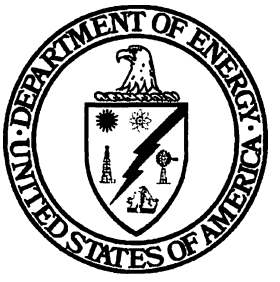
DOE/EIS-423-SA-01

Supplement Analysis of the Final Long-Term Management and Storage of Elemental Mercury Environmental Impact Statement

Department of Energy
Office of Environmental Management



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ACRONYMS AND ABBREVIATIONS

CEQ	Council on Environmental Quality
CFR	*Code of Federal Regulations*
CISF	Consolidated Interim Storage Facility
CSB	Container Storage Building
DOE	U.S. Department of Energy
EIS	environmental impact statement
ER	environmental report
FR	*Federal Register*
NEPA	*National Environmental Policy Act of 1969*
NRC	U.S. Nuclear Regulatory Commission
RCRA	*Resource Conservation and Recovery Act*
ROD	Record of Decision
SA	supplement analysis
SNF	spent nuclear fuel
TCEQ	Texas Commission on Environmental Quality
U.S.C.	*United States Code*
WCS	Waste Control Specialists
WIPP	Waste Isolation Pilot Plant

1 INTRODUCTION

DOE has prepared this SA to evaluate the existing EISs listed below in light of changes that could have bearing on the potential environmental impacts previously analyzed. The CEQ NEPA regulations direct agencies to prepare a supplement to either a draft or final EIS if the "agency makes substantial changes in the proposed action that are relevant to environmental concerns" or there are "significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." (40 CFR 1502.9(c)(1)(i and ii)) The DOE NEPA regulations state that when it "is unclear whether or not an EIS supplement is required, DOE shall prepare a Supplement Analysis." (10 CFR 1021.314(c)), this SA provides sufficient information for DOE to determine whether (1) to supplement an existing EIS, (2) to prepare a new EIS, or (3) no further NEPA documentation is required. (10 CFR 1021.314(c)(2)) Existing EISs evaluated in this SA:

- *Final Long-Term Management and Storage of Elemental Mercury Environmental Impact Statement* (DOE/EIS-0423; the EIS) (DOE 2011), https://www.energy.gov/nepa/downloads/eis-0423-final-environmental-impact-statement. January 28, 2011.

- *Final Long-Term Management and Storage of Elemental Mercury Supplemental Environmental Impact Statement* (DOE/EIS-0423-S1; the SEIS) (DOE 2013), https://www.energy.gov/nepa/downloads/eis-0423-s1-final-supplemental-environmental-impact-statement. October 4, 2013.

2 PROPOSED CHANGE OR NEW INFORMATION[1]

In 2011, DOE issued the EIS to evaluate eight potential facilities across the U.S. for management and storage of elemental mercury. In 2013, DOE issued the SEIS to evaluate three additional potential locations for management and storage of elemental mercury, and to update some analyses from the 2011 EIS. To date, no ROD has been issued on the EIS. There has been no change to the proposed action as stated in the 2011 EIS or 2013 SEIS. This SA evaluates changes in environmental conditions at the WCS facility near Andrews, Texas, that may have occurred since EIS and SEIS were published. The WCS facility was the preferred alternative evaluated in the EIS and the SEIS. There are additional changes that have occurred since 2011 that will also be addressed in this SA. These changes include the following:

- The total inventory of elemental mercury that was projected for the next 40 years in the EIS (and subsequently evaluated in the SEIS) was 10,000 metric tons. The current projection for the next 40 years is now 6,800 metric tons. The derivation of this projection is presented in Appendix A to this SA.

[1] Throughout this document, the phrase "proposed change or new information" refers to a substantial change in a proposed action that may be relevant to environmental concerns or significant new circumstances or information that may be relevant to environmental concerns and have bearing on the proposed action or its impacts consistent with 40 CFR 1502.9(c).

- The EIS and SEIS evaluated the use of an existing facility at WCS, CSB that had the capacity to store up to 2,000 metric tons of elemental mercury. The EIS and SEIS also evaluated the construction of a new facility that could accommodate up to 10,000 metric tons. WCS now has a combination of two existing facilities (the CSB and the Bin Storage Unit 1) that can accommodate the complete inventory of 6,800 metric tons. Therefore, no new construction would be required to manage and store the full projected inventory. WCS may use one or both facilities to store elemental mercury. However, the analysis in this document conservatively assumes that both facilities will be used to store the full inventory.

3 BACKGROUND

In 2011, DOE issued the EIS, which evaluated the storage of up to 10,000 metric tons (11,000 tons) of elemental mercury in existing buildings, new buildings, or a combination of existing and new buildings, at eight locations: Grand Junction Disposal Site near Grand Junction, Colorado; Hanford Site near Richland, Washington; Hawthorne Army Depot near Hawthorne, Nevada; the Idaho Nuclear Technology and Engineering Center (INTEC) and Radioactive Waste Management Complex (RWMC) at Idaho National Laboratory near Idaho Falls, Idaho; Kansas City Plant in Kansas City, Missouri; Savannah River Site near Aiken, South Carolina; and Waste Control Specialists, LLC, site near Andrews, Texas. In the draft and final versions of the EIS, DOE announced its preferred alternative to be the WCS facility in Texas.

In 2013, DOE issued a supplement to the EIS, which evaluated three additional alternatives for a facility at and in the vicinity of the WIPP near Carlsbad, New Mexico (WIPP, WIPP Vicinity Section 10, WIPP Vicinity Section 20 and WIPP Vicinity Section 35). In the SEIS, DOE maintained its preferred alternative as WCS.

WCS has reported that they have the permitted capacity to manage and store an inventory of elemental mercury greater than 6,800 metric tons in existing buildings. Therefore, the preferred alternative from the EIS and SEIS can be implemented without construction of a new facility.

In response to an Expression of Interest published by DOE (DOE 2018a), WCS provided information about its existing facilities (WCS 2018). The response provides the following:

> "Waste Control Specialists has multiple structures permitted for storage of Resource Conservation and Recovery Act hazardous waste/materials. Two buildings, (1) Container Storage Building, and (2) Bin Storage Unit 1, can be made available for long-term management and storage of elemental mercury.
>
> Waste Control Specialists' permit allows for the storage of mercury in any container that has appropriate integrity. Current storage capacity is adequate for the projected amount of mercury. Our current permitted capacity at both the container storage building and bin storage unit 1 is 130,000 ft^3. This would be the equivalent of 12,500 metric tons of elemental mercury."

In July 2018, WCS submitted Revision 2 of an ER to the NRC to support a License Application for a CISF for commercial SNF. This CISF ER (ISP 2018) includes the most current information regarding the affected environment at the WCS site.

4 RESOURCE AREAS NOT EVALUATED IN THIS SA

This SA evaluates the same environmental resource areas that were considered in the EIS and SEIS. The proposed changes or new information will have no effect on certain resource areas. Therefore, the following resource areas are not analyzed in more detail this SA:

Resource Area Not Analyzed in Detail in this SA	Basis
Land use and visual resources	Based on the analysis in the 2018 CISF ER (ISP 2018), there is no new information that would substantively change the affected environment for land use and visual resources as described in Section 3.8.1 of the Elemental Mercury Storage EIS. There would be no exterior modifications to the RCRA-permitted facilities, although interior modifications would be performed to upgrade mechanical systems. The storage of up to 6,800 metric tons of elemental mercury at WCS would not impact existing land uses or the current view shed.
Geology, soils, and geologic hazards	Based on the analysis in the 2018 CISF ER (ISP 2018), there is no new information that would substantively change the affected environment for geology, soils, and geologic hazards as described in Section 3.8.2 of the EIS. There would be no exterior modifications to the RCRA-permitted facilities and no construction that would impact geologic resources. There would be no excavation or impacts to soils. As stated in the EIS, the existing CSB would be evaluated and structural upgrades implemented, as necessary, prior to use to comply with applicable seismic design criteria. This stipulation would also apply to the Bin Storage Unit 1. Therefore, neither of these existing buildings would be likely to suffer substantial structural damage from the maximum predicted earthquake at the site such that a breach in mercury containers would occur.
Water resources	Based on the analysis in the 2018 CISF ER (ISP 2018), there is no new information that would substantively change the affected environment for surface water or groundwater as described in Section 3.8.3 of the EIS. As stated in Section 4.9.3 of the EIS, "Use of and interior modification of the existing CSB would not have any impact on surface-water features." This statement would also apply to the existing Bin Storage Unit 1.

Resource Area Not Analyzed in Detail in this SA	Basis
Meteorology, air quality, and noise	Based on the analysis in the 2018 CISF ER (ISP 2018), there is no new information that would substantively change the affected environment for meteorology, air quality, and noise as described in Section 3.8.4 of the EIS. As of 2016, Andrews County, Texas, was still in attainment for all criteria pollutants. There would be no construction-related air quality impacts and no change in the potential operations-related air quality impacts as presented in the EIS. Short-term noise impacts in the EIS were mostly attributed to construction of the new facility. Since no new construction would be required under the current proposal, there would be no short-term noise impacts.
Ecological resources	Based on the analysis in the 2018 CISF ER (ISP 2018), there is no new information that would substantively change the affected environment for ecological resources as described in Section 3.8.5 of the EIS. The EIS evaluated potential impacts to terrestrial and aquatic resources, wetlands, and threatened and endangered species. For terrestrial resources, the EIS reported, "Since an existing building (i.e., the CSB) would be used for interim mercury storage, no land would be disturbed, and no terrestrial resources would be impacted." This statement would also apply to the existing Bin Storage Unit 1. The EIS made a similar statement regarding wetlands and aquatic resources for the CSB, which would also apply to Bin Storage Unit 1. DOE received one letter from the Texas Parks and Wildlife notifying DOE that the federal listing status of two species had changed since the issuance of the Draft EIS. Since the use of existing buildings at the WCS site would not impact ecological resources, this change to the federal listing status of two species would not affect the potential impacts presented in the Final Elemental Mercury Storage EIS or SEIS. There have been no reports of the existence of threatened or endangered species on the WCS site since issuance of the EIS (ISP 2018).
Cultural and paleontological resources	Based on the analysis in the 2018 CISF ER (ISP 2018), there is no new information that would substantively change the affected environment for cultural and paleontological resource as described in Section 3.8.6 of the EIS. The EIS evaluated potential impacts to prehistoric, historic, American Indian, and paleontological resources. The EIS

Resource Area Not Analyzed in Detail in this SA	Basis
	reported that neither the construction of a new facility of use of the CSB would result in impacts to any of these resources. The recent WCS License Application and CISF ER (ISP 2018) did not identify any other resources that could be impacted.
Site infrastructure	The EIS evaluated potential impacts to ground transportation and to use of electricity, fuel, and water. There is an existing onsite rail spur that serves the current WCS facilities, including the CSB and Bin Storage Facilities. The storage of elemental mercury in these facilities would not appreciably increase the impacts to ground transportation. Based on the analysis in the 2018 CISF ER (ISP 2018), there is no new information that would substantively change the affected environment for site infrastructure as described in Section 3.8.7 of the EIS. There would be no exterior modifications to the RCRA-permitted facilities, although interior modifications would be performed to upgrade mechanical systems. Since existing facilities would be used to store a smaller volume of elemental mercury than estimated in the 2011 analyses, the projected use of electricity, fuel, and water would be less than the amounts presented in the EIS.
Ecological risk	Based on the analysis in the 2018 CISF ER (ISP 2018), there are no substantial changes in environment conditions that could influence ecological risk as described in Section 3.8 of the EIS. In addition, Section 4.9.10 of the EIS indicates that the analysis of ecological risk is common among all evaluated alternatives. The reduction of the inventory of elemental mercury would result in a slight reduction in the probability of an accident that could affect ecological risk.
Socioeconomics	The use of an existing facility that requires minor interior modification as compared to construction of a new storage facility would reduce the construction employment numbers presented in the EIS. The operation of the existing facilities would likely require a similar workforce as reported in the EIS; five to eight employees, which would not have a significant impact on the socioeconomics of the region.
Environmental justice	The EIS evaluated potential impacts to environmental justice populations within a 10-mile radius of the site. Of the eight census blocks located within this radius, the EIS reported that one had a high minority population and none had a high low-income population (50 percent of the total population or 20 percentage points greater than the State or County percentage

Resource Area Not Analyzed in Detail in this SA	Basis
	for either minority or low-income populations). Within a smaller 2-mile radius, there were two census blocks, neither of which contained a high minority or low-income population. The SEIS updated the data related to environmental justice populations to reflect 2010 decennial census information and reported that none of the census blocks had a high minority population and none had a high low-income population. The more recent analysis conducted for the CISF ER (ISP 2018) also identified no minority or low-income populations exceeding 50 percent of the relevant block group or more than 20 percentage points greater than the state or county percentages within a 4-mile radius of the WCS site. As a result, there would be no increase in the environmental justice impacts as presented in the EIS.

There are two environmental resource areas that were evaluated in the EIS that require further review and discussion in this SA. They include: (1) waste management; and (2) occupational and public health and safety (normal operations, facility accidents, and transportation). These resource areas are addressed below.

5 RESOURCE AREAS EVALUATED IN THIS SA

As mentioned above, the following resource areas could be affected by the proposed change or new information associated with long-term management and storage of elemental mercury in existing buildings at the WCS facility near Andrews, Texas.

5.1 Waste Management

The EIS evaluated the potential impacts to waste generation and management and to waste minimization associated with the proposed interim storage of up to 2,000 metric tons of elemental mercury in the CSB, and long-term storage of 10,000 metric tons of elemental mercury in a newly constructed facility.

Section 4.9.8 of the EIS presents the potential impacts to waste management from the long-term management and storage of 10,000 metric tons of elemental mercury. It states that both modification and operation of the existing CSB for interim mercury storage at WCS are expected to have a negligible impact on waste generation and waste management infrastructure. Internal modification of the CSB for interim mercury storage is expected to generate much less than the 270 cubic meters (355 cubic yards) of nonhazardous solid waste and 9,850 liters (2,600 gallons) of nonhazardous sanitary liquid waste projected to be generated during construction of a new facility. Modifying the Bin Storage Unit 1 would be expected to have an impact similar to

modification of the CSB. Nevertheless, these volumes are negligible compared with the current waste generation and management activities at WCS. It is assumed that construction-generated solid waste would be disposed of off-site at the Lea County Landfill in New Mexico. The use of an additional existing facility (Bin Storage Unit 1) would not change the assessment in the EIS. WCS may use one or both facilities to store elemental mercury. However, the analysis in this document conservatively assumes that both facilities will be used to store the full inventory.

Per the EIS, operation of the elemental mercury storage facility (for storage of 10,000 metric tons) is expected to generate an estimated 910 55-gallon (208-liter) drums of hazardous waste over the 40-year operational period. This equates to about 23 55-gallon drums, or approximately five cubic meters (6.5 cubic yards) annually. This estimated yearly hazardous waste generation rate is minor (ranging from about 0.5 to 7 percent) compared with the hazardous waste volumes (which include mercury-contaminated waste) received and managed annually by WCS. WCS is a listed hazardous waste large-quantity generator. No changes in generator status would be required to operate the proposed elemental mercury storage facility, nor are any substantial effects on WCS's waste management infrastructure expected. The fact that storage of elemental mercury would take place in two facilities as opposed to a single new facility, would have little bearing on the hazardous waste volumes presented in the EIS. The reduction in projected inventory from 10,000 metric tons to 6,800 metric tons would result in an overall decrease in the amount of hazardous waste generated.

Per the EIS, operations (for storage of 10,000 metric tons) would also generate an estimated 2,360,000 liters (623,000 gallons) of nonhazardous sanitary waste over the 40-year period of analysis or 58,960 liters (15,575 gallons) annually. Nonetheless, operation of the existing facilities is not expected to result in a substantial increase in sanitary waste generation as the CSB and Bin Storage Unit 1 are already in operation for other purposes.

Since preparation of the EIS, there have been a few developments relevant to waste management at WCS. These changes would not contribute to direct waste management impacts, but are being discussed relative to potential cumulative impacts.

- DOE recently issued the *Environmental Assessment for the Disposal of Greater-Than-Class C (GTCC) Low-Level Radioactive Waste and GTCC-Like Waste at Waste Control Specialists, Andrews County, Texas* (DOE/EA-2082; DOE 2018b). This EA analyzed the DOE proposal to dispose of 12,000 cubic meters (420,000 cubic feet) of GTCC low-level radioactive waste (LLW) and GTCC-like waste in the Federal Waste Facility (FWF), a separate facility on the WCS Site. The full inventory of GTCC LLW and GTCC-like waste contains about 160 million curies of radioactivity.

- Currently, 258 transuranic (TRU) waste containers from the Los Alamos National Laboratory (LANL) are being safely stored at the WCS FWF in compliance with the TCEQ Radioactive Material License No. R04100. The LANL TRU waste containers are stored in a location that is segregated and separated by a berm from the licensed disposed wastes. The LANL TRU waste containers are being maintained in a monitored and safely retrievable storage configuration pending future decisions on permanent disposition. Any future decision related to these TRU waste containers would involve

WCS, DOE, and TCEQ and would include an evaluation of potential environmental impacts. (DOE 2018b)

- As reported in Section 3 of this SA, WCS submitted a License Application for interim storage of commercial SNF. The SNF would be stored on the WCS site.

The action of disposing of GTCC LLW and GTCC-like waste at the FWF would not have any additional incremental impact to waste management at the WCS site. It would not have a bearing on impacts from mercury storage. Similarly, the temporary storage of LANL TRU waste drums in the FWF would not have a bearing on waste management impacts related to the storage of mercury in the existing facilities.

The interim storage of commercial SNF could generate additional LLW, however, the incremental increases to the waste management impacts described in the Elemental Mercury Storage EIS would be minimal.

Since there would be no new construction and the existing facilities would be storing less elemental mercury over the 40-year analytical period, the potential impacts to waste management would be less than those impacts presented in the EIS. If both the CSB and Bin Storage Unit 1 were required, the impacts would still be less than those in the EIS.

5.2 Occupational and Public Health and Safety

The EIS evaluated potential impacts to occupational and public health and safety for: (1) normal operations, (2) facility accidents, and (3) transportation. The impacts in the EIS assumed storage of 10,000 metric tons of elemental mercury over a 40-year period. The SEIS updated these potential impacts to reflect changes in the definition of severity levels for assessing acute-inhalation exposures to the public under certain accident scenarios; however, the methodology and approach to conducting occupational and public health and safety analysis remained otherwise unchanged

5.2.1 Public and Occupational Health and Safety (Normal Operations)

The potential impacts to workers and the offsite public due to normal operations are presented in Section 4.9.9.1 of the EIS. The consideration of various health risks is common to all alternative storage sites evaluated in the EIS. The buildings would have to meet the permitting requirements for mercury storage, which would be verified by the regulator, TCEQ. Because of the design requirements of the building, consequences to the involved worker are predicted to be negligible, which would not change with the current proposal to store a smaller inventory in existing buildings.

For people outside the building during normal operations (noninvolved workers and members of the public), the EIS determined that a chronic, long-term release is bounded by consideration of a full spill tray under a pallet of 3-L flasks that remains undetected indefinitely (a highly conservative assumption given the expected inspection and monitoring activities within the storage building). The steady state release from this source of mercury vapor is assumed to leak from the building and to be mixed into its turbulent building wake. The predicted long-term

average concentration in the building wake for new construction is about 2.0×10^{-5} milligrams per cubic meter; for the CSB, about 3.0×10^{-5} milligrams per cubic meter. Bin Storage Unit 1 would have impacts similar to those of the CSB. These values are well below Environmental Protection Agency's chronic-inhalation-exposure reference concentration of 3.0×10^{-4} milligrams per cubic meter. Hence, consequences would be in the lowest severity level (SL-1), and the risk to both noninvolved workers and the public would be negligible.

Because the risks to individual noninvolved workers and the public would be negligible and below the chronic-inhalation-exposure reference concentration, the impacts of normal operations are not dependent on the number of people working or living near the facility. Therefore, any changes that have occurred in population surrounding the site would have no bearing on the impacts presented for normal operations in the EIS and SEIS.

5.2.2 Public and Occupational Health and Safety (Facility Accidents and Intentional Destructive Acts)

Section 4.2.9.1.4 of the EIS provides a discussion of facility accident risks that applies to all alternative sites. The nearest residence to the existing WCS storage facilities is approximately 5.4 kilometers (3.4 miles) away. The EIS reported that the risk to resident members of the public from an accident involving elemental mercury would be negligible. The SEIS identified updates to the definitions of severity levels. However, risks of facility accidents were still found to be negligible. This risk would be unchanged by the use of two facilities or by reduction in the projected inventory to be stored in the existing, permitted facilities. Potential consequences due to an intentional destructive act as presented in the EIS (Section 4.2.9.1.6) and SEIS would also be unchanged.

WCS plans to continue to store LLW and mixed LLW in the CSB while also storing elemental mercury. The CSB has 10 separate, bermed container storage areas, which would adequately segregate the different waste types to prevent interaction. WCS would comply with all applicable permit requirements for protecting the elemental mercury in storage and to minimize the potential for accidents, including for scenarios that would involve co-located LLW and mixed LLW.

5.2.3 Public and Occupational Health and Safety (Transportation)

Section 4.9.9.3 of the EIS provides the analytical results of the potential for impacts associated with transportation of 10,000 metric tons of elemental mercury. The EIS reports that the frequency of accidents with spills would be low under the two truck scenarios and negligible under the railcar scenario. Updates to these assumptions and impacts are provided in Appendix E of the SEIS. The frequency of crashes with fires or death would be negligible under all scenarios.

The use of two existing buildings at WCS would have no effect on the analysis presented in the EIS. The primary change that would affect potential transportation impacts is the greater than 30-percent reduction in the amount of mercury that would be transported to the Andrews, Texas site. Appendix D of the EIS (Section D.2.7) provides the assumptions used in the analysis, including the number of truck or rail shipments from each of the points of origin to WCS and the

resulting transportation distances. Appendix A of this SA provides the updated estimates of elemental mercury that would be shipped over the next 40 years. Under the action evaluated in this SA, the number of shipments and miles traveled would decrease by a similar amount as the decrease in mercury being transported, more than 30-percent. While this would not affect the consequence of an accident, if it were to occur, it would reduce the probability of an accident occurring by the same amount as the decrease in miles traveled. Potential consequences due to an intentional destructive act as presented in the EIS (Section 4.2.9.1.6) and SEIS would also be unchanged.

As reported in Section D.2.9 of Appendix D of the EIS, that analysis does not account for population densities. The estimated risks to members of the public from inhalation of elemental mercury are essentially individual risks, expressed as the predicted frequency with which an individual would be exposed to concentrations above safety threshold levels. As a result, any changes that have occurred in population density along the potential transportation routes would have no bearing on the impacts presented in the EIS and SEIS.

6 MITIGATION

Section 4.12 of the EIS and 4.5 of the SEIS provide summaries of the mitigation measures that could be used to avoid or reduce environmental impacts resulting from implementation of the Proposed Action. No mitigation measures were deemed to be required for implementation of the Proposed Action. The proposed changes in the WCS Storage Alternative and new information would not result in any changes to the mitigation measures identified in the EIS.

7 DETERMINATION

The long-term management and storage of up to 6,800 metric tons of elemental mercury in the CSB and Bin Storage Unit 1 at the WCS facility near Andrews, Texas, would not constitute a substantial change from the proposal evaluated in the EIS and updated in the SEIS. In accordance with NEPA, and the CEQ and DOE implementing NEPA regulations, DOE prepared this SA to evaluate whether the proposed change and/or new information requires supplementing the existing EIS or preparing a new EIS. DOE concludes that the proposed change and new information is not a substantial change relative to the proposal analyzed in the EIS as updated in the SEIS. Therefore, no further NEPA documentation is required.

JUN 0 3 2019

Anne Marie White
Assistant Secretary
for Environmental Management

Approved Date

8 REFERENCES

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ISP (Interim Storage Partners) 2018. *WCS Consolidated Interim Spent Fuel Storage Facility Environmental Report*. Docket No. 72-1050, Revision 2. https://www.nrc.gov/docs/ML1822/ML18221A405.html. July 19, 2018.

Roach, J. 2018. *Elemental Mercury Generation and Storage Current Status*, May 6, 2018. Preliminary Predecisional.

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Appendix A. Projected Inventory of Elemental Mercury

A.1 Estimated Mercury Inventory

DOE published the Elemental Mercury Storage EIS in response to the Mercury Export Ban Act, 2008 (MEBA), Public Law No. 110-414. Chapter 1, Section 1.3.1, of the Elemental Mercury Storage EIS provides information on the 10,000 MT (11,000 tons) of elemental mercury assumed to accumulate over 40 years. The SEIS used the same inventory. MEBA does not specify how long the DOE mercury storage facility would need to operate. For purposes of analysis in the EIS and the SEIS, DOE assumed the mercury storage facility would operate over a 40-year timeframe.

Since publication of the EIS and the SEIS, updated information has become available regarding current inventories of elemental mercury in storage, and projected annual generation rates from various sources. Table A-1 provides a summary of the total estimated amount of excess elemental mercury currently in storage in the United States (i.e., not being recycled or part of in-process inventories). This is based on updated information provided by the generators and permitted treatment/storage/disposal facilities, as well as the fixed inventory owned by the National Nuclear Security Administration (NNSA). The NNSA inventory is currently managed as a commodity and stored in a controlled environment at Y-12 on the Oak Ridge Reservation (Roach 2018).

Table A-1 Current U.S. Inventories of Elemental Mercury in Storage

Source	Quantity (MT)	Notes
Nevada ore processors	38	Estimated based on average monthly generation of about 9.5 MT, which is a conservative estimate.
Other U.S. ore processors	11	Estimated based on assumed annual generation of 6 MT (5 percent of Nevada ore processors) accumulated since passage of the Chemical Safety for the 21st Century Act in June 2016.
Commercial storage	301	Based on inventory information provided by commercial storage entities in early February 2018.
NNSA	1,206	For analysis purposes, this inventory is assumed eventually to be managed as waste. Some or all could remain a commodity depending on NNSA mission needs.
Total	1,560	Current inventory assumed subject to MEBA requirements. Rounded to three significant figures.

Note: To convert metric tons to tons, multiply by 1.1023.
Key: MEBA=2008 Mercury Export Ban Act; MT=metric tons; NNSA=National Nuclear Security Administration.
Source: Roach 2018

Table A-2 provides a summary of the estimated annual generation rates and the primary sources. It also includes the generation estimates and sources used in the EIS and the SEIS for comparison. The EIS and the SEIS assumed a total accumulation during a 40-year period of

10,000 MT (11,000 tons) of elemental mercury, which was rounded up from an actual estimated maximum total of 9,700 MT (10,700 tons).

Table A-2 Projections of Annual Generation of Elemental Mercury Subject to the MEBA

Source	Current Estimate	EIS Estimate	Notes
Nevada ore processors	120 MT/yr	127 MT/yr	The actual maximum estimated rate in the EIS was 122.5 metric tons (MT) per year, or 4,900 MT total, which is consistent with the current estimate. The additional 5 MT per year is due to rounding used in the 2011 EIS.
Other U.S. ore processors	6 MT/yr	1 MT/yr	Non-Nevada mining is assumed to represent about 5 percent of the elemental mercury generation.
Chlor-alkali plants	0 MT/yr	27 MT/yr	The EIS assumed that a total of 1,100 MT would be shipped to the DOE storage facility in the first seven years of operation. In this table, the elemental mercury is distributed over a 40-year period for consistency. Current information indicates that the Chlor-Alkali plants are dispositioning excess elemental mercury using Canadian facilities and, therefore, would not be stored at a DOE facility.
Recycling and reclamation	5 MT/yr	63 MT/yr	The EIS estimated a 40-year total of 2,500 MT. Based on current data, no excess mercury is being generated as a result of these activities; however, a small quantity is included to account for uncertainty.
Total annual generation	130 MT/yr	220 MT/yr	Reported to only two significant digits due to uncertainty in the estimates.
Total currently accumulated	1,560 MT	1,200 MT	The 1,560 MT is from Table 1-1 and includes all stored mercury. The EIS only accounted for the NNSA inventory in storage.
40-year Total	6,760 MT	10,000 MT	The current estimate is considered conservative based on the available information. Nevertheless, it represents about a 33-percent reduction from the EIS.

Note: To convert metric tons to tons, multiply by 1.1023.
Key: MT=metric tons; NNSA=National Nuclear Security Administration; yr=year.
Source: Roach 2018

This SA evaluates management and storage of approximately 6,800 MT of mercury for 40 years. These are estimates with a degree of uncertainty; therefore, it is possible that more or less than 6,800 MT of elemental mercury could eventually require storage for a period longer or shorter than 40 years. Additional NEPA documentation could be required to expand the commercial elemental mercury storage facility(ies) to accept more than 6,800 MT of mercury or extend its operations beyond the 40-year period of analysis.[2]

[2] The EIS and the SEIS analyzed storage of 10,000 MT (11,000 tons) of elemental mercury for 40 years.