40 CFR Part 191
Subparts B and C
Compliance Recertification Application 2026
for the
Waste Isolation Pilot Plant

Removal of Waste
(40 CFR 194.46)

United States Department of Energy
Waste Isolation Pilot Plant

Carlsbad Field Office
Carlsbad, New Mexico

Compliance Recertification Application 2026
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Acronyms and Abbreviations

CARD	Compliance Application Review Document
CCA	Compliance Certification Application
CFR	Code of Federal Regulations
CRA	Compliance Recertification Application
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
FR	Federal Register
WIPP	Waste Isolation Pilot Plant
WRAC	Waste Removal After Closure

46.0 REMOVAL OF WASTE (40 CFR 194.46)

46.1 Requirements

§ 194.46 Removal of Waste

Any compliance application shall include documentation which demonstrates that removal of waste from the disposal system is feasible for a reasonable period of time after disposal. Such documentation shall include an analysis of the technological feasibility of mining the sealed disposal system, given technology levels at the time a compliance application is prepared.

46.2 Background

Title 40 Code of Federal Regulations (CFR) § 194.46 "Removal of waste" is one of the six assurance requirements in the Compliance Criteria (U.S. EPA 1996a). The U.S. Environmental Protection Agency (EPA) stated, in the preamble to the 1985 promulgation of the first version of disposal standards, 40 CFR Part 191 (U.S. EPA 1985, 50 FR 38072), that the assurance requirements were included in the disposal standards to compensate qualitatively for the inherent uncertainties in projecting the behavior of natural and engineered components of the disposal system for many thousands of years.

In the Compliance Application Guidance for 40 CFR Part 194 (U.S. EPA 1996b), the EPA stated that compliance with the 40 CFR 194.46 criteria is demonstrated by an analysis that includes: (1) procedures necessary for removal of waste after disposal is complete; (2) descriptions of current technology that could be used in implementing these procedures; and (3) an estimate of how long it will be technologically feasible to remove the waste.

The U.S. Department of Energy (DOE) demonstrated compliance with 40 CFR 194.46 in the Compliance Certification Application (CCA) (U.S. DOE 1996), Chapter 7.0 and Appendix Waste Removal After Closure (WRAC). The DOE presented a five-phase approach to accomplish the removal of waste. This approach was supported by a discussion of techniques that could be used to remove the waste, given repository conditions at the time of removal. The EPA reviewed the materials to assess the completeness of the strategy and the justification of the proposed technologies for removing the waste. In the 1998 certification decision (U.S. EPA 1998a, 63 FR 27397, 27398) , the EPA accepted the DOE's demonstration of the feasibility for waste removal. The EPA determined that the DOE complied with 40 CFR 194.46. The EPA's certification decision is presented in U.S. EPA 1998a, Section VIII.D.6, and in the Compliance Application Review Document (CARD) 46 (U.S. EPA 1998b).

The DOE did not report any changes in the waste removal approach during the 2004 Compliance Recertification Application (CRA-2004) (U.S. DOE 2004) and the 2009 Compliance Recertification Application (CRA-2009) (U.S. DOE 2009). The CRA-2004 and CRA-2009 included the CCA, Chapter 7 and Appendix WRAC, by reference; no changes were made to Appendix WRAC. Based on review and evaluation of the CRA-2004, CRA-2009, and the CCA (Chapter 7

and Appendix WRAC), the EPA determined that the DOE continued to comply with the requirements of 40 CFR 194.46 during these recertification cycles. A complete description of the EPA's decision can be found in U.S. EPA 2006a (Section V.E), U.S. EPA 2010a (Section V.E) and CARD 46 (U.S. EPA 2006b and 2010b).

The DOE reported no changes to the waste removal approach in the CRA-2014 (U.S. DOE 2014). However, during the completeness determination phase of CRA-2014, the EPA found that the DOE's waste removal plan did not reflect updates and modifications to the repository design and waste characteristics. The EPA recommended that Appendix WRAC be revised (EPA comment 2-46-1; U.S. EPA 2015). In response to the EPA's comment , the DOE submitted a revision of Appendix WRAC, WRAC-2014 (U.S. DOE 2015). The EPA reviewed the updated information and determined that the DOE continued to comply with the requirements of Section 194.46 during the 2014 recertification cycle (CARD 46; U.S. EPA 2017).

The DOE submitted a Planned Change Notice (U.S. DOE 2017) for a new shaft and associated access drifts. However, these planned changes do not impact potential waste removal after closure because they are not associated with the waste disposal rooms and would be isolated from planned removal activities. The EPA found no significant changes in the DOE's strategy for removal of waste and determined that the DOE continued to comply with 40 CFR 194.46 requirements in the 2019 recertification application (U.S. EPA 2022).

Information and data from previous applications (CCA, CRA-2004, CRA-2009, CRA-2014, and CRA-2019) can be found in the CRA-2019 (U.S. DOE 2019), which included references that form the basis of DOE compliance positions and EPA decision documents.

46.3 Changes or New Information Since CRA-2019

The Waste Isolation Pilot Plant (WIPP) was initially certified as a repository consisting of 10 panels excavated for the long-term storage and placement of transuranic waste (U.S. EPA 1998a). However, due to deteriorating ground conditions and radiological contamination, disposal capacity was lost in Panels 1, 7, and 9. The DOE issued a Planned Change Notification (U.S. DOE 2021) for the excavation of five new main access drifts located to the west of the currently mined area of the WIPP in 2021, which was subsequently acknowledged by the EPA later in the year (U.S. EPA 2021). In March 2024, DOE submitted the Replacement Panels Planned Change Request (RPPCR) to seek EPA approval for waste emplacement in two new panels, referred to as replacement panels, located west of the existing operations area. The DOE received EPA approval of the RPPCR on July 31, 2025.

Although the construction of the two new panels, the five new main access drifts, and the new shaft and associated access drifts changes the layout of the repository, there is no change to the waste removal strategy described in Appendix WRAC-2014. This is because the waste removal strategy applies to any single-level repository configuration. The DOE has not changed its position on waste removal since the CRA-2019. The information presented in the CCA (Chapter 7.0, Section 7.6) and the WRAC-2014 continues to demonstrate compliance with the requirements of 40 CFR 194.46.

46.4 References

(*Indicates a reference that has not been previously submitted.)

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