



U.S. DEPARTMENT OF
ENERGY

OFFICE OF
**ENVIRONMENTAL
MANAGEMENT**



2016 Compliance Order on Consent Progress Update

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ENVIRONMENTAL MANAGEMENT
SAFETY ♦ PERFORMANCE ♦ CLEANUP ♦ CLOSURE



- **Consent Order Process**
- **Campaign Approach**
- **Appendix C: Consent Order Campaigns**
- **Appendix B: FY 2018 Enforceable Milestones**
- **Appendix B: FY 2019 Enforceable Milestones**





- **Appendix A: Solid Waste Management Unit/Area of Concern List**
- **Appendix C: Future Campaigns**
- **Appendix B: Milestones and Targets**
- **Process for updating Appendix B**
 - Current FY, FY+1, & FY+2, with milestones and targets
 - Updated annually
 - Review includes changed conditions, priorities, & funding
 - Revised Appendix B posted on NMED's website
 - Public meeting held to present changes to Appendix B
- **Dynamic process allows for revision during the year due to upward or downward adjustments in funding**





- **EM-LA Lifecycle Cost Estimate (LCE) is based on a campaign approach**
 - **LCE is integrated with the 2016 Consent Order**
 - 17 Soil and Water campaigns identified in Appendix C
 - **Legacy waste is a standalone campaign driven by DOE radiological authority (rather than the Consent Order)**
- **Campaigns are worked in the prioritized order listed in Appendix C**
- **Multiple campaigns underway simultaneously**
- **Safe, efficient and transparent execution**





Appendix C: Consent Order Campaigns

Item #	Campaign Title	SWMUs/AOCs	Estimated Completion	Estimated Cost (M)
1	Chromium Interim Measure	1	2020 – 2022	\$38.9 - \$50.6
2	Historic Properties Completion	84	2019 – 2020	\$5.3 - \$6.4
3	Royal Demolition Explosives (RDX) Characterization	2	2022 – 2024	\$1.6 - \$2.1
4	Supplemental Investigations Reports	222	2019 – 2019	\$0 - \$1.0
5	TA-21 D&D and Cleanup	41	2020 – 2022	\$45.8 - \$54.9
6	RDX Remedy	0	2024 – 2025	\$22.3 - \$26.8
7	Known Cleanup Sites	20	2027 - 2028	\$34.8 - \$41.8
8	Material Disposal Area (MDAs) A & T Remedy	30	2028 – 2031	\$92.1 - \$124.3
9	Chromium Final Remedy	0	2026 – 2028	\$100.3 - \$130.0
10	Southern External Boundary	60	2025 – 2026	\$10.0 - \$12.0
11	MDA C Remedy	1	2024 – 2026	\$34.6 - \$48.7
12	Sandia Canyon Watershed	49	2024 – 2025	\$6.3 - \$7.6
13	Pajarito Watershed	167	2028 – 2030	\$20.7 - \$24.9
14	Upper Water Watershed	253	2030 – 2031	\$33.5 - \$40.2
15	MDA AB Remedy	12	2027 – 2030	\$41.8 - \$50.2
16	MDA H Remedy	1	2029 – 2030	\$15.3 - \$18.3
17	MDA G & L Remedy / D&D	12	2035 – 2040	\$237.9 - \$356.9

Highlighted rows indicate campaigns currently underway





Appendix B: FY 2018 Enforceable Milestones

Campaign	Consent Order Milestone	Target Date	Forecast	Actual (M/NM)
Chromium IM & Characterization	Technical Report Package for Chromium Plume Center Characteristics	Mar 30, 2018	Mar 28, 2018	Met
Chromium IM & Characterization	Letter Report to NMED-HWB documenting integrated operation of Chromium Extraction Well 4 (CrEX-4) into the existing IM System	Mar 30, 2018	Mar 22, 2018	Met
Chromium IM & Characterization	Summary Report (Completion or Progress) Phase I Pilot Amendment Test Results	Jul 31, 2018	Jul 31, 2018	Met
Chromium IM & Characterization	Phase II Pilot Amendment Test Work Plan	Sep 28, 2018	Sep 28, 2018	
Chromium IM & Characterization	Annual Progress Report on Chromium Plume Control IM Performance	Sep 28, 2018	Sep 28, 2018	
RDX Characterization	Technical Report Package related to Deep Groundwater Investigation	Mar 30, 2018	Mar 30, 2018	Met
RDX Characterization	R-69 Field Completion	Sep 28, 2018	Sep 28, 2018	
RDX Characterization	First Annual Long-Term Monitoring Report following completion of Surface CMI and approval of Long-Term Monitoring Plan	Sep 28, 2018	Sep 28, 2018	



Campaign	Consent Order Milestone	Target Date	Forecast	Actual (M/NM)
Historical Properties Upper LA Canyon	Upper LA Canyon Phase II IR Submitted to NMED	Sept 28, 2018	Sept 28, 2018	
Historical Properties Middle LA Canyon	Middle LA Canyon Phase II IR Submitted to NMED	Sept 28, 2018	Sept 28, 2018	
TA-21 D&D and Cleanup	Investigation Report for DP sites Aggregate Area at DP East at TA-21	Jun 29, 2018	Jun 29, 2018	Met
Known Cleanup Sites	Field Completion for Aggregate Area Known Cleanup Sites	Sep 28, 2018	Sep 28, 2018	
Sandia Canyon Watershed	Sandia Canyon Wetland Performance Report for Period April 2017-December 2017	Apr 30, 2018	Apr 30, 2018	Met
N/A	Annual Monitoring Report for the completed FY17 and Plan for the upcoming FY18 LA/Pueblo Watershed Sediment Transport Mitigation Project	Apr 30, 2018	Apr 28, 2018	Met
N/A	Annual Update to the Interim Facility-Wide Groundwater Monitoring Plan	May 30, 2018	May 30, 2018	Met





- **FY 2019 enforceable milestones are under development**
- **Public meeting scheduled for November in Los Alamos**



Appendix B MILESTONES AND TARGETS

Appendix B MILESTONES AND TARGETS											
		FY 2019 MILESTONES				FY 2020 TARGETS			FY 2021 TARGETS		
Campaign	Milestone # FY2019	Milestone	Milestone Description	Milestone Date	Target	Target Description	Target Date	Target	Target Description	Target Date	
	7	Annual Update to the Interim Facility-Wide Groundwater Monitoring Plan (IFGMP) for MY2020 (October 2019-September 2020)	Annual update to the groundwater monitoring program baseline document with adjustments to sampling, monitoring groups, analytes, and frequencies based on previous results.	5/30/2019	Annual Update to the Interim Facility-Wide Groundwater Monitoring Plan (IFGMP) for MY2021 (October 2020-September 2021)	Annual update to the groundwater monitoring program baseline document with adjustments to sampling, monitoring groups, analytes, and frequencies based on previous results.	5/30/2020	Annual Update to the Interim Facility-Wide Groundwater Monitoring Plan (IFGMP) for MY2022 (October 2021-September 2022)	Annual update to the groundwater monitoring program baseline document with adjustments to sampling, monitoring groups, analytes, and frequencies based on previous results.	5/30/2021	
	4	Annual Monitoring Report for the Completed FY19 and Plan for the upcoming FY19 for Los Alamos/Pueblo Watershed Sediment Transport Mitigation Project	Annual report of last year's results and update to plan for the upcoming year based on last year's observations. Both the annual report and the plan that addresses the performance of stormwater controls installed in the LA/Pueblo watershed.	4/30/2019	Annual Monitoring Report for the Completed FY19 and Plan for the upcoming FY20 for Los Alamos/Pueblo Watershed Sediment Transport Mitigation Project.	Annual report of last year's results and update to plan for the upcoming year based on last year's observations. Both the annual report and the plan that addresses the performance of stormwater controls installed in the LA/Pueblo watershed.	4/30/2020	Summary Report on Monitoring for Los Alamos/Pueblo Watershed Sediment Mitigation Project.	Report on results of optimized monitoring necessary to document efficacy of sediment transport mitigation efforts.	4/30/2021	
	5	Annual Monitoring Plan for the Los Alamos/Pueblo Watershed Sediment Transport Mitigation Project	Annual plan for the upcoming year that addresses the performance of stormwater controls installed in the LA/Pueblo watershed.	4/30/2019	Annual Monitoring Plan for the Los Alamos/Pueblo Watershed Sediment Transport Mitigation Project	Annual plan for the upcoming year that addresses the performance of stormwater controls installed in the LA/Pueblo watershed.	4/30/2020				
	6	Sandia Canyon Wetland Performance Report for Period April 2018 - December 2018 [2019]	Annual inspection report describing activities performed in canyon to stabilize head cutting in the wetland that is keeping trivalent chromium entrained. Report on results of monitoring necessary to document efficacy of wetland stabilization efforts.	4/30/2019	Sandia Canyon Wetland Performance Report for Period April 2019 - December 2019 [2020]	Annual inspection report describing activities performed in canyon to stabilize head cutting in the wetland that is keeping trivalent chromium entrained. Report on results of monitoring necessary to document efficacy of wetland stabilization efforts.	4/30/2020	Summary Report on Monitoring for Sandia Wetland	Report on results of monitoring necessary to document efficacy of wetland stabilization efforts.	4/30/2021	
	13	TA-21 Westbay Wells Reconfiguration Completion Report Activities Completed for R-5, R-7, R-8, R-9i, R-19, R-25, and R-31 and Report	This report will include a summary of field activities and as-built information associated with reconfiguration of R-5, R-7, R-8, R-9i, R-19, and R-31, Westbay the wells and plugging and abandonment of R-25 which requires removal of the Westbay system. The work will be conducted pursuant to NMED-approved work plans.	3/31/2019 8/30/2019							
Chromium IM & Characterization	1	Semiannual Performance Monitoring Progress Report of the Effectiveness of the Chromium Plume Control Interim Measure (July 2018 to December 2018)	This progress report will include summaries of the data collected from performance monitoring wells, operational activities, and analysis of performance of the IM with respect to the plume control objective. Modeling may be included as necessary to support the analysis. The report may also include recommendations for, the modeling activities and changes in projections, and a discussion of the effectiveness to meet the objectives of plume control, and recommendations on additional changes to be considered in the subsequent operating year.	9/30/2019 3/29/2019	Semiannual Performance Monitoring Progress Report of the Effectiveness of the Chromium Plume Control Interim Measure (July 2019 to December 2019)	This progress report will include summaries of the data collected from performance monitoring wells, operational activities, and analysis of performance of the IM with respect to the plume control objective. Modeling may be included as necessary to support the analysis. The report may also include recommendations for, the modeling activities and changes in projections, and a discussion of the effectiveness to meet the objectives of plume control, and recommendations on additional changes to be considered in the subsequent operating year.	9/30/2020 3/31/2020	Semiannual Performance Monitoring Progress Report of the Chromium Plume Control Interim Measure (July 2020 to December 2020)	This progress report will include summaries of the data collected from performance monitoring wells , operational activities, and analysis of performance of the IM with respect to the objective of the plume control objective. Modeling may be included as necessary to support the analysis. The report may also include recommendations for the subsequent operating year. The 2021 report is dependent on progress and performance of the IM.	3/31/2021	

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			FY 2019 MILESTONES			FY 2020 TARGETS			FY 2021 TARGETS		
	Campaign	Milestone # FY2019	Milestone	Milestone Description	Milestone Date	Target	Target Description	Target Date	Target	Target Description	Target Date
Chromium IM & Characterization	Chromium IM & Characterization	14	Semiannual Performance Monitoring Progress Report of the Chromium Plume Control Interim Measure (January 2019 to June 2019)	This progress report will include summaries of the data collected from performance monitoring wells , operational activities, and analysis of performance of the IM with respect to the objective of the plume control objective. Modeling may be included as necessary to support the analysis. The report may also include recommendations for the subsequent operating year.	9/30/2019	Semiannual Performance Monitoring Progress Report of the Chromium Plume Control Interim Measure (January 2020 to June 2020)	This progress report will include summaries of the data collected from performance monitoring wells , operational activities, and analysis of performance of the IM with respect to the objective of the plume control objective. Modeling may be included as necessary to support the analysis. The report may also include recommendations for the subsequent operating year.	9/30/2020	Semiannual Performance Monitoring Progress Report of the Chromium Plume Control Interim Measure (January 2021 to June 2021)	This progress report will include summaries of the data collected from performance monitoring wells , operational activities, and analysis of performance of the IM with respect to the objective of the plume control objective. Modeling may be included as necessary to support the analysis. The report may also include recommendations for the subsequent operating year. The 2021 report is dependent on progress and performance of the IM.	9/30/2021
	Chromium IM & Characterization	9	Completion Report for Conversion of CrIN-6 and Integration into Chromium IM System	This report will include information associated with conversion of CrIN-6 to an extraction well (CrEX-5) in accordance with an NMED-approved work plan. The report will also include as-built information for CrEX-5.	6/28/2019						
	Chromium IM & Characterization	8	Letter Report Documenting Completion of R-70 and Collection of First Samples	R-70 is a Chromium Interim Measure performance monitoring well that will be located downgradient of CrIN-6 and will monitor performance of Interim Measure activities, specifically associated with the northeastern portion of the plume. The well will be drilled in accordance with an NMED-approved work plan. Deliverable is a letter to NMED documenting completion of the well and collection of first samples.	5/31/2019						
	Chromium IM & Characterization	15	Summary Report (Completion or Progress) of the Phase 2 Pilot Amendment Test Results submitted to NMED-HWB	Summary report will include the description of the tests, the data collected in relation the test plan, identify any anomalous conditions observed, and any preliminary results available.	9/30/2019	Chromium Corrective Measures Evaluation (CME) Report completed and submitted to NMED-HWB	The CME will be the culmination of the chromium investigatory activities and will include a recommendation of a remedy.	9/30/2020			
Chromium Final Remedy									Chromium Remediation Corrective Measures Implementation (CMI) Plan completed and submitted to NMED	CMI Plan TBD based on NMED review of the CME Report	9/30/2021

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	Campaign	Milestone # FY2019	FY 2019 MILESTONES			FY 2020 TARGETS			FY 2021 TARGETS		
			Milestone	Milestone Description	Milestone Date	Target	Target Description	Target Date	Target	Target Description	Target Date
Historical Properties Completion	Historical Properties - Middle LA Cyn	2	Investigation Report for SWMU 02-014	Investigation report that summarizes the cleanup activities at SWMU 02- 014 and risk assessments for this site.	3/29/2019						
	Historical Properties					Campaign Completion Report for Historical Properties Campaign	Summary report that documents the status, recommendations, and approvals of all sites in the Historical Properties Campaign	3/30/2020			
RDX Characterization	RDX Characterization	10	Investigation Report for Deep Groundwater	Investigation Report that culminates results of investigation activities associated with deep groundwater and includes a groundwater risk assessment. Follows completion and multiple rounds of data collection at R-69.	3/30/2019 6/28/2019	Corrective Measures Evaluation (CME) for the RDX Contaminant Plume in the Deep Groundwater	This CME will address RDX contamination in deep groundwater if the risk assessment in the Deep Groundwater Investigation Report indicates a driver for remediation to protect the regional aquifer.	3/30/2020 6/30/2020			
	RDX Characterization	16	Second Annual Long-Term Monitoring Report of Results following Surface RDX Corrective Measures Implementation Completion	Executes the reporting required for long-term monitoring and inspection for the Remedy Completion Report	9/30/2019	Third Annual Long-Term Monitoring Report of Results following Surface RDX Corrective Measures Implementation Completion	Executes the reporting required for long-term monitoring and inspection for the Remedy Completion Report	9/30/2020	Annual Long-Term Monitoring Report of Results following Surface RDX Corrective Measures Implementation Completion	Executes the reporting required for long-term monitoring and inspection for the Remedy Completion Report	
RDX Remedy	RDX Remedy					RDX Remediation Corrective- Measures Implementation (CMI) Plan Completed and Submitted to NMED- HWP.	CMI Plan for deep groundwater.	9/30/2020	RDX Remediation Corrective Measures Implementation (CMI) Plan for deep groundwater completed and submitted to NMED.	CMI Plan for deep groundwater. Date and content TBD based on NMED review of the CME Report	
Supplemental Investigation Reports	SIR - S-Site Canyon Aggregate Area	3	Supplemental Investigation Report (SIR) for S-Site Canyon Aggregate Area Revision 1	Resolve comments, incorporate changes, and submit Revision 1 to the SIR	3/29/2019	Campaign Completion Report for Supplemental Investigation Reports	Summary report that documents the status, recommendations, and approvals of all sites in the Supplemental Investigation Report Campaign	9/30/2020			
	SIR - Potrillo/Fence Canyon Aggregate Area	11	Supplemental Investigation Report (SIR) for Potrillo/Fence Canyon Aggregate Area Revision 1	Resolve comments, incorporate changes, and submit Revision 1 to the SIR	6/28/2019						
	SIR - Upper Mortandad Canyon Aggregate Area					Supplemental Investigation Report (SIR) for Upper Mortandad Canyon Aggregate Area Revision 1	Resolve comments, incorporate changes, and submit Revision 1 to the SIR	3/31/2020			
	SIR - Upper Cañada del Buey Aggregate Area					Supplemental Investigation Report (SIR) for Upper Cañada del Buey Canyon Aggregate Area Revision 1	Resolve comments, incorporate changes, and submit Revision 1 to the SIR	6/30/2020	Campaign Completion Report for Supplemental Investigation Reports	Summary report that documents the status and recommendations for the eleven SIRs in this campaign.	
D&D and Cleanup	TA-21 D&D and Cleanup - Bldg 21-257					Letter report that summarizes the initial investigations of SWMUs/AOCs associated with Building 21-257. Following demolition of TA 21- Building 21-257 (not under Consent Order), initiate the Building 21-257 Footprint Investigation (tied to removal of DP West Industrial Waste Lines).	Following demolition of TA-21 Building 21-257 (not under Consent Order), initiate the Building 21-257 Footprint Investigation (tied to removal of DP West Industrial Waste Lines). Letter report that summarizes the initial investigations of SWMUs/AOCs associated with Building 21-257.	9/30/2020			

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TA-21 D	TA-21 D&D and Cleanup - DP West	17	TA-21 Delta Prime (DP) West Building Footprint Investigations Letter Report Complete and Investigation Report	This report will summarize the investigation of sites located at Letter report summarizing the initiation of investigation activities associated with waste lines at DP West.	9/30/2019	Letter report documenting field work completion and sampling conducted at sites at DP West and DP East (Ph II)	Letter report that summarizes the completion of sampling activities associated with sites at DP West and DP East (Ph II)	9/30/2020	TA-21 Delta Prime Site Aggregate Area Investigation Report	Report will include both DP West and DP East (Phase II) industrial waste lines work, and Bldg 21-257 investigation results.	9/30/2021
Known Cleanup Sites (Above SSLs)	Known Cleanup Sites (Above SSLs)	18	Field Completion for Aggregate Area Known Cleanup Sites Campaign: SWMU 39-002(a), SWMU 46-004(q), SWMU 15-008(b), and SWMU 15-007(c) Letter Report	Letter report documenting field completion of cleanups of remaining four sites currently known to exceed soil screening levels. Sites to be addressed are SWMU 39-002(a), SWMU 46-004(q), SWMU 15-008(b), and SWMU 15-007(c).	9/30/2019	Investigation Report for SWMUs 03-049(a), 50-006(d), 39-002(a), 46-004(q), 15-008(b), and 15-007(c).	Report will summarize the cleanup activities and provides risk assessments and recommendations for the Known Cleanup sites.	6/29/2020			
MDAs-A & -T Remedy	MDAs-A & -T Remedy	12	Submit Revised Work Plan for Vadose Zone Moisture Monitoring at MDA T	The revised work plan will include proposed drilling, and characterization activities, and installation and instrumentation of a vadose zone moisture monitoring system at MDA T.	6/28/2019	MDA T Moisture Monitoring Instrumentation Installation Completion and Field Summary Report	Summary report describing the installation and instrumentation of boreholes at MDA T.	4/30/19 9/30/2020	MDA T Moisture Monitoring Report	Submittal of the moisture monitoring report including results and recommendations. for final monitoring configuration.	4/30/2020 9/30/2021
Southern External Boundary	Southern External Boundary	19	Chaquehui Canyon Aggregate Area Investigation Report Completed and Submitted to NMED-HWB Chaquehui Canyon Aggregate Area Letter Report	Initial investigation and development of IR for one of the southern canyons. This campaign is paired with South Ancho as geographical proximity warrants pairing. Letter report summarizing the fieldwork implementation and status of site investigations in Chaquehui Canyon Aggregate Area.	9/30/2019	Chaquehui Canyon Aggregate Area Investigation Report Completed and Submitted to NMED-HWB	Investigation report for this aggregate area and the requisite risk assessment. This would include cleanups for media above SSLs.	6/30/2020			
	Southern External Boundary					Investigation Report for South Ancho Canyon Aggregate Area	Investigation Report for this aggregate area and the requisite risk assessment. This would include cleanups for media above SSLs.	9/30/2020			
	Southern External Boundary					Investigation Report for Lower Water/Indio Canyon Aggregate Area	Investigation Report for this aggregate area and the requisite risk assessment. This would include cleanups for media above SSLs.	9/30/2020			
	Southern External Boundary								Phase II Investigation Report for North Ancho Canyon Aggregate Area	Phase II investigation report for this aggregate area and the requisite risk assessment. This would include cleanups for media above SSLs.	9/30/2021
MDA-C Remedy	MDA-C Remedy								Corrective Measures Implementation (CMI) plan for Material Disposal Area C	Implementation plan details to activities required to implement the selected corrective measures.	9/30/2021
Pajarito Watershed	Pajarito Watershed					Twomile Canyon Aggregate Area Letter Report	Letter report summarizing the fieldwork implementation and status of site investigations in Twomile Canyon Aggregate Area.	9/30/2020	Investigation Report for Twomile Canyon Aggregate Area	Investigation Report for this aggregate area and the requisite risk assessment. This would include cleanups for media above SSLs.	9/30/2021

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	Campaign	Milestone # FY2019	Milestone	Milestone Description	Milestone Date	Target	Target Description	Target Date	Target	Target Description	Target Date
Upper Water Watershed	Upper Water Watershed										
MDA-AB Remedy	MDA-AB Remedy										
MDA-H Remedy	MDA-H Remedy										
MDAs-G & -L Remedies	MDAs-G & -L Remedies										
					19				21		
										14	