with flooding. No impact on LSA's determination as all LSA 10 survey units proven acceptable by FSS, backfill already in place, berm/slope in place and not compromised in adjacent Area 3</p> <p>11) Storm event August 31, 2015 no impact – backfill already in place</p>	
LSA-10-13	Burial Pit Area Section 13	06/10/2015	Yes	<p><b>Time Line</b></p> <p>1) April 3, 2014 Storm event</p> <p>2) November 20, 2014 Westinghouse letter HEM-14-87 - NRC notified remediation complete in burial pit area and de-escalation of security plan</p> <p>3) January 9, 2015 FSS activities recommence</p> <p>4) March 2015 remediation complete in LSA 10-13 and LSA 10-14</p> <p>5) March 31, 2015, NRC Identifies issue</p> <p>6) April 1, 2015 Berm and slope established along length of Burial Pit Area (see NRC photo) (see HDP photos) <i>"The inspectors identified one violation of NRC requirements for failure to prevent water flow into an isolated area with a berm or equivalent that could cause cross contamination (VI007000036/2015002-002). The licensee took immediate corrective actions while the inspector was on site."</i> (See pages 9 and 10)</p> <p>7) April 2, 2015, NRC Inspector takes photographs which confirm establishment of berm/slope (See pages 11 and 12)</p> <p>8) April 15, 2015 HDP survey and soil samples in of LSA 10-03 confirm no contamination transfer. Confirms operability of berm.</p> <p>9) April 29, 2015 GWS complete in LSA 10-13 and LSA 10-14</p> <p>10) May 4-7, 2015 ORAU Survey</p> <p>11) ORAU Report 5184-SR-05-0, dated April 16, 2016 (ML16111B050), documented confirmatory survey activities for LSAs 10-03 and 10-04, and</p>	
LSA-10-14	Burial Pit Area Section 14	06/10/2015	Yes		

Plausibility Matrix of Contaminated Items in an Excavation Prior to Backfill  
February 2, 2017

Survey Unit	Description	FSS Complete Date	Backfill Yes or No	Post Storm Event (7/2/2017) Investigation Determined to not be Necessary	Pre-Backfill 72 Hour Survey	
				scan survey results for LSAs 10-01 and 10-02. ORAU data supports effectiveness of berm/slope 12) June 10, 2015 FSS documentation activities completed for LSA 10-13 and LSA 10-14 13) Backfill commenced in Area 1 (LSA 10-01, LSA 10-02, LA 10-03, LSA 10-04 and LSA 10-12) on June 29, 2015. By end of shift excavation floors covered. (See page 13) 14) July 2, 2015 – Storm event with flooding. No impact on LSA's determination as all LSA 10 survey units proven acceptable by FSS, backfill already in place, berm/slope in place and not compromised in adjacent Area 3 15) Backfill commenced in Area 2 (LSA 10-13, LSA 10-14 and LSA 10-05 by July 30, 2015. (See page 14) 16) Storm event August 31, 2015 no impact – backfill already in place		
<b>LSA-11 East Open Land Area</b>						
LSA-11-01	Northeast Site Creek	10/29/2015	Yes Backfill to Contour Surface. No excavation in this survey unit	N/A	Yes	
LSA-11-02	Rail Road Line	07/05/2016	No			
LSA-11-03	East Site Wooded Area	06/24/2015	No			
LSA-11-04	Small East Site Wooded area	04/24/2015	No			
LSA-11-05	Northeast Site Creek East Section	06/03/2015	No			
LSA-11-06	Rail Road Line Elevated Area	07/05/2016	No			

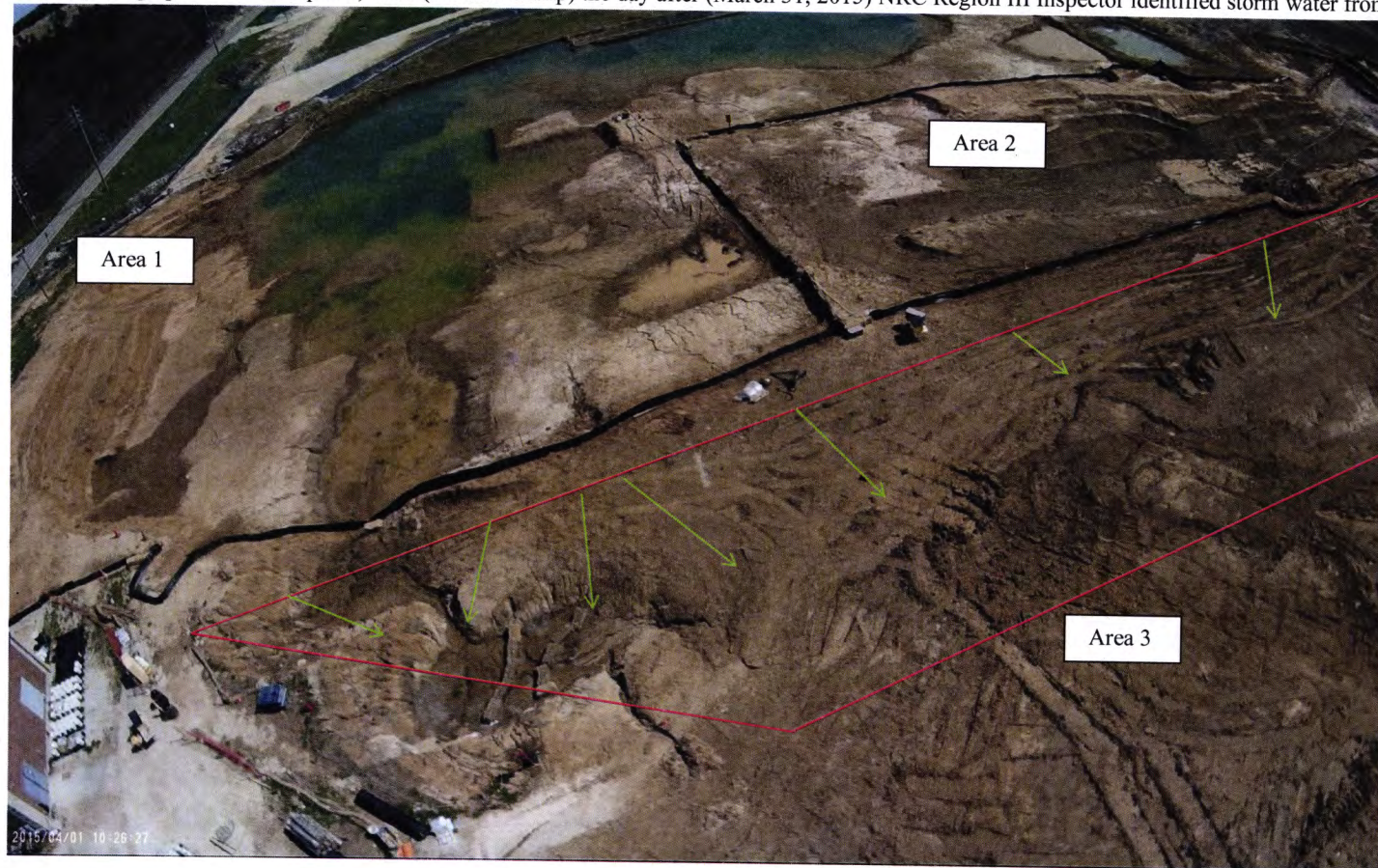


Plausibility Matrix of Contaminated Items in an Excavation Prior to Backfill  
February 2, 2017

Survey Unit	Description	FSS Complete Date	Backfill Yes or No	Post Storm Event (7/2/2017) Investigation Determined to not be Necessary	Pre-Backfill 72 Hour Survey	
<b>LSA-12 Lay Down Area</b>						
LSA-12-01	Reuse Soil Laydown Area Section 1	07/13/2016	No			
LSA-12-02	Reuse Soil Laydown Area Section 2	07/13/2016	No			
LSA-12-03	Reuse Soil Laydown Area Section 3	07/12/2016	No			
LSA-12-04	Reuse Soil Laydown Area Section 4	07/12/2016	No			
LSA-12-05	Reuse Soil Laydown Area Section 5	07/12/2016	No			
LSA-12-06	Reuse Soil Laydown Area Section 6	07/12/2016	No			
LSA-12-07	Reuse Soil Laydown Area Section 7	07/12/2016	No			
LSA-12-08	Reuse Soil Laydown Area Section 8	07/12/2016	No			
LSA-12-09	Reuse Soil Laydown Area Section 9	07/12/2016	No			

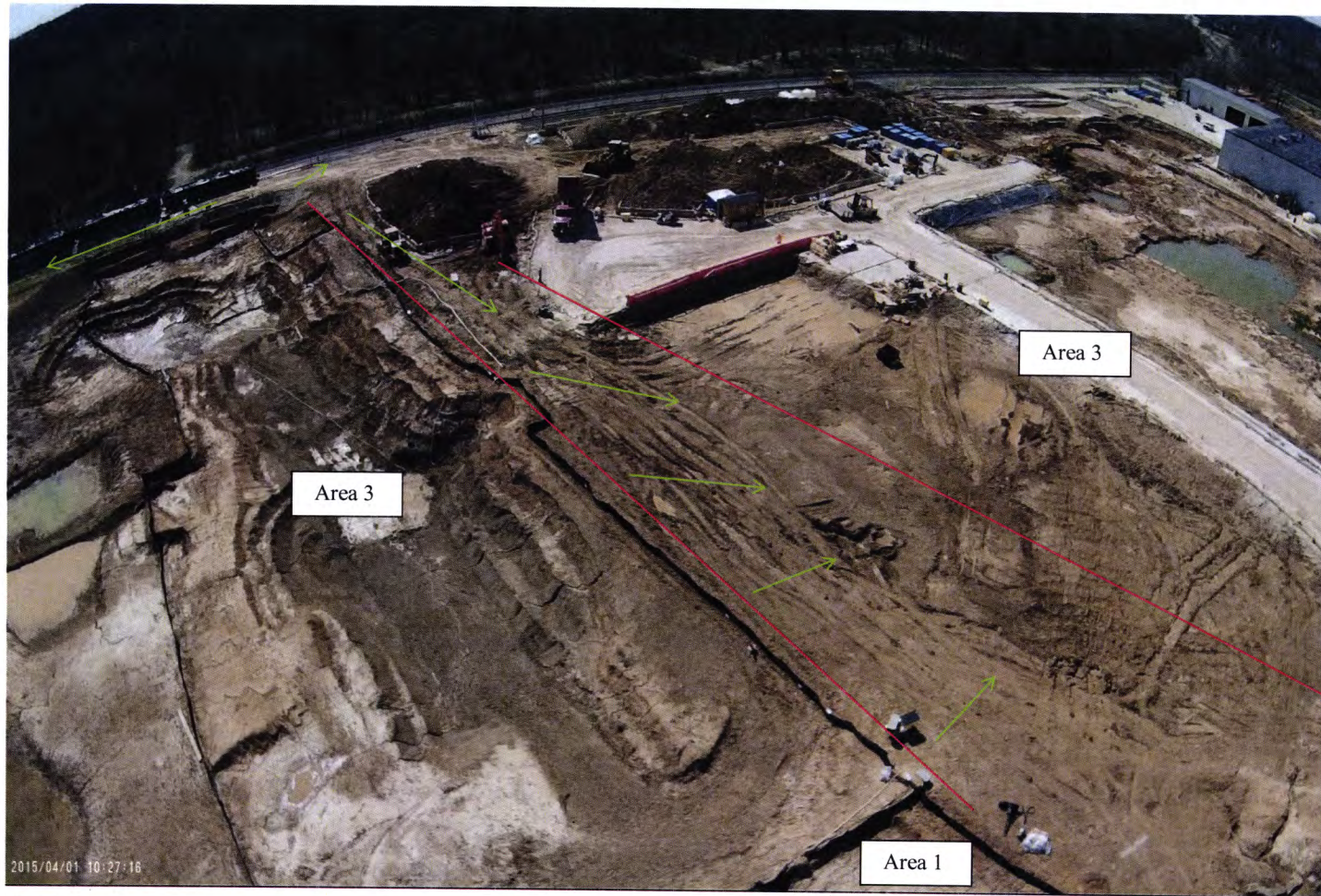
Plausibility Matrix of Contaminated Items in an Excavation Prior to Backfill  
February 2, 2017

Below photographs taken on April 1, 2015 (see date stamp) the day after (March 31, 2015) NRC Region III Inspector identified storm water from Area 3 to Area 1.





Plausibility Matrix of Contaminated Items in an Excavation Prior to Backfill  
February 2, 2017





Plausibility Matrix of Contaminated Items in an Excavation Prior to Backfill  
February 2, 2017

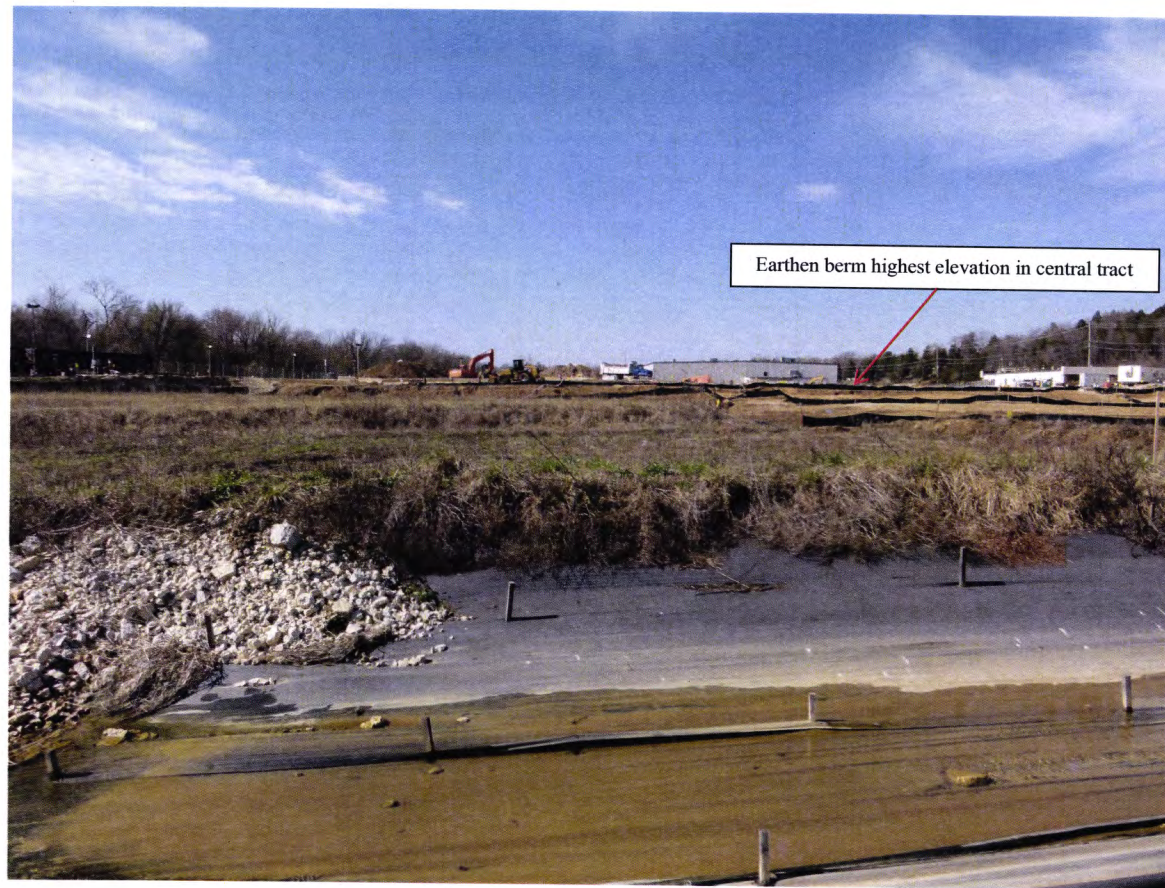
File search identified these photos taken on April 2, 2015 by the NRC Inspector.





Plausibility Matrix of Contaminated Items in an Excavation Prior to Backfill  
February 2, 2017

Photograph by NRC Region III Inspector verifies elevations.





Plausibility Matrix of Contaminated Items in an Excavation Prior to Backfill  
February 2, 2017

Photo taken 6-30-2015. LSA 10-01, LSA 10-02, LSA 10-03, LSA 10-04 and LSA 10-12 being backfilled.





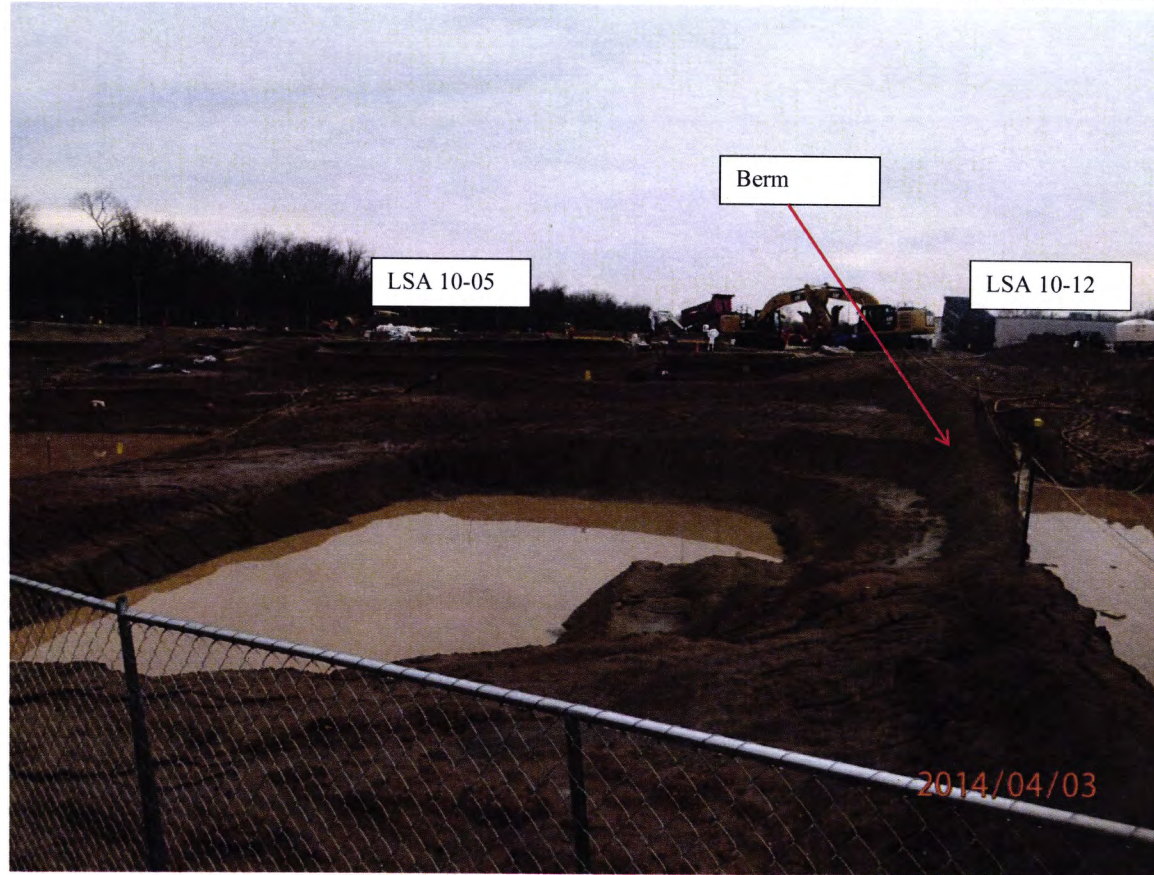
Plausibility Matrix of Contaminated Items in an Excavation Prior to Backfill  
February 2, 2017

Photo taken 08-13-2015. Civil survey in LSA 10-14 looking through to LSA 10-13, LSA 10-03 and LSA 10-01 in the distance



Plausibility Matrix of Contaminated Items in an Excavation Prior to Backfill  
February 2, 2017

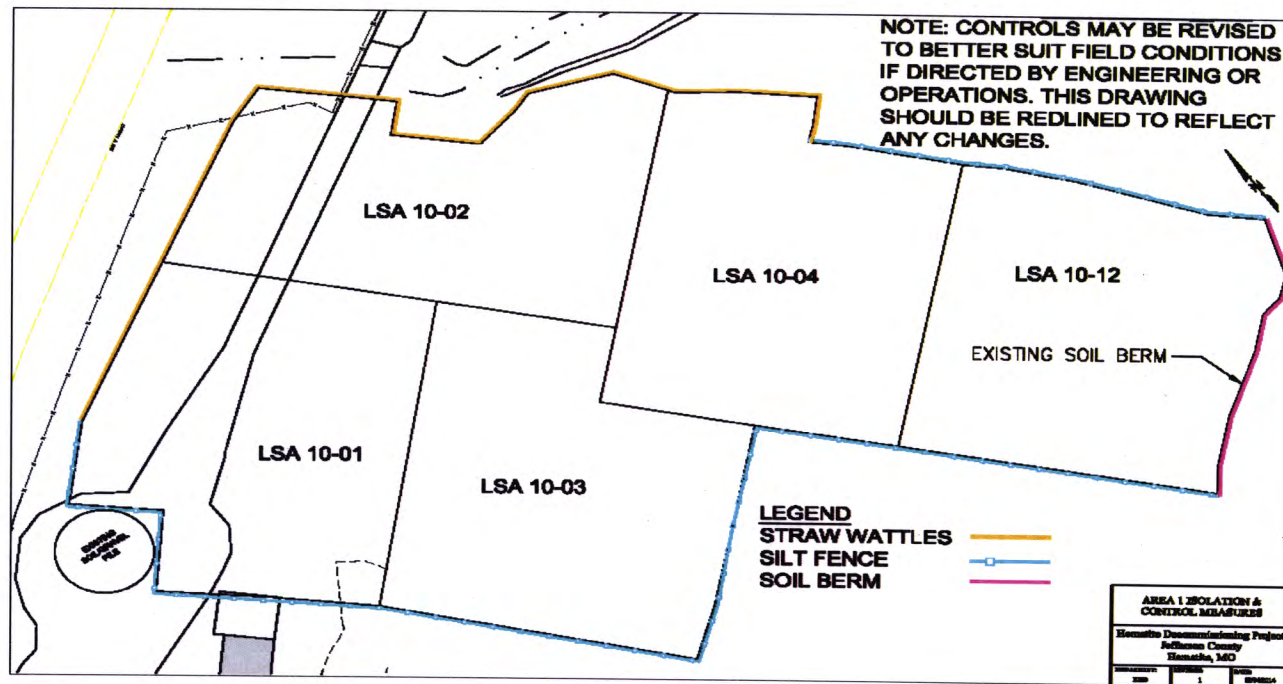
Flood event April 2014. Berm between LSA 10-05 and LSA 10-12 intact. Water in LSA 10-12 never crested berm and entered LSA 10-05.





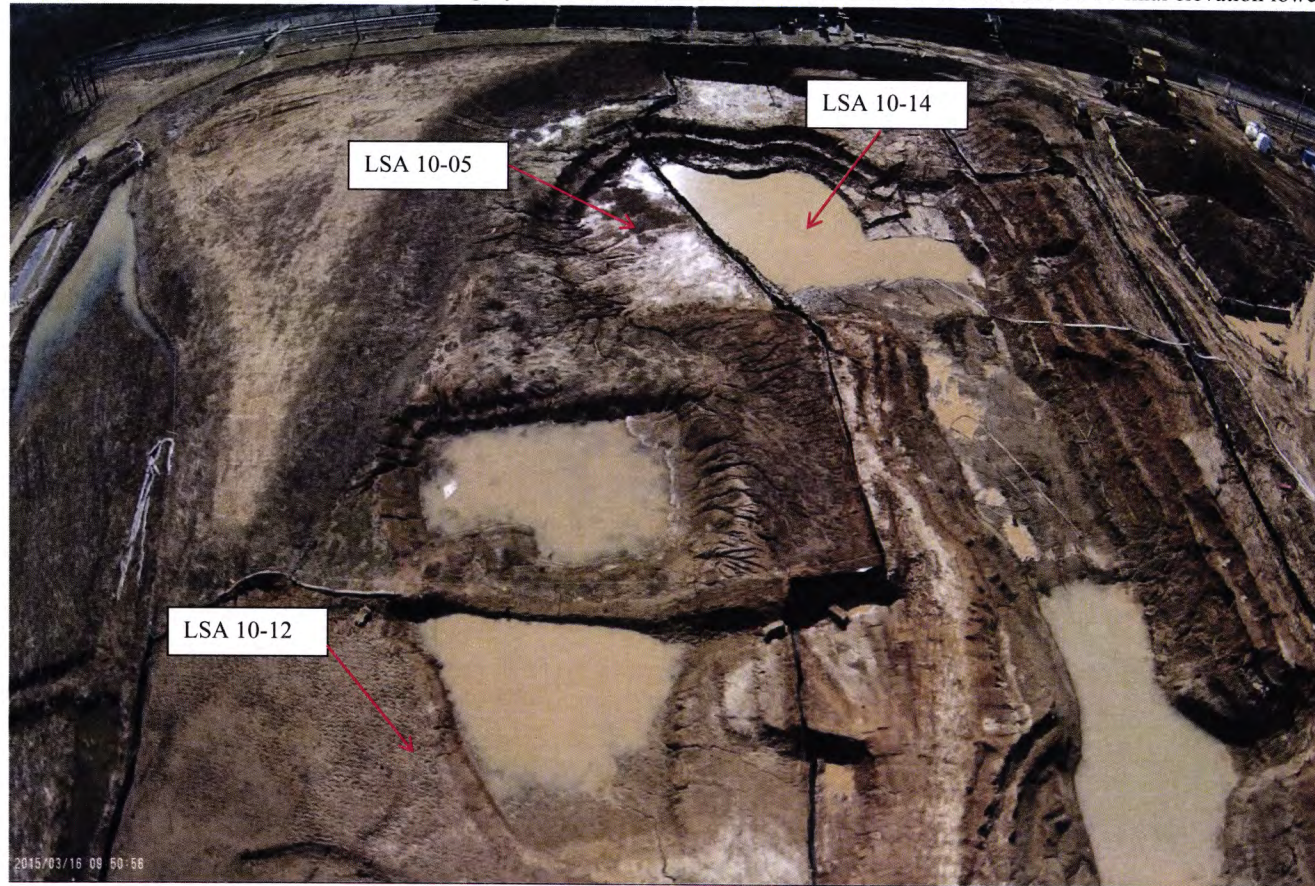
Plausibility Matrix of Contaminated Items in an Excavation Prior to Backfill  
February 2, 2017

Isolation Control between LSA 10-05 and LSA 10-12.



Plausibility Matrix of Contaminated Items in an Excavation Prior to Backfill  
February 2, 2017

Photo taken March 16, 2015 Demonstrates integrity of I& C between LSA 10-05 and LSA 10-14 and LSA 10-14 final elevation lower



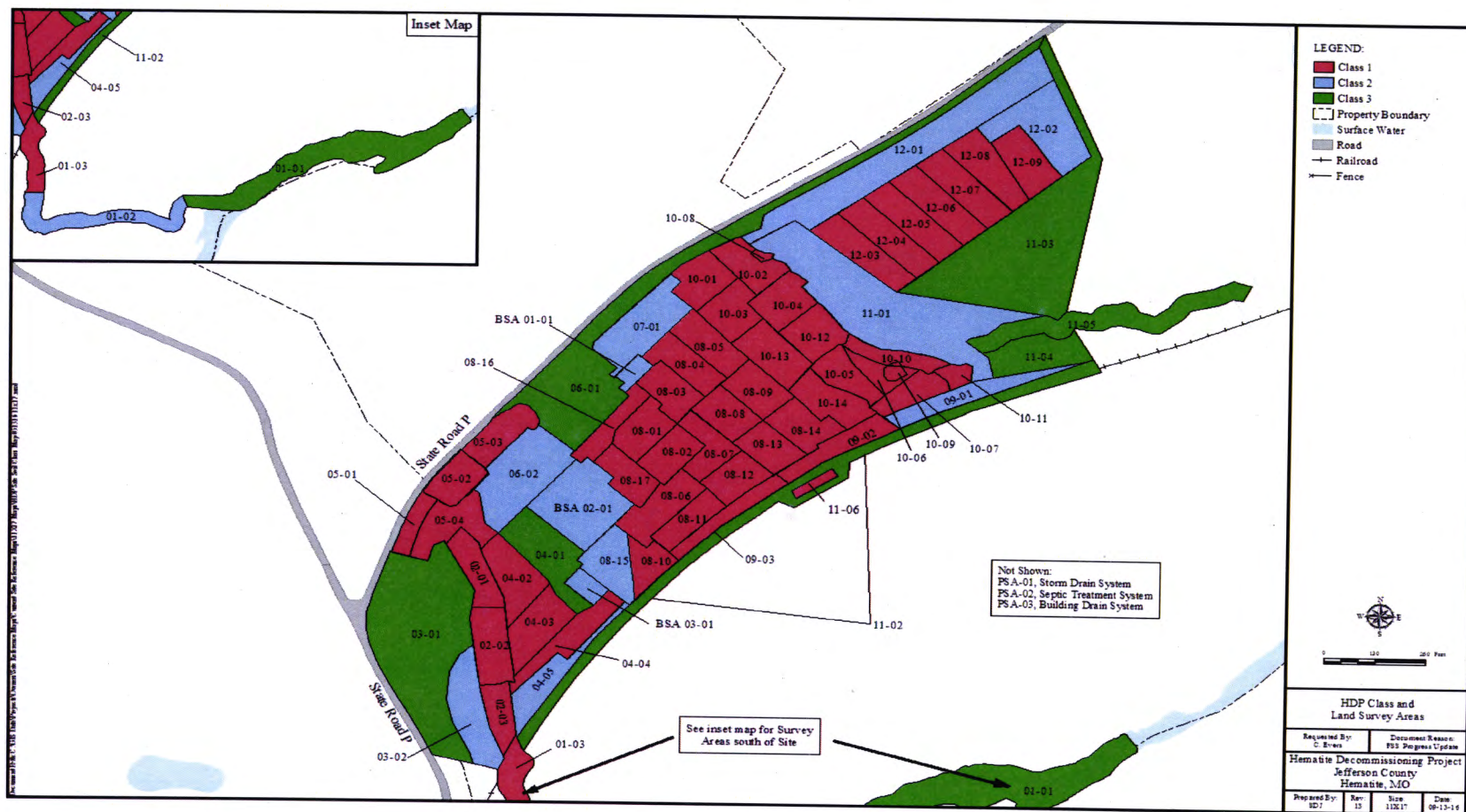


Plausibility Matrix of Contaminated Items in an Excavation Prior to Backfill  
February 2, 2017

LSA 05-02 and LSA 05-03 Backfilling on November 11, 2013 LSA 05-01 Backfilled immediately after NRC survey



Plausibility Matrix of Contaminated Items in an Excavation Prior to Backfill  
February 2, 2017





## LaFranzo, Michael

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**From:** Smith, James  
**Sent:** Wednesday, January 25, 2017 9:17 AM  
**To:** Kunowski, Michael  
**Cc:** Smith, Theodore; LaFranzo, Michael  
**Subject:** Fwd: Westinghouse HDP information to support discussion 1/26/2017 public call  
**Attachments:** LSA 10-05 section 11 for discussion with NRC.docx

Mike

Fyi. I sent this to Mike LaFranzo, but got a response that he would be out until the 27th. Given your interest in the issue, I thought you might like to see information that Westinghouse provided.

Jim

Begin Forwarded Message:

**From:** "Smith, James" <James.Smith@nrc.gov>  
**Subject:** Fwd: Westinghouse HDP information to support discussion 1/26/2017 public call  
**Date:** 25 January 2017 10:10  
**To:** "LaFranzo, Michael" <Michael.LaFranzo@nrc.gov>, "Chapman, Gregory" <Gregory.Chapman@nrc.gov>, "Parks, Leah" <Leah.Parks@nrc.gov>, "Smith, Theodore" <Theodore.Smith@nrc.gov>

Fyi

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**From:** "Pallagi, Kenneth E." <pallagke@westinghouse.com>  
**Subject:** [External\_Sender] Westinghouse HDP information to support discussion 1/26/2017 public call  
**Date:** 25 January 2017 09:22  
**To:** "Smith, James" <James.Smith@nrc.gov>  
**Cc:** "Smetanka, Joseph W" <smetaljw@westinghouse.com>, "Evers, William C." <everswc@westinghouse.com>

Good Morning Jim,

To facilitate discussion on agenda item #1, the path forward on areas identified as possibly being impacted by storm water events, post remediation, and not surveyed prior to backfill HDP is providing the draft section "Surveillance After FSS" for the pending report for LSA 10-05. The LSA 10-05 report will provide discussion on three storm events.



The first storm event is one in which the site, following procedural protocol, assessed the storm event and found it necessary to conduct verification surveys to confirm the radiological status of the survey unit.

The second storm event, following procedural protocol, site staff determined that there was no impact to survey unit as the storm water source was from the Northeast Site Creek Diversion which entered the excavation by traversing LSA 10-10 and LSA 10-06, survey units in which FSS had been completed. The isolation and control barriers in the active work area remained intact, and remediation was complete in LSA 10-13 and LSA 10-14.

The third storm event occurred after the LSA 10-05 survey unit had been backfilled.

This is a fairly good example of the type of information that will be provided if the survey unit was backfilled prior to the implementation of the 72 hour prior to backfill walkover survey.

Of note is that we use the term storm event rather than rain event. We use this term to align with the NRC correspondence to the site in which it discusses the issue. We believe the use of the term by the NRC and HDP better reflects those types of conditions in nature that could cause transfer of material. Our previous use of the term rain event could be and is misleading as conditions from a misty drizzle to a microburst with rain could be defined as a rain event. The term storm event has been applied in the context of a storm which exceeded the conditions discussed in the Environmental Report, that is sufficient enough to overwhelm the isolation and control barriers. As such, the example provided indicates that we have identified three storm events during the time frame in which FSS commenced and was completed for LSA 10-05. For each survey unit report we will assess storm events that occurred in the time frame of completion of FSS to backfill activities for each specific survey unit.

I would also like to confirm with you that we have been working to the expectation provided to Westinghouse by the NRC in the letter dated November 15, 2016 in which the letter states that *"In summary, for Violations No. 1 and No. 2, no further action is required by you at this time, but the NRC will not close out the violations*



*until acceptance of the FSSs."* Our efforts here have been to provide the needed information in the FSS reports to align with the *"until acceptance of the FSSs"*. Thus the implementation of the "Surveillance After FSS" section in each survey unit report. We understand that the needed information would be provided in the FSS reports and not in separate submittals.

Thanks,

ken

Ken Pallagi  
Hematite Decommissioning Project  
Licensing

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## **11.0 SURVEILLANCE FOLLOWING FSS**

FSS activities in LSA 10-05 were completed in January 2014. The sections below describe those storm events that occurred prior to backfill of the SU that had a potential to impact the radiological status of the SU.

### **11.1 April 3, 2014, Storm Event**

Due to a storm event that occurred on April 3<sup>rd</sup>, 2014 that produced higher than anticipated rainfall which led to subsequent flooding, the LSA 10-05 isolation controls were overrun by storm water. The storm water had the potential to carry contamination from other active remediation areas near LSA 10-05 into LSA 10-05. Because of this storm water event the radiological status of LSA 10-05 needed to be determined to verify the integrity of the FSS surveys that were previously performed in LSA 10-05. As such, the Radiation Safety Officer (RSO) instructed that confirmatory surveys be performed in LSA 10-05 to determine if the previously performed FSS surveys were still valid.

A Radiological Survey Instruction (Form HDP-PR-HP-311-4) was prepared to provide direction to the HP Technicians performing the confirmatory surveys. The instructions stated that 100% of low lying flat areas that were potentially impacted by flooding would be subject to a 100% GWS, and elevated surfaces that were not subject to flooding (e.g. slopes and sidewalls) would be subject to a 50% coverage GWS. Additionally 8 surface soil samples would be collected, these soil samples were assigned on a random start point grid, but are not systematically collected samples under the FSS Plan therefore these samples are reported as Biased results.

A review of the confirmatory GWS results conducted on May 5 and May 6, 2014, and the 8 new biased sample results were reviewed and it was determined that the FSS of LSA 10-05 had not been negatively impacted by the flooding that occurred within the LSA. The results of the 8 new biased samples are included in Table 7-3. The Radiological Survey Instructions and the Radiological Survey Reports are provided in Appendix V.

### **11.2 July 3, 2015, Storm Event**

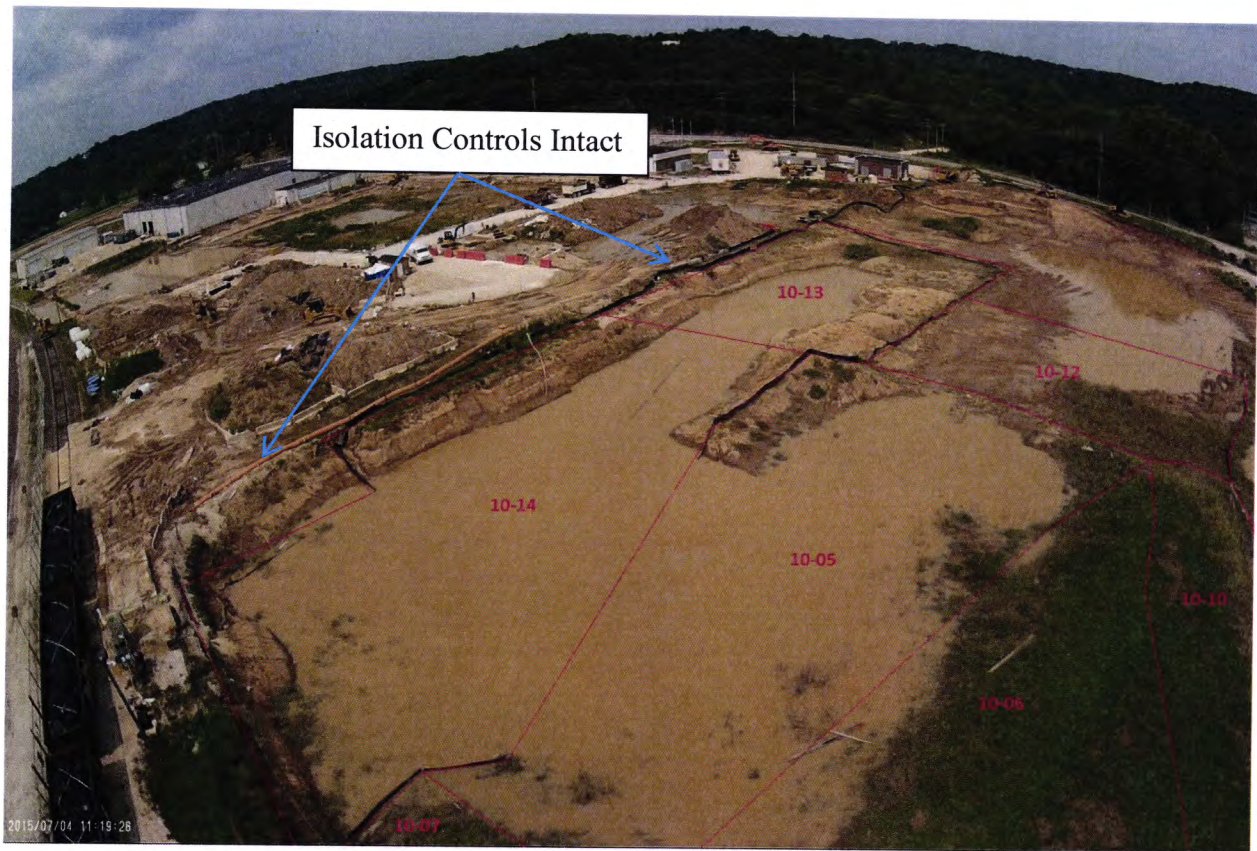
Due to a storm event that occurred on July 3, 2015 that produced higher than anticipated rainfall which led to subsequent accumulation of storm water that encompassed LSA 10-05, LSA 10-06, LSA 10-07, LSA 10-13, LSA 10-14.

Prior to the July 3, 2015, storm event, remediation had been completed in all of the SUs adjacent to LSA 10-05 (LSA 10-06, LSA 10-07, LSA 10-10, LSA 10-12, LSA 10-13 and LSA 10-14).

The source of the large quantity of storm water in the area was storm water runoff from up-gradient areas above the site via the Northeast Site Creek Diversion. The storm water backed up and traveled from the Northeast Site Creek Diversion across LSA 10-06 and LSA 10-10 into the area shown in Figure 11-1. As can be seen in Figure 11-1, SUs LSA 10-06 and LSA 10-10 had been previously backfilled and the isolation controls between the remediation completed SUs in LSA 10 and the remediation not yet completed in the adjacent LSA 08 SUs remained uncompromised as they resided at a higher elevation.



**Figure 11-1**  
**Storm Water Accumulation from July 3, 2015 Storm Event**  
(Photograph Date – July 4, 2016)



The determination of no impact from the July 3, 2015, storm event and visual inspection of the Burial Pit Area once the storm water was removed from the Burial Pit Area allowed for the approval of the commencement of backfilling the Burial Pit Area on August 4, 2015.

### **11.3 August 31, 2015 Storm Event**

SU LA 10-05 excavation was backfilled prior to the August 31, 2015, storm event.