

TAB D

Site-Wide Groundwater Wells

(Sections 1, 2, 3, 4, 22, 23, 24, 26, 27, 28, 33, 34, 36)

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Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

Five-Year Review Site Inspection Checklist (Template)

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable.")

I. SITE INFORMATION													
Site name: <u>RMA site-wide well inspections</u>	Date of inspection: <u>Various inspection dates:</u>												
Location and Region: <u>RMA Region 8</u>	EPA ID:												
Agency, office, or company leading the five-year review: <u>Army</u>	Weather/temperature: <u>Various</u>												
Remedy Includes: (Check all that apply) <table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> Landfill cover/containment</td> <td><input type="checkbox"/> Monitored natural attenuation</td> </tr> <tr> <td><input type="checkbox"/> Access controls</td> <td><input checked="" type="checkbox"/> Groundwater containment</td> </tr> <tr> <td><input type="checkbox"/> Institutional controls</td> <td><input checked="" type="checkbox"/> Vertical barrier walls</td> </tr> <tr> <td><input checked="" type="checkbox"/> Groundwater pump and treatment</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Surface water collection and treatment</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Other _____</td> <td></td> </tr> </table>		<input type="checkbox"/> Landfill cover/containment	<input type="checkbox"/> Monitored natural attenuation	<input type="checkbox"/> Access controls	<input checked="" type="checkbox"/> Groundwater containment	<input type="checkbox"/> Institutional controls	<input checked="" type="checkbox"/> Vertical barrier walls	<input checked="" type="checkbox"/> Groundwater pump and treatment		<input type="checkbox"/> Surface water collection and treatment		<input type="checkbox"/> Other _____	
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<input type="checkbox"/> Institutional controls	<input checked="" type="checkbox"/> Vertical barrier walls												
<input checked="" type="checkbox"/> Groundwater pump and treatment													
<input type="checkbox"/> Surface water collection and treatment													
<input type="checkbox"/> Other _____													
Attachments: <input type="checkbox"/> Inspection team roster attached <input type="checkbox"/> Site map attached													
II. INTERVIEWS (Check all that apply)													
1. O&M site manager _____ <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">Name</td> <td style="text-align: center;">Title</td> <td style="text-align: center;">Date</td> </tr> <tr> <td colspan="3">Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____</td> </tr> <tr> <td colspan="3">Problems, suggestions; <input type="checkbox"/> Report attached _____</td> </tr> </table> <p style="text-align: center;"><i>N/A</i> <i>RKM 4-24-15</i></p>		Name	Title	Date	Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____			Problems, suggestions; <input type="checkbox"/> Report attached _____					
Name	Title	Date											
Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____													
Problems, suggestions; <input type="checkbox"/> Report attached _____													
2. O&M staff _____ <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">Name</td> <td style="text-align: center;">Title</td> <td style="text-align: center;">Date</td> </tr> <tr> <td colspan="3">Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____</td> </tr> <tr> <td colspan="3">Problems, suggestions; <input type="checkbox"/> Report attached _____</td> </tr> </table>		Name	Title	Date	Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____			Problems, suggestions; <input type="checkbox"/> Report attached _____					
Name	Title	Date											
Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____													
Problems, suggestions; <input type="checkbox"/> Report attached _____													

11-19-14
12-12-14
3-18-15
4-1-15
4-13-15
4-15-15

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency _____
Contact _____
Name Title Date Phone no.
Problems; suggestions; Report attached _____

Agency _____
Contact _____
Name Title Date Phone no.
Problems; suggestions; Report attached _____

Agency _____
Contact _____
Name Title Date Phone no.
Problems; suggestions; Report attached _____

Agency _____
Contact _____
Name Title Date Phone no.
Problems; suggestions; Report attached _____

N/A
RKM
4-24-15

4. **Other interviews (optional)** Report attached.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)			
1.	O&M Documents <input type="checkbox"/> O&M manual <input type="checkbox"/> As-built drawings <input type="checkbox"/> Maintenance logs Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A
2.	Site-Specific Health and Safety Plan <input type="checkbox"/> Contingency plan/emergency response plan Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> N/A
3.	O&M and OSHA Training Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A
4.	Permits and Service Agreements <input type="checkbox"/> Air discharge permit <input type="checkbox"/> Effluent discharge <input type="checkbox"/> Waste disposal, POTW <input type="checkbox"/> Other permits _____ Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A
5.	Gas Generation Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A
6.	Settlement Monument Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A
7.	Groundwater Monitoring Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A
8.	Leachate Extraction Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A
9.	Discharge Compliance Records <input type="checkbox"/> Air <input type="checkbox"/> Water (effluent) Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> N/A
10.	Daily Access/Security Logs Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A

N/A
RKM 4-24-15

IV. O&M COSTS

1. O&M Organization

- State in-house
- PRP in-house
- Federal Facility in-house
- Other _____
- Contractor for State
- Contractor for PRP
- Contractor for Federal Facility

2. O&M Cost Records

- Readily available
- Up to date
- Funding mechanism/agreement in place
- Original O&M cost estimate _____ Breakdown attached

Total annual cost by year for review period if available

From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	

NA RKM 4-24-15

3. Unanticipated or Unusually High O&M Costs During Review Period

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS Applicable N/A

A. Fencing

1. **Fencing damaged** Location shown on site map Gates secured N/A
 Remarks _____

B. Other Access Restrictions

1. **Signs and other security measures** Location shown on site map N/A
 Remarks _____

C. Institutional Controls (ICs)				
1.	Implementation and enforcement			
	Site conditions imply ICs not properly implemented	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
	Site conditions imply ICs not being fully enforced	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
	Type of monitoring (e.g., self-reporting, drive by) _____			
	Frequency _____			
	Responsible party/agency _____			
	Contact _____			
	Name	Title	Date	Phone no.
	Reporting is up-to-date <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A			
	Reports are verified by the lead agency <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A			
	Specific requirements in deed or decision documents have been met <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A			
	Violations have been reported <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A			
	Other problems or suggestions: <input type="checkbox"/> Report attached			
	<div style="font-size: 2em; color: blue; font-weight: bold;">N/A</div> <div style="font-size: 1.2em; color: blue;">RKM 4-24-15</div>			

2.	Adequacy	<input type="checkbox"/> ICs are adequate	<input type="checkbox"/> ICs are inadequate	<input type="checkbox"/> N/A
	Remarks _____			

D. General				
1.	Vandalism/trespassing	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No vandalism evident	
	Remarks _____			

2.	Land use changes on site	<input type="checkbox"/> N/A		
	Remarks _____			

3.	Land use changes off site	<input type="checkbox"/> N/A		
	Remarks _____			

VI. GENERAL SITE CONDITIONS				
A. Roads				
	<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A		
1.	Roads damaged	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Roads adequate	<input type="checkbox"/> N/A
	Remarks _____			

B. Other Site Conditions

Remarks _____

VII. LANDFILL COVERS Applicable N/A

A. Landfill Surface

1. **Settlement** (Low spots) Location shown on site map Settlement not evident
 Areal extent _____ Depth _____
 Remarks _____

N/A RKM 4-24-05

2. **Cracks** Location shown on site map Cracking not evident
 Lengths _____ Widths _____ Depths _____
 Remarks _____

3. **Erosion** Location shown on site map Erosion not evident
 Areal extent _____ Depth _____
 Remarks _____

4. **Holes** Location shown on site map Holes not evident
 Areal extent _____ Depth _____
 Remarks _____

5. **Vegetative Cover** Grass Cover properly established No signs of stress
 Trees/Shrubs (indicate size and locations on a diagram)
 Remarks _____

6. **Alternative Cover (armored rock, concrete, etc.)** N/A
 Remarks _____

7. **Bulges** Location shown on site map Bulges not evident
 Areal extent _____ Height _____
 Remarks _____

8.	Wet Areas/Water Damage	<input type="checkbox"/> Wet areas/water damage not evident	Areal extent _____
	<input type="checkbox"/> Wet areas	<input type="checkbox"/> Location shown on site map	Areal extent _____
	<input type="checkbox"/> Ponding	<input type="checkbox"/> Location shown on site map	Areal extent _____
	<input type="checkbox"/> Seeps	<input type="checkbox"/> Location shown on site map	Areal extent _____
	<input type="checkbox"/> Soft subgrade	<input type="checkbox"/> Location shown on site map	Areal extent _____
	Remarks _____		
9.	Slope Instability	<input type="checkbox"/> Slides	<input type="checkbox"/> Location shown on site map
	Areal extent _____	<input type="checkbox"/> No evidence of slope instability	
	Remarks _____		
B. Benches <input type="checkbox"/> Applicable <input type="checkbox"/> N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)			
1.	Flows Bypass Bench	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A or okay
	Remarks _____		
2.	Bench Breached	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A or okay
	Remarks _____		
3.	Bench Overtopped	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A or okay
	Remarks _____		
C. Letdown Channels <input type="checkbox"/> Applicable <input type="checkbox"/> N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)			
1.	Settlement	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of settlement
	Areal extent _____	Depth _____	
	Remarks _____		
2.	Material Degradation	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of degradation
	Material type _____	Areal extent _____	
	Remarks _____		
3.	Erosion	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of erosion
	Areal extent _____	Depth _____	
	Remarks _____		

4.	Undercutting	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of undercutting
	Areal extent _____	Depth _____	
	Remarks _____		
5.	Obstructions	Type _____	<input type="checkbox"/> No obstructions
	<input type="checkbox"/> Location shown on site map	Areal extent _____	
	Size _____		
	Remarks _____		
6.	Excessive Vegetative Growth	Type _____	
	<input type="checkbox"/> No evidence of excessive growth		
	<input type="checkbox"/> Vegetation in channels does not obstruct flow		
	<input type="checkbox"/> Location shown on site map	Areal extent _____	
	Remarks _____		
D. Cover Penetrations <input type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	Gas Vents	<input type="checkbox"/> Active	<input type="checkbox"/> Passive
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Needs Maintenance
	<input type="checkbox"/> N/A		
	Remarks _____		
2.	Gas Monitoring Probes	<input type="checkbox"/> Routinely sampled	<input type="checkbox"/> Good condition
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A
	<input type="checkbox"/> Evidence of leakage at penetration		
	Remarks _____		
3.	Monitoring Wells (within surface area of landfill)	<input type="checkbox"/> Routinely sampled	<input type="checkbox"/> Good condition
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A
	<input type="checkbox"/> Evidence of leakage at penetration		
	Remarks _____		
4.	Leachate Extraction Wells	<input type="checkbox"/> Routinely sampled	<input type="checkbox"/> Good condition
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A
	<input type="checkbox"/> Evidence of leakage at penetration		
	Remarks _____		
5.	Settlement Monuments	<input type="checkbox"/> Located	<input type="checkbox"/> Routinely surveyed <input type="checkbox"/> N/A
	Remarks _____		

N/A RKM 11-24-15

E. Gas Collection and Treatment <input type="checkbox"/> Applicable <input type="checkbox"/> N/A		
1.	Gas Treatment Facilities <input type="checkbox"/> Flaring <input type="checkbox"/> Thermal destruction <input type="checkbox"/> Collection for reuse <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____	
2.	Gas Collection Wells, Manifolds and Piping <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____	
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____	
F. Cover Drainage Layer <input type="checkbox"/> Applicable <input type="checkbox"/> N/A		
1.	Outlet Pipes Inspected <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____	
2.	Outlet Rock Inspected <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____	
G. Detention/Sedimentation Ponds <input type="checkbox"/> Applicable <input type="checkbox"/> N/A		
1.	Siltation Areal extent _____ Depth _____ <input type="checkbox"/> N/A <input type="checkbox"/> Siltation not evident Remarks _____	
2.	Erosion Areal extent _____ Depth _____ <input type="checkbox"/> Erosion not evident Remarks _____	
3.	Outlet Works <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____	
4.	Dam <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____	

NA per 424-15

H. Retaining Walls		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Deformations	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Deformation not evident
	Horizontal displacement _____	Vertical displacement _____	
	Rotational displacement _____		
	Remarks _____		
2.	Degradation	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Degradation not evident
	Remarks _____		
I. Perimeter Ditches/Off-Site Discharge		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Siltation	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Siltation not evident
	Areal extent _____	Depth _____	
	Remarks _____	NA RKM 4-24-15	
2.	Vegetative Growth	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A
	<input type="checkbox"/> Vegetation does not impede flow		
	Areal extent _____	Type _____	
	Remarks _____		
3.	Erosion	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Erosion not evident
	Areal extent _____	Depth _____	
	Remarks _____		
4.	Discharge Structure	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A
	Remarks _____		
VIII. VERTICAL BARRIER WALLS		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Settlement	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Settlement not evident
	Areal extent _____	Depth _____	
	Remarks _____		
2.	Performance Monitoring	Type of monitoring _____	
	<input type="checkbox"/> Performance not monitored		
	Frequency _____	<input type="checkbox"/> Evidence of breaching	
	Head differential _____		
	Remarks _____		

IX. GROUNDWATER/SURFACE WATER REMEDIES		<input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A
A. Groundwater Extraction Wells, Pumps, and Pipelines		<input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A
1.	Pumps, Wellhead Plumbing, and Electrical <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells properly operating <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____ _____ _____	
2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____	
3.	Spare Parts and Equipment <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks _____ _____	
B. Surface Water Collection Structures, Pumps, and Pipelines		<input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A
1.	Collection Structures, Pumps, and Electrical <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____	
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____	
3.	Spare Parts and Equipment <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks _____ _____	

C. Treatment System

Applicable N/A

1. **Treatment Train** (Check components that apply)

- Metals removal Oil/water separation Bioremediation
- Air stripping Carbon adsorbers
- Filters
- Additive (e.g., chelation agent, flocculent) NA RK-M 4-24-15
- Others _____
- Good condition Needs Maintenance
- Sampling ports properly marked and functional
- Sampling/maintenance log displayed and up to date
- Equipment properly identified
- Quantity of groundwater treated annually _____
- Quantity of surface water treated annually _____

Remarks _____

2. **Electrical Enclosures and Panels** (properly rated and functional)

- N/A Good condition Needs Maintenance

Remarks _____

3. **Tanks, Vaults, Storage Vessels**

- N/A Good condition Proper secondary containment Needs Maintenance

Remarks _____

4. **Discharge Structure and Appurtenances**

- N/A Good condition Needs Maintenance

Remarks _____

5. **Treatment Building(s)**

- N/A Good condition (esp. roof and doorways) Needs repair
- Chemicals and equipment properly stored

Remarks _____

6. **Monitoring Wells** (pump and treatment remedy)

- Properly secured/locked Functioning Routinely sampled Good condition
- All required wells located Needs Maintenance N/A

Remarks With permission and coordination with the Army, site-wide well inspections occurred on various dates by PWT. Comments are included in Section XI, overall observations, Section B.

D. Monitoring Data

1. **Monitoring Data**

- Is routinely submitted on time Is of acceptable quality NA RK-M 4-24-15

2. **Monitoring data suggests:**

- Groundwater plume is effectively contained Contaminant concentrations are declining

D. Monitored Natural Attenuation	
1. Monitoring Wells (natural attenuation remedy)	<input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____ _____
X. OTHER REMEDIES	
If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.	
XI. OVERALL OBSERVATIONS	
A. Implementation of the Remedy	Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.). <i>NA</i> _____ _____ _____ _____ _____ _____ _____ _____
B. Adequacy of O&M	Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. <i>Due to increased public access to the site, a series of inspections was conducted by PWT, with Army consent. An attachment is included to indicate wells that were not secured by a lock.</i> _____ _____ _____ _____ _____

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

None noted.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Applying locks to wells to increase security measures.

List of unlocked wells Sitewide at the RMA

Well #	Secured?
22001	No
22007	No
22015	No
22049	No
22072	No
22504	No
22505	No
22506	No
22508	No
22512	No
22008	No
22009	No
22035	No
22043	No
22045	No
22053	No
22056	No
22057	No
22059	No
22061	No
22062	No
22063	No
22064	No
22066	No
22067	No
22069	No
22070	No
22073	No
22075	No
22076	No
22077	No
22078	No
22081	No
22500	No
22501	No
22511	No
27002	No
27500	No
27501	No
27506	No
27516	No
27525	No
27529	No
27063	No
27066	No
27090	No
27091	No
27092	No
27093	No

Well #	Secured?
23119	No
23161	No
23194	No
23195	No
23200	No
23207	No
23208	No
23211	No
23212	No
23214	No
23217	No
23510	No
23513	No
23516	No
23519	No
23522	No
23533	No
23534	No
23535	No
23542	No
23544	No
24004	No
24081	No
24117	No
24171	No
24179	No
24180	No
24185	No
24506	No
24509	No
24512	No
24515	No
24518	No
24521	No
24522	No
24523	No
24526	No
24527	No
24528	No
27505	No
27508	No
27509	No
27510	No
27517	No
27522	No
27528	No
27530	No
27532	No
27533	No

Well #	Secured?
25503	No
25504	No
25505	No
25506	No
36303	No
36304	No
36306	No
36555	No
36556	No
36557	No
36559	No
36561	No
36562	No
36563	No
36564	No
36565	No
36567	No
36568	No
36569	No
36570	No
36577	No
36578	No
19001	NO
36222	No
36223	No
36224	No
36225	No
36226	No
36521	No
36528	No
36529	No
36530	No
36531	No
36532	No
36533	No
36535	No
36536	No
36537	No
24529	No
24530	No
23029	No
23040	No
23182	No
23199	No
23227	No
24080	No
24108	No
24124	No
24158	No

Well #	Secured?
03002	No *
03005	No *
03008	No *
03012	No *
03013	No *
03014	No *
03015	No *
03016	No *
03503	No *
03523	No *
04020	No *
04021	No *
04024	No *
04029	No *
04038	No *
04040	No *
04076	No *
04080	No *
04082	No *
04525	No *
04528	No *
04535	No *
27025	No *
27035	No *
27037	No *
27043	No *
27049	No *
27051	No *
27053	No *
27083	No *
28012	No *
28022	No *
28027	No *
28520	No *
33001	No *
33025	Yes
33043	No *
33061	No *
33081	No *
33341	No *
33510	No *
33514	No *
33533	No *
34005	No *
34008	No *
34014	No *
34015	No *
34017	No *
34018	No *

List of unlocked wells Sitewide at the RMA

Well #	Secured?
34020	No *
34503	No *
34508	No *
01102	No
01300	No
01534	No
01658	No
01662	No
01663	No
01665	No
01666	No
01667	No
01668	No
01669	No
01670	No
01671	No
02047	No
02048	No
02057	No
02058	No
02065	No
35013	No
35083	No
36052	No
36054	No
36092	No
36094	No
36123	No
36157	No
36158	No
36168	No
36169	No
36170	No
36171	No
36181	No
36183	No
36189	No
36201	No
36210	No
36211	No
36212	No
36216	No
36217	No
36218	No
36219	No
36220	No
36221	No
36301	No
36629	No

Well #	Secured?
36630	No
36632	No
36633	No
36911	No
36912	No
36913	No
36087	No
MW-1	No
MW-8	No
36235	No
36236	No
MW-9	No
36240	No
36237	No
36234	No
36233	No
28002	No
28031	No
28521	No
28522	No
34019	No
01067	No
01072	No
01078	No
24187	No
26017	No
26071	No
26160	No
26163	No
35087	No
36112	No
36113	No
36114	No
36142	No
36159	No

* These wells were secured by a nut and bolt. While not intended to prevent human tampering, the method is seemingly very effective in preventing lid removal by Bison.

TAB E
HWL and ELF
Leachate Storage and Loadout Facility
and Leachate Riser Control House

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3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency Env. Protection Agency
Contact Gary Hargreaves RPM 3-24-15 303 912 6061
Name Title Date Phone no.

Problems; suggestions; Report attached _____

Agency _____
Contact _____
Name Title Date Phone no.

Problems; suggestions; Report attached _____

Agency _____
Contact _____
Name Title Date Phone no.

Problems; suggestions; Report attached _____

Agency _____
Contact _____
Name Title Date Phone no.

Problems; suggestions; Report attached _____

4. **Other interviews** (optional) Report attached.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)			
1.	O&M Documents <input checked="" type="checkbox"/> O&M manual <input type="checkbox"/> As-built drawings <input checked="" type="checkbox"/> Maintenance logs Remarks _____	<input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A <input type="checkbox"/> N/A
2.	Site-Specific Health and Safety Plan <input type="checkbox"/> Contingency plan/emergency response plan Remarks <i>Not Inspected</i>	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> N/A
3.	O&M and OSHA Training Records Remarks <i>Not Inspected</i>	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A
4.	Permits and Service Agreements <input type="checkbox"/> Air discharge permit <input type="checkbox"/> Effluent discharge <input type="checkbox"/> Waste disposal, POTW <input type="checkbox"/> Other permits _____ Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
5.	Gas Generation Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
6.	Settlement Monument Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
7.	Groundwater Monitoring Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
8.	Leachate Extraction Records Remarks <i>Provided by Navarro on request</i>	<input type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A
9.	Discharge Compliance Records <input type="checkbox"/> Air <input type="checkbox"/> Water (effluent) Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
10.	Daily Access/Security Logs Remarks <i>Not Inspected</i>	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A

IV. O&M COSTS

1. O&M Organization

- State in-house
- PRP in-house
- Federal Facility in-house
- Other _____
- Contractor for State
- Contractor for PRP
- Contractor for Federal Facility

2. O&M Cost Records *N/A*

- Readily available
- Funding mechanism/agreement in place
- Original O&M cost estimate _____
- Up to date
- Breakdown attached

Total annual cost by year for review period if available

From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	

3. Unanticipated or Unusually High O&M Costs During Review Period

Describe costs and reasons: *N/A*

V. ACCESS AND INSTITUTIONAL CONTROLS Applicable N/A

A. Fencing

- 1. Fencing damaged** Location shown on site map Gates secured N/A
- Remarks *The L5/14 & 20R14 Buildings are locked at all times unless AMO*

B. Other Access Restrictions

- 1. Signs and other security measures** Location shown on site map N/A
- Remarks *Signaged Danger - Keep out - Auth. Pers. Only*

C. Institutional Controls (ICs)			
1. Implementation and enforcement			
Site conditions imply ICs not properly implemented	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Site conditions imply ICs not being fully enforced	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Type of monitoring (e.g., self-reporting, drive by)	<i>Self-reporting by USFW & Navarro</i>		
Frequency	_____		
Responsible party/agency	_____		
Contact	<i>See Part II</i> →		
	Name	Title	Date
Reporting is up-to-date	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Reports are verified by the lead agency	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Specific requirements in deed or decision documents have been met	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Violations have been reported	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Other problems or suggestions:	<input type="checkbox"/> Report attached		

2. Adequacy <input type="checkbox"/> ICs are adequate <input type="checkbox"/> ICs are inadequate <input type="checkbox"/> N/A			
Remarks	<i>No obvious issues regarding ICs observed during inspection.</i>		

D. General			
1. Vandalism/trespassing <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No vandalism evident			
Remarks	_____		

2. Land use changes on site <input checked="" type="checkbox"/> N/A			
Remarks	_____		

3. Land use changes off site <input checked="" type="checkbox"/> N/A			
Remarks	_____		

VI. GENERAL SITE CONDITIONS			
A. Roads <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1. Roads damaged <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Roads adequate <input type="checkbox"/> N/A			
Remarks	_____		

B. Other Site Conditions

Remarks _____

VII. LANDFILL COVERS Applicable N/A

A. Landfill Surface

1. **Settlement** (Low spots) Location shown on site map Settlement not evident
 Areal extent _____ Depth _____
 Remarks _____

2. **Cracks** Location shown on site map Cracking not evident
 Lengths _____ Widths _____ Depths _____
 Remarks _____

3. **Erosion** Location shown on site map Erosion not evident
 Areal extent _____ Depth _____
 Remarks _____

4. **Holes** Location shown on site map Holes not evident
 Areal extent _____ Depth _____
 Remarks _____

5. **Vegetative Cover** Grass Cover properly established No signs of stress
 Trees/Shrubs (indicate size and locations on a diagram)
 Remarks _____

6. **Alternative Cover (armored rock, concrete, etc.)** N/A
 Remarks _____

7. **Bulges** Location shown on site map Bulges not evident
 Areal extent _____ Height _____
 Remarks _____

8.	Wet Areas/Water Damage <input type="checkbox"/> Wet areas <input type="checkbox"/> Ponding <input type="checkbox"/> Seeps <input type="checkbox"/> Soft subgrade Remarks _____ _____	<input type="checkbox"/> Wet areas/water damage not evident <input type="checkbox"/> Location shown on site map Areal extent _____ <input type="checkbox"/> Location shown on site map Areal extent _____ <input type="checkbox"/> Location shown on site map Areal extent _____ <input type="checkbox"/> Location shown on site map Areal extent _____	
9.	Slope Instability <input type="checkbox"/> Slides <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of slope instability Areal extent _____ Remarks _____ _____		
B. Benches <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)			
1.	Flows Bypass Bench <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay Remarks _____ _____		
2.	Bench Breached <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay Remarks _____ _____		
3.	Bench Overtopped <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay Remarks _____ _____		
C. Letdown Channels <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)			
1.	Settlement <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of settlement Areal extent _____ Depth _____ Remarks _____ _____		
2.	Material Degradation <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of degradation Material type _____ Areal extent _____ Remarks _____ _____		
3.	Erosion <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of erosion Areal extent _____ Depth _____ Remarks _____ _____		

4.	Undercutting	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of undercutting
	Areal extent _____	Depth _____	
	Remarks _____		
5.	Obstructions	Type _____	<input type="checkbox"/> No obstructions
	<input type="checkbox"/> Location shown on site map	Areal extent _____	
	Size _____		
	Remarks _____		
6.	Excessive Vegetative Growth	Type _____	
	<input type="checkbox"/> No evidence of excessive growth		
	<input type="checkbox"/> Vegetation in channels does not obstruct flow		
	<input type="checkbox"/> Location shown on site map	Areal extent _____	
	Remarks _____		
D. Cover Penetrations <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
1.	Gas Vents	<input type="checkbox"/> Active	<input type="checkbox"/> Passive
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration	<input type="checkbox"/> Needs Maintenance	
	<input type="checkbox"/> N/A		
	Remarks _____		
2.	Gas Monitoring Probes	<input type="checkbox"/> Routinely sampled	<input type="checkbox"/> Good condition
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A
	<input type="checkbox"/> Evidence of leakage at penetration		
	Remarks _____		
3.	Monitoring Wells (within surface area of landfill)	<input type="checkbox"/> Routinely sampled	<input type="checkbox"/> Good condition
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A
	<input type="checkbox"/> Evidence of leakage at penetration		
	Remarks _____		
4.	Leachate Extraction Wells	<input type="checkbox"/> Routinely sampled	<input type="checkbox"/> Good condition
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A
	<input type="checkbox"/> Evidence of leakage at penetration		
	Remarks _____		
5.	Settlement Monuments	<input type="checkbox"/> Located	<input type="checkbox"/> Routinely surveyed <input type="checkbox"/> N/A
	Remarks _____		

E. Gas Collection and Treatment <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
1.	Gas Treatment Facilities <input type="checkbox"/> Flaring <input type="checkbox"/> Thermal destruction <input type="checkbox"/> Collection for reuse <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____	
2.	Gas Collection Wells, Manifolds and Piping <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____	
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____	
F. Cover Drainage Layer <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
1.	Outlet Pipes Inspected <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____	
2.	Outlet Rock Inspected <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____	
G. Detention/Sedimentation Ponds <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
1.	Siltation Areal extent _____ Depth _____ <input type="checkbox"/> N/A <input type="checkbox"/> Siltation not evident Remarks _____	
2.	Erosion Areal extent _____ Depth _____ <input type="checkbox"/> Erosion not evident Remarks _____	
3.	Outlet Works <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____	
4.	Dam <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____	

H. Retaining Walls		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Deformations	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Deformation not evident
	Horizontal displacement _____	Vertical displacement _____	
	Rotational displacement _____		
	Remarks _____		
2.	Degradation	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Degradation not evident
	Remarks _____		
I. Perimeter Ditches/Off-Site Discharge		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Siltation	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Siltation not evident
	Areal extent _____	Depth _____	
	Remarks _____		
2.	Vegetative Growth	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A
	<input type="checkbox"/> Vegetation does not impede flow		
	Areal extent _____	Type _____	
	Remarks _____		
3.	Erosion	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Erosion not evident
	Areal extent _____	Depth _____	
	Remarks _____		
4.	Discharge Structure	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A
	Remarks _____		
VIII. VERTICAL BARRIER WALLS		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Settlement	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Settlement not evident
	Areal extent _____	Depth _____	
	Remarks _____		
2.	Performance Monitoring	Type of monitoring _____	
	<input type="checkbox"/> Performance not monitored		
	Frequency _____	<input type="checkbox"/> Evidence of breaching	
	Head differential _____		
	Remarks _____		

C. Treatment System <i>ms</i> <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A <i>Leachate Collection Storage Transfer</i>	
1.	Treatment Train (Check components that apply) <input type="checkbox"/> Metals removal <input type="checkbox"/> Oil/water separation <input type="checkbox"/> Bioremediation <input type="checkbox"/> Air stripping <input type="checkbox"/> Carbon adsorbers <input type="checkbox"/> Filters <input type="checkbox"/> Additive (e.g., chelation agent, flocculent) <input checked="" type="checkbox"/> Others <i>The leachate manholes on the HWL were inspected. All were functional with no action items noted</i> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> Sampling ports properly marked and functional <input type="checkbox"/> Sampling/maintenance log displayed and up to date <input checked="" type="checkbox"/> Equipment properly identified <input checked="" type="checkbox"/> Quantity of groundwater treated annually _____ <input checked="" type="checkbox"/> Quantity of surface water treated annually _____ Remarks <i>Quantities monitored & recorded routinely</i>
2.	Electrical Enclosures and Panels (properly rated and functional) <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____
3.	Tanks, Vaults, Storage Vessels <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Good condition <input checked="" type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs Maintenance Remarks <i>Labelled</i>
4.	Discharge Structure and Appurtenances <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____
5.	Treatment Building(s) <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Good condition (esp. roof and doorways) <input type="checkbox"/> Needs repair <input checked="" type="checkbox"/> Chemicals and equipment properly stored <i>-labelled</i> Remarks <i>Orderly & clean</i>
6.	Monitoring Wells (pump and treatment remedy) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A Remarks _____
D. Monitoring Data <i>N/A</i>	
1.	Monitoring Data <input type="checkbox"/> Is routinely submitted on time <input type="checkbox"/> Is of acceptable quality
2.	Monitoring data suggests: <input type="checkbox"/> Groundwater plume is effectively contained <input type="checkbox"/> Contaminant concentrations are declining

D. Monitored Natural Attenuation <i>N/A</i>	
1. Monitoring Wells (natural attenuation remedy)	<input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A
Remarks _____	
X. OTHER REMEDIES	
If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.	
XI. OVERALL OBSERVATIONS	
A. Implementation of the Remedy	<p>Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).</p> <p><i>This inspection involved observation of the LS/LF & LCRH facilities. The HULLLELF landfills were not included.</i></p>
B. Adequacy of O&M	<p>Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.</p> <p><i>Observations: O&M Manager explained leachate collection & storage process & computer screen displays at the leachate sensors, high-level and low level alarms. Explained "upset conditions" such as sump level, temperature, power outage, tank levels; capability of remote monitoring via internet. Two operators on-call 24 hrs/day for these systems.</i></p>

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Five-Year Review Site Inspection Checklist

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable.")

I. SITE INFORMATION													
Site name: Hazardous Waste Landfill and Enhanced Hazardous Waste Landfill Leachate Storage/Leachate Loadout Facility	Date of inspection: <div style="text-align: center; font-size: 1.2em;">3/24/15</div>												
Location and Region: RMA Region VIII	EPA ID: CO5210020769												
Agency, office, or company leading the five-year review: U.S. Army	Weather/temperature: <div style="text-align: center; font-size: 1.2em;">Mild</div>												
Remedy Includes: (Check all that apply) <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Landfill cover/containment</td> <td style="width: 50%;">Monitored natural attenuation</td> </tr> <tr> <td>Access controls</td> <td>Groundwater containment</td> </tr> <tr> <td>Institutional controls</td> <td>Vertical barrier walls</td> </tr> <tr> <td>Groundwater pump and treatment</td> <td></td> </tr> <tr> <td>Surface water collection and treatment</td> <td></td> </tr> <tr> <td colspan="2">Other: <u>ELF & HWL Leachate Collection</u></td> </tr> </table>		Landfill cover/containment	Monitored natural attenuation	Access controls	Groundwater containment	Institutional controls	Vertical barrier walls	Groundwater pump and treatment		Surface water collection and treatment		Other: <u>ELF & HWL Leachate Collection</u>	
Landfill cover/containment	Monitored natural attenuation												
Access controls	Groundwater containment												
Institutional controls	Vertical barrier walls												
Groundwater pump and treatment													
Surface water collection and treatment													
Other: <u>ELF & HWL Leachate Collection</u>													
Attachments: Inspection team roster attached Site map attached													
II. INTERVIEWS (Check all that apply)													
1. O&M site manager <u>Gaehle Camero</u> <u>Ops. Manager</u> <u>3/24/15</u> <div style="display: flex; justify-content: space-between; font-size: 0.8em;"> Name Title Date </div> Interviewed: <input checked="" type="radio"/> at site <input type="radio"/> at office <input type="radio"/> by phone Phone no. <u>720 498-2120</u> Problems, suggestions; Report attached _____													
2. O&M staff <u>Nick Adams</u> <u>lead operator</u> <u>3/24/15</u> <div style="display: flex; justify-content: space-between; font-size: 0.8em;"> Name Title Date </div> Interviewed: <input checked="" type="radio"/> at site <input type="radio"/> at office <input type="radio"/> by phone Phone no. <u>720 625-3619</u> Problems, suggestions; Report attached _____													

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency Tri-County Health
 Contact Deanne Kelly RMA Field Sup. 3/24/15 30439-5909
Name Title Date Phone no.
 Problems; suggestions; Report attached n/a

Agency CDPHE
 Contact Ken Vogler Engineer 3/24/15 303 692-3382
Name Title Date Phone no.
 Problems; suggestions; Report attached none

Agency Grosg Horvath & Partners (KPA)
 Contact [Signature] [Signature] [Signature] 303 872 6060
Name Title Date Phone no.
 Problems; suggestions; Report attached _____

Agency Sentinel/CDPHE
 Contact Vince Steward _____ 720-252-2826
Name Title Date Phone no.
 Problems; suggestions; Report attached _____

4. **Other interviews** (optional) Report attached.

V. ACCESS AND INSTITUTIONAL CONTROLS Applicable N/A

A. Fencing

1. **Fencing damaged** . Location shown on site map Gates secured N/A
 Remarks Building Access gate open
FWS Law Enforcement patrols sometimes

B. Other Access Restrictions

1. Signs and other security measures Location shown on site map N/A
 Remarks Authorized personnel only
Buildings are locked

C. Institutional Controls (ICs)			
1.	Implementation and enforcement		
	Site conditions imply ICs not properly implemented	Yes	No <input checked="" type="radio"/> N/A
	Site conditions imply ICs not being fully enforced	Yes	No <input checked="" type="radio"/> N/A
	Type of monitoring (e.g., self-reporting, drive by) <i>Storage shed</i>	<i>Temp., Sump level, Tank levels</i>	
	Frequency <i>Continuous</i>		
	Responsible party/agency		
	Contact <i>George Homers</i> <i>Secondary on call</i>	Name	Title
		Date	Phone no.
	Reporting is up-to-date	Yes	No N/A
	Reports are verified by the lead agency	Yes	No N/A
	Specific requirements in deed or decision documents have been met	Yes	No N/A
	Violations have been reported	Yes	No N/A
	Other problems or suggestions: Report attached		

2.	Adequacy	ICs are adequate	ICs are inadequate N/A
	Remarks _____		

D. General			
1.	Vandalism/trespassing	Location shown on site map	<i>No vandalism evident</i>
	Remarks _____		

2.	Land use changes on site	<i>N/A</i>	
	Remarks _____		

3.	Land use changes off site	<i>N/A</i>	
	Remarks _____		

VI. GENERAL SITE CONDITIONS			
A. Roads	Applicable	N/A	
1.	Roads damaged	Location shown on site map	<i>Roads adequate</i> N/A
	Remarks _____		

B. Other Site Conditions			
	Remarks _____		

<i>leachate</i>		IX. GROUNDWATER/SURFACE WATER REMEDIES		Applicable	N/A
<i>leachate Collection</i>		A. Groundwater Extraction Wells, Pumps, and Pipelines		Applicable	N/A
1.	Pumps, Wellhead Plumbing, and Electrical Good condition All required wells properly operating Needs Maintenance N/A Remarks _____				
2.	<i>leachate</i> Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition Needs Maintenance Remarks <i>Pumped from ELF & HWL to leachate Collection Bldg, & Gravity to Storage Tanks in another bldg.</i>				
3.	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks <i>Stored in leachate Storage building</i>				
C. Treatment System		Applicable	N/A		
1.	Treatment Train (Check components that apply) Metals removal Oil/water separation Bioremediation Air stripping Carbon adsorbers Filters _____ Additive (e.g., chelation agent, flocculent) _____ Others _____ Good condition Needs Maintenance Sampling ports properly marked and functional Sampling/maintenance log displayed and up to date Equipment properly identified Quantity of groundwater treated annually _____ Quantity of surface water treated annually _____ Remarks _____				
2.	Electrical Enclosures and Panels (properly rated and functional) N/A Good condition Needs Maintenance Remarks _____				
3.	Tanks, Vaults, Storage Vessels N/A Good condition Proper secondary containment Needs Maintenance Remarks _____				
4.	Discharge Structure and Appurtenances N/A Good condition Needs Maintenance Remarks _____				

5.	Treatment Building(s) N/A Good condition (esp. roof and doorways) Chemicals and equipment properly stored Needs repair Remarks _____	
6.	Monitoring Wells (pump and treatment remedy) Properly secured/locked Functioning Routinely sampled Good condition All required wells located Needs Maintenance N/A Remarks _____	
XI. OVERALL OBSERVATIONS		
A.	Implementation of the Remedy Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.). <div style="text-align: center; font-family: cursive;"> functioning as intended </div>	
B.	Adequacy of O&M Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. <div style="font-family: cursive;"> A low for Temperature Stop high level for LTS & LDS pumps </div>	

to collection sldg.

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TAB F
BASIN A Neck System

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III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)			
1.	O&M Documents <input checked="" type="checkbox"/> O&M manual <input type="checkbox"/> As-built drawings <input checked="" type="checkbox"/> Maintenance logs Remarks <u>Did not request as-built drawings</u>	<input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A
2.	Site-Specific Health and Safety Plan <input type="checkbox"/> Contingency plan/emergency response plan Remarks <u>Did not request</u>	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> N/A
3.	O&M and OSHA Training Records Remarks <u>Did not request</u>	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A
4.	Permits and Service Agreements <input type="checkbox"/> Air discharge permit <input type="checkbox"/> Effluent discharge <input type="checkbox"/> Waste disposal, POTW <input type="checkbox"/> Other permits Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
5.	Gas Generation Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
6.	Settlement Monument Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
7.	Groundwater Monitoring Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
8.	Leachate Extraction Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
9.	Discharge Compliance Records <input type="checkbox"/> Air <input type="checkbox"/> Water (effluent) Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
10.	Daily Access/Security Logs Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A

IV. O&M COSTS

1. **O&M Organization**
 State in-house Contractor for State
 PRP in-house Contractor for PRP
 Federal Facility in-house Contractor for Federal Facility
 Other _____

2. **O&M Cost Records** *N/A*
 Readily available Up to date
 Funding mechanism/agreement in place
 Original O&M cost estimate _____ Breakdown attached

Total annual cost by year for review period if available

From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	

3. **Unanticipated or Unusually High O&M Costs During Review Period**
 Describe costs and reasons: *N/A*

V. ACCESS AND INSTITUTIONAL CONTROLS Applicable N/A

A. Fencing

1. **Fencing damaged** Location shown on site map Gates secured N/A
 Remarks *Fencing newly constructed to keep Bison out of extraction & recharge well fields*

B. Other Access Restrictions

1. **Signs and other security measures** Location shown on site map N/A
 Remarks *Treatment plant is locked when un-attended. Roads are accessible to plant and systems areas. Signage (keep out - authorized personnel only) are present.*

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented Yes No N/A
 Site conditions imply ICs not being fully enforced Yes No N/A

Type of monitoring (e.g., self-reporting, drive by) Self reporting by USFW & Navarro

Frequency _____

Responsible party/agency _____

Contact See Part II _____

Name	Title	Date	Phone no.

Reporting is up-to-date Yes No N/A
 Reports are verified by the lead agency Yes No N/A

Specific requirements in deed or decision documents have been met Yes No N/A
 Violations have been reported Yes No N/A

Other problems or suggestions: Report attached

2. **Adequacy** ICs are adequate ICs are inadequate N/A

Remarks No obvious issues regarding IC's observed during inspection.

D. General

1. **Vandalism/trespassing** Location shown on site map No vandalism evident

Remarks _____

2. **Land use changes on site** N/A

Remarks _____

3. **Land use changes off site** N/A

Remarks _____

VI. GENERAL SITE CONDITIONS

A. Roads Applicable N/A

1. **Roads damaged** Location shown on site map Roads adequate N/A

Remarks _____

B. Other Site Conditions

Remarks _____

VII. LANDFILL COVERS Applicable N/A

A. Landfill Surface

1. **Settlement (Low spots)** Location shown on site map Settlement not evident
 Areal extent _____ Depth _____
 Remarks _____

2. **Cracks** Location shown on site map Cracking not evident
 Lengths _____ Widths _____ Depths _____
 Remarks _____

3. **Erosion** Location shown on site map Erosion not evident
 Areal extent _____ Depth _____
 Remarks _____

4. **Holes** Location shown on site map Holes not evident
 Areal extent _____ Depth _____
 Remarks _____

5. **Vegetative Cover** Grass Cover properly established No signs of stress
 Trees/Shrubs (indicate size and locations on a diagram)
 Remarks _____

6. **Alternative Cover (armored rock, concrete, etc.)** N/A
 Remarks _____

7. **Bulges** Location shown on site map Bulges not evident
 Areal extent _____ Height _____
 Remarks _____

8.	Wet Areas/Water Damage <input type="checkbox"/> Wet areas <input type="checkbox"/> Ponding <input type="checkbox"/> Seeps <input type="checkbox"/> Soft subgrade Remarks _____	<input type="checkbox"/> Wet areas/water damage not evident <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map	Areal extent _____ Areal extent _____ Areal extent _____ Areal extent _____
9.	Slope Instability Areal extent _____ Remarks _____	<input type="checkbox"/> Slides <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of slope instability	
B. Benches <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)			
1.	Flows Bypass Bench Remarks _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay	
2.	Bench Breached Remarks _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay	
3.	Bench Overtopped Remarks _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay	
C. Letdown Channels <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)			
1.	Settlement Areal extent _____ Depth _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of settlement	
2.	Material Degradation Material type _____ Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of degradation	
3.	Erosion Areal extent _____ Depth _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of erosion	

4.	Undercutting	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of undercutting
	Areal extent _____	Depth _____	
	Remarks _____		
5.	Obstructions	Type _____	<input type="checkbox"/> No obstructions
	<input type="checkbox"/> Location shown on site map	Areal extent _____	
	Size _____		
	Remarks _____		
6.	Excessive Vegetative Growth	Type _____	
	<input type="checkbox"/> No evidence of excessive growth		
	<input type="checkbox"/> Vegetation in channels does not obstruct flow		
	<input type="checkbox"/> Location shown on site map	Areal extent _____	
	Remarks _____		
D. Cover Penetrations <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
1.	Gas Vents	<input type="checkbox"/> Active	<input type="checkbox"/> Passive
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled
	<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Good condition
	<input type="checkbox"/> N/A		<input type="checkbox"/> Needs Maintenance
	Remarks _____		
2.	Gas Monitoring Probes	<input type="checkbox"/> Routinely sampled	<input type="checkbox"/> Good condition
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Needs Maintenance
	<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> N/A
	Remarks _____		
3.	Monitoring Wells (within surface area of landfill)	<input type="checkbox"/> Routinely sampled	<input type="checkbox"/> Good condition
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Needs Maintenance
	<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> N/A
	Remarks _____		
4.	Leachate Extraction Wells	<input type="checkbox"/> Routinely sampled	<input type="checkbox"/> Good condition
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Needs Maintenance
	<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> N/A
	Remarks _____		
5.	Settlement Monuments	<input type="checkbox"/> Located	<input type="checkbox"/> Routinely surveyed
			<input type="checkbox"/> N/A
	Remarks _____		

E. Gas Collection and Treatment			<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Gas Treatment Facilities	<input type="checkbox"/> Flaring	<input type="checkbox"/> Thermal destruction	<input type="checkbox"/> Collection for reuse
		<input type="checkbox"/> Good condition	<input type="checkbox"/> Needs Maintenance	
	Remarks	_____		

2.	Gas Collection Wells, Manifolds and Piping	<input type="checkbox"/> Good condition	<input type="checkbox"/> Needs Maintenance	
	Remarks	_____		

3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings)	<input type="checkbox"/> Good condition	<input type="checkbox"/> Needs Maintenance	<input type="checkbox"/> N/A
	Remarks	_____		

F. Cover Drainage Layer			<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Outlet Pipes Inspected	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A	
	Remarks	_____		

2.	Outlet Rock Inspected	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A	
	Remarks	_____		

G. Detention/Sedimentation Ponds			<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Siltation Areal extent _____	Depth _____	<input type="checkbox"/> N/A	
	<input type="checkbox"/> Siltation not evident			
	Remarks	_____		

2.	Erosion Areal extent _____	Depth _____		
	<input type="checkbox"/> Erosion not evident			
	Remarks	_____		

3.	Outlet Works	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A	
	Remarks	_____		

4.	Dam	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A	
	Remarks	_____		

H. Retaining Walls		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Deformations	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Deformation not evident
	Horizontal displacement _____	Vertical displacement _____	
	Rotational displacement _____		
	Remarks _____		
2.	Degradation	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Degradation not evident
	Remarks _____		
I. Perimeter Ditches/Off-Site Discharge		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Siltation	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Siltation not evident
	Areal extent _____	Depth _____	
	Remarks _____		
2.	Vegetative Growth	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A
	<input type="checkbox"/> Vegetation does not impede flow		
	Areal extent _____	Type _____	
	Remarks _____		
3.	Erosion	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Erosion not evident
	Areal extent _____	Depth _____	
	Remarks _____		
4.	Discharge Structure	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A
	Remarks _____		
VIII. VERTICAL BARRIER WALLS		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Settlement	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Settlement not evident
	Areal extent _____	Depth _____	
	Remarks <i>Not inspected</i>		
2.	Performance Monitoring	Type of monitoring _____	
	<input type="checkbox"/> Performance not monitored		
	Frequency _____	<input type="checkbox"/> Evidence of breaching	
	Head differential _____		
	Remarks <i>Not inspected</i>		

IX. GROUNDWATER/SURFACE WATER REMEDIES <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A	
A. Groundwater Extraction Wells, Pumps, and Pipelines <input type="checkbox"/> Applicable <input type="checkbox"/> N/A	
1.	Pumps, Wellhead Plumbing, and Electrical <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells properly operating <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks <u>Appear to be functional as intended</u>
2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks <u>Pipelines buried; other appurtenances appear functional</u>
3.	Spare Parts and Equipment <input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks <u>Maintained and Maintained in BAWs Treatment Facility</u>
B. Surface Water Collection Structures, Pumps, and Pipelines <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
1.	Collection Structures, Pumps, and Electrical <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____
3.	Spare Parts and Equipment <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks _____

C. Treatment System		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Treatment Train (Check components that apply) <input checked="" type="checkbox"/> Metals removal * <input type="checkbox"/> Oil/water separation <input type="checkbox"/> Bioremediation <input checked="" type="checkbox"/> Air stripping <input checked="" type="checkbox"/> Carbon adsorbers <input checked="" type="checkbox"/> Filters <u>Bag</u> <input type="checkbox"/> Additive (e.g., chelation agent, flocculent) <input checked="" type="checkbox"/> Others <u>Sludge Tank + Coagulant</u> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> Sampling ports properly marked and functional <input checked="" type="checkbox"/> Sampling/maintenance log displayed and up to date <input checked="" type="checkbox"/> Equipment properly identified <input checked="" type="checkbox"/> Quantity of groundwater treated annually <u>Avg. 25 gpm annual</u> <input type="checkbox"/> Quantity of surface water treated annually <u>NA</u> Remarks <u>* Arsenic removal capability (not used)</u>		
2.	Electrical Enclosures and Panels (properly rated and functional) <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____		
3.	Tanks, Vaults, Storage Vessels <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Good condition <input checked="" type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs Maintenance Remarks _____		
4.	Discharge Structure and Appurtenances <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks <u>Recharge trenches not inspected in detail</u>		
5.	Treatment Building(s) <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Good condition (esp. roof and doorways) <input type="checkbox"/> Needs repair <input checked="" type="checkbox"/> Chemicals and equipment properly stored - <u>labeled</u> Remarks <u>Clean, free of debris, plumbing well labeled</u>		
6.	Monitoring Wells (pump and treatment remedy) <input checked="" type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks <u>* See XI</u>		
D. Monitoring Data <u>Not Inspected</u>			
1.	Monitoring Data <input type="checkbox"/> Is routinely submitted on time <input type="checkbox"/> Is of acceptable quality		
2.	Monitoring data suggests: <input type="checkbox"/> Groundwater plume is effectively contained <input type="checkbox"/> Contaminant concentrations are declining		

D. Monitored Natural Attenuation <i>N/A</i>	
1. Monitoring Wells (natural attenuation remedy)	<input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A
Remarks _____	
X. OTHER REMEDIES	
If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.	
XI. OVERALL OBSERVATIONS	
A. Implementation of the Remedy	
Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).	
<i>The inspection of the BANS involved observation of the treatment plant as well as the extraction and recharge systems, the Bedrock Ridge extraction system, and Lime Basins Area Project. Inspections conducted 03-24 & 04-23-15. Inspected performance water quality well 35516. The outer casing lockable lid was observed not secured.</i>	
B. Adequacy of O&M	
Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.	
<i>Observations: Lime Basins Metering Station has rodent issue (mice droppings, carcass). Lime Basins DNAPL monitoring well 36633 inspected; the lockable outer casing lid is not secured.</i>	

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Five-Year Review Site Inspection Checklist

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable.")

I. SITE INFORMATION			
Site name: Basin A Neck Containment System/Bedrock Ridge Extraction System/Lime Basins Dewatering System	Date of inspection: 3/24/15		
Location and Region: RMA Region VIII	EPA ID: CO5210020769		
Agency, office, or company leading the five-year review: U.S. Army	Weather/temperature: Mild		
Remedy Includes: (Check all that apply) <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> Landfill cover/containment Access controls Institutional controls <u>Groundwater pump and treatment</u> Surface water collection and treatment Other _____ </td> <td style="width: 50%; vertical-align: top;"> Monitored natural attenuation Groundwater containment Vertical barrier walls </td> </tr> </table>		Landfill cover/containment Access controls Institutional controls <u>Groundwater pump and treatment</u> Surface water collection and treatment Other _____	Monitored natural attenuation Groundwater containment Vertical barrier walls
Landfill cover/containment Access controls Institutional controls <u>Groundwater pump and treatment</u> Surface water collection and treatment Other _____	Monitored natural attenuation Groundwater containment Vertical barrier walls		
Attachments: Inspection team roster attached Site map attached			
II. INTERVIEWS (Check all that apply)			
1. O&M site manager <u>Gayle Lammers</u> <u>Ops. Manager</u> <u>3/24/15</u> <div style="display: flex; justify-content: space-between; font-size: small;"> Name Title Date </div> Interviewed: <u>at site</u> at office by phone Phone no. <u>720 498-2120 cell</u> Problems, suggestions; Report attached _____			
2. O&M staff <u>Nick Adams</u> <u>Lead operator</u> <u>3/24/15</u> <div style="display: flex; justify-content: space-between; font-size: small;"> Name Title Date </div> Interviewed: at site at office by phone Phone no. _____ Problems, suggestions; Report attached _____			

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency Tri-County Health
 Contact Deanne Kelly RMA Field Sup. 3/24/15 303-439-5909
Name Title Date Phone no.
 Problems; suggestions; Report attached n/a

Agency CDPHE
 Contact Ken Vogler Engineer 3/24/15 303 692-3383
Name Title Date Phone no.
 Problems; suggestions; Report attached none

Agency Cros Heryrears (KPA)
 Contact [Signature] 303 872 6060
Name Title Date Phone no.
 Problems; suggestions; Report attached _____

Agency Sentinel/CDPHE
 Contact Vince Steward 720-252-2820
Name Title Date Phone no.
 Problems; suggestions; Report attached _____

4. **Other interviews** (optional) Report attached.

V. ACCESS AND INSTITUTIONAL CONTROLS				Applicable	N/A
A. Fencing					
1.	Fencing <u>damaged</u>	Location shown on site map	Gates secured	N/A	
	Remarks <u>in good condition</u>				
B. Other Access Restrictions					
1.	Signs and other security measures	Location shown on site map	N/A		
	Remarks <u>present where required</u>				

C. Institutional Controls (ICs)				
1.	Implementation and enforcement			
	Site conditions imply ICs not properly implemented	Yes	<input checked="" type="radio"/> No	N/A
	Site conditions imply ICs not being fully enforced	Yes	<input checked="" type="radio"/> No	N/A
	Type of monitoring (e.g., self-reporting, <u>drive by</u>) _____			
	Frequency _____			
	Responsible party/agency _____			
	Contact _____			
	Name	Title	Date	Phone no.
	Reporting is up-to-date		Yes	No <input checked="" type="radio"/> N/A
	Reports are verified by the lead agency		Yes	No <input checked="" type="radio"/> N/A
	Specific requirements in deed or decision documents have been met		Yes	No <input checked="" type="radio"/> N/A
	Violations have been reported		Yes	<input checked="" type="radio"/> No <input checked="" type="radio"/> N/A
	Other problems or suggestions: Report attached			

2.	Adequacy	<input checked="" type="radio"/> ICs are adequate	<input type="radio"/> ICs are inadequate	N/A
	Remarks _____			

D. General				
1.	Vandalism/trespassing	Location shown on site map	<input checked="" type="radio"/> No vandalism evident	
	Remarks _____			

2.	Land use changes on site	<input checked="" type="radio"/> N/A		
	Remarks _____			

3.	Land use changes off site	<input checked="" type="radio"/> N/A		
	Remarks _____			

VI. GENERAL SITE CONDITIONS				
A. Roads	Applicable	<input checked="" type="radio"/> N/A		
1.	Roads damaged	Location shown on site map	<input checked="" type="radio"/> Roads adequate <input type="radio"/> N/A	
	Remarks _____			

B. Other Site Conditions				
	Remarks _____			

IX. GROUNDWATER/SURFACE WATER REMEDIES		Applicable	N/A
A. Groundwater Extraction Wells, Pumps, and Pipelines		Applicable	N/A
1.	Pumps, Wellhead Plumbing, and Electrical Good condition <u>All required wells properly operating</u>	Needs Maintenance	N/A
Remarks _____			
2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition	Needs Maintenance	
Remarks _____			
3.	Spare Parts and Equipment Readily available	Good condition	Requires upgrade
Remarks <u>2 influent pumps & chem. feed pumps & spare parts</u> <u>Bag filters</u>			
C. Treatment System		Applicable	N/A
1.	Treatment Train (Check components that apply)		
	Metals removal	Oil/water separation	Bioremediation
	<u>Air stripping</u>	<u>Carbon adsorbers</u>	
	<u>Filters</u>		
	Additive (e.g., chelation agent, flocculent)		
	Others		
	Good condition	Needs Maintenance	
	<u>Sampling ports properly marked and functional</u>		
	<u>Sampling/maintenance log displayed and up to date</u>		
	<u>Equipment properly identified</u>		
	Quantity of groundwater treated annually	<u>25 gpm avg.</u>	
	Quantity of surface water treated annually		
Remarks _____			
2.	Electrical Enclosures and Panels (properly rated and functional)		
	N/A	<u>Good condition</u>	Needs Maintenance
Remarks _____			
3.	Tanks, Vaults, Storage Vessels		
	N/A	<u>Good condition</u>	Proper secondary containment
			Needs Maintenance
Remarks _____			
4.	Discharge Structure and Appurtenances		
	N/A	<u>Good condition</u>	Needs Maintenance
Remarks _____			

5.	Treatment Building(s) N/A <u>Good condition (esp. roof and doorways)</u> Chemicals and equipment properly stored Remarks _____	Needs repair
6.	Monitoring Wells (pump and treatment remedy) Properly secured/locked <u>Functioning</u> All required wells located Needs Maintenance Remarks _____	Routinely sampled N/A Good condition
XI. OVERALL OBSERVATIONS		
A.	Implementation of the Remedy Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.). <u>functioning as intended</u> _____ _____ _____ _____	
B.	Adequacy of O&M Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. <u>O&M appears adequate - records kept of maintenance and root cause analysis conducted.</u> _____ _____ _____	

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