5.14 Waste Management

5.14.1 Introduction

The Hidden Hills Solar Electric Generating System (HHSEGS) will be located on privately owned land in Inyo County, California, adjacent to the Nevada border. It will comprise two solar fields and associated facilities: the northern solar plant (Solar Plant 1) and the southern solar plant (Solar Plant 2). Each solar plant will generate 270 megawatts (MW) gross (250 MW net), for a total net output of 500 MW. Solar Plant 1 will occupy approximately 1,483 acres (or 2.3 square miles), and Solar Plant 2 will occupy approximately 1,510 acres (or 2.4 square miles). A 103-acre common area will be established on the southeastern corner of the site to accommodate an administration, warehouse, and maintenance complex, and an onsite switchyard. A temporary construction laydown and parking area on the west side of the site will occupy approximately 180 acres.

Each solar plant will use heliostats—elevated mirrors guided by a tracking system mounted on a pylon—to focus the sun's rays on a solar receiver steam generator (SRSG) atop a tower near the center of each solar field. The solar power tower technology for the HHSEGS project design incorporates an important technology advancement, the 750-foot-tall solar power tower. One principle advantage of the HHSEGS solar power tower design is that it results in more efficient land use and greater power generation. The new, higher, 750-foot solar power tower allows the heliostat rows to be placed closer together, with the mirrors at a steeper angle. This substantially reduces mirror shading and allows more heliostats to be placed per acre. More megawatts can be generated per acre and the design is more efficient overall.

In each solar plant, one Rankine-cycle steam turbine will receive steam from the SRSG (or solar boiler) to generate electricity. The solar field and power generation equipment will start each morning after sunrise and, unless augmented, will shut down when insolation drops below the level required to keep the turbine online. Each solar plant will include a natural-gas-fired auxiliary boiler, used to augment the solar operation when solar energy diminishes or during transient cloudy conditions, as well as a startup boiler, used during the morning startup cycle, and a nighttime preservation boiler, used to maintain system temperatures overnight. On an annual basis heat input from natural gas will be limited by fuel use and other conditions to less than 10 percent of the heat input from the sun.

To save water in the site's desert environment, each solar plant will use a dry-cooling condenser. Cooling will be provided by air-cooled condensers, supplemented by a partial dry-cooling system for auxiliary equipment cooling. Raw water will be drawn daily from onsite wells located in each power block and at the administration complex. Groundwater will be treated in an onsite treatment system for use as boiler make-up water and to wash the heliostats.

Two distinct transmission options are being considered because of a unique situation concerning Valley Electric Association (VEA). Under the first option, the project would interconnect via a 230-kilovolt (kV) transmission line to a new VEA-owned substation

(Tap Substation) at the intersection of Tecopa Road[1] and Nevada State Route (SR) 160 (the Tecopa/SR 160 Option). The other option is a 500-kV transmission line that interconnects to the electric grid at the Eldorado Substation (the Eldorado Option), in Boulder City, Nevada.

A 12- to 16-inch-diameter natural gas pipeline will be required for the project. It will exit the HHSEGS site at the California-Nevada border and travel on the Nevada side southeast along the state line, then northeast along Tecopa Road until it crosses under SR 160. From this location a 36-inch line will turn southeast and continue approximately 26 miles, following the proposed Eldorado Option transmission line corridor, to intersect with the Kern River Gas Transmission (KRGT) pipeline. A tap station will be constructed at that point to connect it to the KRGT line. The total length of the natural gas pipeline will be approximately 35.3 miles.

The transmission and natural gas pipeline alignments will be located in Nevada, primarily on federal land managed by the U.S. Bureau of Land Management (BLM), except for small segments of the transmission line (both options) in the vicinity of the Eldorado Substation, which is located within the city limits of Boulder City, Nevada. A detailed environmental impact analysis of the transmission and natural gas pipeline alignments will be prepared by BLM.

This section is organized as follows: Section 5.14.2 describes the waste management laws, ordinances, regulations, and standards (LORS) that may apply to the project. A discussion of existing conditions in the project area (affected environment) is included in Section 5.14.3. The environmental analysis to determine potential impacts and potential cumulative impacts from waste management as a result of construction and operation of the project are provided in Sections 5.14.4 and 5.14.5, respectively. Mitigation measures proposed for the project are provided in Section 5.14.6. Permits and schedules and the references cited in the preparation of this section are listed in Sections 5.14.8 and 5.14.9, respectively.

5.14.2 Laws, Ordinances, Regulations, and Standards

Waste handling at HHSEGS will be governed by federal, state, and local laws. Applicable laws and regulations address proper waste handling, storage, and disposal practices to protect the environment from contamination and protect facility workers and the surrounding community from exposure to both nonhazardous and hazardous waste. The LORS applicable to waste handling at the HHSEGS facility are summarized in Table 5.14-1. Because of the site's location on the state border, it is possible that HHSEGS-related wastes could be disposed of in either California or Nevada; therefore, applicable LORS for both California and Nevada are provided. The project will comply with all applicable LORS.

[1] The road is also called Tecopa Highway and Old Spanish Trail Highway. The names are generally used interchangeably.

TABLE 5.14-1
Laws, Ordinances, Regulations, and Standards Applicable to Waste Management

LORS	Requirements/Applicability	Administering Agency	AFC Section Explaining Conformance
Federal			
Resource Conservation and Recovery Act (RCRA) Subtitle D	Regulates design and operation of solid waste landfills. HHSEGS solid waste will be collected and disposed of by a collection company in conformance with Subtitle D.	California Department of Resources Recycling and Recovery (CalRecycle); Nevada Department of Environmental Protection (NDEP), Solid Waste Branch	Sections 5.14.2.1, 5.14.2.2, 5.14.4.2.1, and 5.14.6
RCRA Subtitle C	Regulates storage, treatment, and disposal of hazardous waste. Hazardous waste will be handled by contractors in conformance with Subtitle C.	Department of Toxic Substances Control (DTSC)	Sections 5.14.2.1, 5.14.4.2.2, and 5.14.6
Clean Water Act (CWA)	Regulates discharge of wastewater to the surface waters of the U.S. HHSEGS will discharge sanitary wastewater to an onsite septic tank and leach field that will comply with CWA requirements.	Regional Water Quality Control Board	Sections 5.14.4.2, 5.14.2.1, and Section 5.15
State			
California Integrated Waste Management Act (CIWMA)	Regulates solid waste collectors, recyclers, and depositors. HHSEGS solid waste will be collected and disposed of by a collection company in conformance with the CIWMA.	CalRecycle; Inyo County Department of Environmental Health Services	Sections 5.14.2.2, 5.14.4.2.1, 5.14.5, and 5.14.7
California Hazardous Waste Control Law (HWCL)	Regulates storage, treatment, and disposal of hazardous waste. Hazardous waste will be handled by contractors in conformance with the HWCL.	DTSC	Sections 5.14.2.2, 5.14.4.1.1.3, 5.14.4.2.2.3, 5.14.4.2.2, 5.14.4.3.2.2, and 5.14.7
Nevada Hazardous Materials (Nevada Revised Statutes [NRS] 459)	Governs the disposal, transportation, packing and labeling of hazardous waste in a manner consistent with regulations issued by the United States Department of Transportation relating to hazardous waste;	NDEP Bureau of Waste Management	Section 5.14.2.2

TABLE 5.14-1
Laws, Ordinances, Regulations, and Standards Applicable to Waste Management

LORS	Requirements/Applicability	Administering Agency	AFC Section Explaining Conformance
Porter-Cologne Water Quality Control Act	Controls discharge of wastewater to the surface and ground waters of California. HHSEGS will treat sanitary wastewater with an onsite septic tank and leach field.	Regional Water Quality Control Board	Sections 5.14.2.2, 5.14.4.1.1.2, 5.14.4.1.2.2, 5.14.4.3.2.1 and Section 5.15
California Fire Code	Controls storage of hazardous materials and wastes and the use and storage of flammable/combustible liquids. Wastes will be accumulated and stored in accordance with Fire Code requirements. Permits for storage containers will be obtained, as needed, from the Inyo County Department of Environmental Health Services.	Southern Inyo Fire District; Inyo County Department of Environmental Health Services	Sections 5.14.2.3, 5.14.2.4, and Section 5.16
Hazardous Materials/Waste Transportation Laws (49 CFR Parts 100 to 185, 49 USC 5101 et seq.)	Transportation of hazardous materials, including waste, is regulated under the United States Department of Transportation's Pipeline and Hazardous Materials Safety Administration in accordance with regulations in CFR Title 49, Parts 100 to 185. Only licensed carriers and certified haulers will be used to transport waste to and from the project site.	California Department of Motor Vehicles; Nevada Department of Motor Vehicles and Public Safety	Section 5.14.2.2
Local			
Construction and Demolition Debris Diversion Program (Inyo County Code, Title 7, Chapter 7.11)	Monitoring and Diversion of Construction and Demolition Debris, Inyo County Code, Title 7, Chapter 7.11 - All construction, demolition, and renovation projects within Inyo County, for which a building permit is required, shall comply with this requirement if they exceed eighteen cubic yards per day of generated construction and demolition debris.	Inyo County Integrated Waste Management Department	Section 5.14.2.3

5.14.2.1 Federal LORS

Wastewater is regulated by the U.S. Environmental Protection Agency (EPA) under the Clean Water Act (CWA). Sanitary wastewater will be treated with an onsite septic tank system and leach field (see Section 5.15, Water Resources).

The federal statute that controls both nonhazardous and hazardous waste is the Resource Conservation and Recovery Act (RCRA), 42 USC 6901, et seq. RCRA's implementing regulations for hazardous waste are found at 40 CFR 260, et seq. and for nonhazardous waste at 40 CFR 239 et seq. HHSEGS will comply with this law in its generation, storage, transport, and disposal of any solid or hazardous waste generated at the facility. EPA has delegated its authority for implementing the law to the State of California and the State of Nevada.

5.14.2.2 State LORS

In California, nonhazardous solid waste is regulated by the California Integrated Waste Management Act (CIWMA) of 1989, found in Public Resources Code (PRC) Section 40000, et seq. This law provides an integrated statewide system of solid waste management by coordinating state and local efforts in source reduction, recycling, and land disposal safety. Counties are required to submit Integrated Waste Management Plans to the state. These county and statewide plans are required to meet the minimum federal standards provided by RCRA Subtitle D and its implementing regulations. This law directly affects Inyo County and the solid waste hauler and disposer that will collect solid waste from the HHSEGS; a disposal facility not located in California will not be regulated by Inyo County or by the State of California, but by its own local and state agencies. It also affects the HHSEGS to the extent that hazardous wastes are not to be disposed of with solid waste.

Wastewater is regulated by the State Water Resources Control Board and Regional Water Quality Control Boards under the Porter-Cologne Water Quality Control Act in California. Sanitary wastewater will be treated with an onsite septic tank system and leach field. Stormwater will be managed as described in Section 5.15, Water Resources.

RCRA allows states to develop their own programs to regulate hazardous waste. The programs must be at least as stringent as RCRA. California has developed its own program in the California Hazardous Waste Control Law (HWCL) (Health and Safety Code Section 25100, et seq.). The HWCL performs essentially the same regulatory functions as RCRA and is the law that will regulate hazardous waste at HHSEGS, since California has elected to develop its own program. However, the HWCL also classifies certain wastes as hazardous that are not classified as hazardous waste under RCRA (these wastes are referred to as "California-only" wastes). Because hazardous wastes will be generated at the HHSEGS facility during construction and operation, the HWCL will require the Applicant to adhere to storage, recordkeeping, reporting, and training requirements for these wastes.

The Nevada Department of Environmental Protection (NDEP) Bureau of Waste Management (BWM) manages solid and hazardous waste in Nevada, and promotes waste reduction, reuse, and recycling. The BWM is composed of two regulatory branches: the hazardous waste management branch and the solid waste management branch. Included within the solid waste branch is the recycling program. Nevada Revised Statutes (NRS, which are state laws) and the Nevada Administrative Code (NAC, which are the code of state regulations) applicable to solid waste disposal include NRS 444.440 to 444.645 and NAC 444.570 to 444.7499, and NRS 444A.010 to 444A.110 and NAC 444A.005 to 444A.470 for recycling (NDEP, 2011). Additionally, NRS 459.400 to 459.600 and NAC 444.965 to 444.976 address facilities for management of hazardous waste (NDEP, 2011). Because solid and hazardous wastes will be generated and recycled at the HHSEGS facility during

construction and operation and due to the site's location on the state border, it is possible that HHSEGS-related wastes could be disposed of in either California or Nevada; therefore, the Applicant will adhere to these requirements for transportation and disposal of wastes to facilities in Nevada.

In both California and Nevada, transportation of hazardous materials, including waste, is regulated under the United States Department of Transportation's (DOT) Pipeline and Hazardous Materials Safety Administration in accordance with regulations in CFR Title 49, Parts 100 to 185. At the state level, the California Department of Motor Vehicles (California DMV) and the Nevada Department of Motor Vehicles and Public Safety (Nevada DMV) controls the licensing and regulation of commercial carriers throughout their states. The California Highway Patrol (CHP) and Nevada Highway Patrol (NHP) enforce highway transportation regulations in their states. Hazardous materials and waste haulers must be certified by the respective DMV. California DMV and Nevada DMV administer the licensing and regulation of commercial carriers throughout the state. Only licensed carriers and certified haulers will be used to transport waste to and from the project site.

5.14.2.3 Local LORS

The Inyo County Department of Environmental Health Services will have the responsibility for administering and enforcing the CIWMA for solid, nonhazardous waste for the HHSEGS project (Lanshaw, 2011). The Inyo County Integrated Waste Management Department manages solid waste in Inyo County, operates landfills in Inyo County, and promotes waste reduction, reuse, and recycling.

The Inyo County Integrated Waste Management Department operates a Construction and Demolition Debris Diversion Program pursuant to Inyo County Code, Title 7, Chapter 7.11 (Lanshaw, 2011). Under this program, all construction, demolition, and renovation projects within Inyo County, for which a building permit is required, shall comply with these requirements if they exceed eighteen cubic yards per day of generated construction and demolition debris. During the project, the contractor will be responsible for compliance with Chapter 7.11 of the Inyo County Code, regarding diversion of construction and demolition debris. Consistent with the Inyo County Code, the contractor shall separate material that can reasonably be diverted and for which local markets are available, including appliances, dimensional lumber, concrete, brick, asphalt, cardboard, scrap metal, wood waste, vegetative waste, and roofing material.

For hazardous waste, local regulations consist primarily of the administration and enforcement of the HWCL. The Inyo County Department of Environmental Health Services is the designated Certified Unified Program Agency (CUPA) for Inyo County (Long, 2011).

5.14.2.4 Codes

The design, engineering, and construction of hazardous waste storage and handling systems will be in accordance with all applicable codes and standards, including:

- The Uniform Fire Code
- The Uniform Building Code
- The Uniform Plumbing Code

- California Building Code
- California Fire Code

5.14.3 Affected Environment

A Phase I Environmental Site Assessment (ESA) was conducted by Ninyo and Moore in accordance with the ASTM Standard E 1527-05, Standard Practice for Environmental Site Assessments.

The ESA covered approximately 3,900 acres, composed of 172 undeveloped, vacant parcels of land, located in the northwest corner of the intersection of Tecopa Road (referred to as Old Spanish Trail Highway in the ESA) and Gold Street in Inyo County, California. The subject parcels have no assigned addresses and based on review of historical sources, the parcels have not been previously developed, with the exception of a small portion in the south-central portion of the site that was formerly used as an orchard (Ninyo and Moore, 2011). The area in the general vicinity of the site consists of undeveloped land and residential ranch properties. The site is bordered to the south by the Tecopa Road, to the west by unpaved Quartz Street, to the north by the California-Nevada border, and to the east by Gold Street (Ninyo and Moore, 2011).

During the site reconnaissance, six existing groundwater wells were identified: four located on the southern boundary of the site along Tecopa Road; and two located on the northeast portion of the site. Five of the wells have no downhole pumps installed and four of these wells are open to the surface with no permanent well caps installed. The remaining well, located in the former orchard area, has a downhole, submersible pump. Groundwater samples from the orchard well were taken and no groundwater contaminants of concern were noted (Ninyo and Moore, 2011).

Historical debris and trash piles were noted on the north-central portion of the site, in addition to a small quantity of general solid waste, primarily along Tecopa Road. Irrigation piping debris was noted in the former orchard area. No drums, unidentified substance containers, or other evidence of the storage or disposal of hazardous substances or petroleum products were observed on the site (Ninyo and Moore, 2011).

Two abandoned and non-useable aboveground storage tanks (ASTs), approximately 4,000 gallons each and labeled "fire water", are located along the southern boundary of the site, to the east of the former orchard. No evidence of additional ASTs or underground storage tanks was identified on the site (Ninyo and Moore, 2011).

The report stated that review of environmental databases and records indicated that there are no facilities located on the project site and/or in the vicinity of the site that have handled hazardous materials or petroleum products, nor have reported releases of these materials (Ninyo and Moore, 2011).

As a result of the assessment, no recognized environmental conditions were identified at the project site. The following conditions were noted in the report as non-ASTM 1527-05 issues (Ninyo and Moore, 2011):

- Removal and disposal of the historical debris and trash piles in accordance with applicable federal and state regulations is recommended

- Onsite groundwater wells that are not suitable for monitoring purposes and/or production are recommended for abandonment in accordance with applicable federal and state regulations. Wells that are to be used for monitoring purposes but do not have a permanent, sealed wellhead should have proper wellheads installed to minimize potential contamination pathways.

A copy of the Phase I ESA report is included in Appendix 5.14A.

5.14.4 Environmental Analysis

5.14.4.1 Project Waste Generation

Wastewater, solid nonhazardous waste, and hazardous liquid and solid wastes will be generated at the HHSEGS site during facility construction and operation.

5.14.4.1.1 Construction Phase

During construction, the primary waste generated will be solid nonhazardous waste. However, some nonhazardous liquid waste and hazardous waste (solid and liquid) will also be generated. The types of waste and their estimated quantities are described below and summarized in Table 5.14-2.

TABLE 5.14-2
Potential Wastes Generated during the Construction Phase at the HHSEGS Facility

Waste	Origin	Composition	Estimated Quantity	Classification	Disposal
Scrap wood, steel, glass, plastic, paper, calcium silicate insulation, mineral wool insulation	Construction of facility	Normal refuse	180 tons	Non-hazardous	Recycle and/or dispose of in a Class II or III landfill
Scrap Metals	Construction of facility	Parts, containers	1 ton per month during construction	Non-hazardous	Recycle and/or dispose of in a Class III landfill
Unused concrete	Construction (power tower and building foundations)	Rock, sand, cement	Less than 1,000 pounds per month during construction	Non hazardous (dry)	Recycle or dispose of in a Class III landfill.
Empty hazardous material containers	Construction of facility	Drums, containers, totes	100 containers*	Hazardous and non-hazardous solids	Containers < 5 gallons will be disposed as normal refuse. Containers > 5 gallons will be returned to vendors for recycling or reconditioning
Spent welding materials	Construction of facility	Solid	1 ton	Hazardous	Disposal at a Class I landfill
Waste oil filters	Construction equipment and vehicles	Solids	200 pounds per month	Non-hazardous	Recycle at a permitted treatment, storage, and disposal facility (TSDF)

TABLE 5.14-2
Potential Wastes Generated during the Construction Phase at the HHSEGS Facility

Waste	Origin	Composition	Estimated Quantity	Classification	Disposal
Used and waste lube oil	ST lube oil flushes and equipment vehicles	Hydrocarbons	12,000 gallons (life of project construction)	Hazardous	Recycle at a permitted TSDF
Oily rags, oil sorbent excluding lube oil flushes	Cleanup of small spills	Hydrocarbons	3,000 pounds during construction	Hazardous	Recycle or dispose at a permitted TSDF
Solvents, paint, adhesives	Construction of facility	Varies	180 pounds per month	Hazardous	Recycle at a permitted TSDF
Spent lead-acid batteries	Equipment and Trucks	Heavy metals	10 batteries per year	Hazardous	Store no more than 10 batteries (up to 1-year) - Recycle offsite
Spent alkaline batteries	Equipment	Metals	50 batteries per month	Universal Waste solids	Recycle or dispose offsite at a Universal Waste Destination Facility
Steam turbine cleaning waste	Pre-boiler piping	Corrosive cleaning chemicals	200 gallons before plant startup	Hazardous or non-hazardous liquid	Dispose at a permitted TSDF
Sanitary waste	Portable toilet holding tanks	Sewage sludge	Approx. 200 gallons per day	Non-Hazardous Liquid	Remove by contracted sanitary service
Fluorescent, mercury vapor lamps	Lighting	Metals and polychlorinated biphenyls (PCBs)	100 pounds per year	Universal Waste solids	Recycle or dispose offsite at a Universal Waste Destination Facility
Passivating and chemical cleaning fluid waste	Pipe cleaning and flushing	Varies	200,000 to 400,000 gallons (life of project construction)	Hazardous or non-hazardous liquid	Sample and characterize—if clean (meets regulatory standards), discharge to the surrounding area or use for dust control; otherwise, manage appropriately offsite
Hydrotest water	Testing equipment and piping integrity	Water	400,000 gallons (life of project construction)	Hazardous or non-hazardous liquid	Sample and characterize—if clean, (meets regulatory standards) discharge to the surrounding area or use for dust control; otherwise, manage appropriately offsite (see Section 5.15)

*Containers include < 5-gallon containers and 55-gallon drums or totes

Nonhazardous Solid Waste

Listed below are nonhazardous waste streams that could potentially be generated during HHSEGS construction.

Paper, Wood, Glass, Plastics, and Concrete. Paper, wood, glass, and plastics will be generated from packing materials. In addition, waste concrete, waste lumber, insulation, and empty nonhazardous chemical containers will also be generated. Approximately 7.5 tons of these wastes will be generated on a monthly basis during project construction. These wastes will be recycled where practical. Waste that cannot be recycled will be disposed of weekly in a Class III landfill. Onsite, the waste will be placed in dumpsters.

Metal. Metal will include steel from welding/cutting operations, packing materials, and empty nonhazardous chemical containers. Aluminum waste will be generated from packing materials and electrical wiring. Approximately 24 tons of waste metal (based on 2,000 pounds per month over 24 months[2]) will be generated during construction. Waste will be recycled where practical and non-recyclable waste will be deposited in a Class III landfill.

Nonhazardous Wastewater

Nonhazardous wastewater will be generated, including sanitary wastewater, stormwater runoff, and wastewater from pressure testing the gas supply line. Sanitary waste will be collected in portable, self-contained toilets. Stormwater runoff will be managed in accordance with the contractor-developed stormwater pollution prevention plan (SWPPP) that will be approved by the appropriate agencies prior to the start of construction (see Appendix 5.15A for the Construction SWPPP).

The gas supply pipeline hydrostatic test water will be filtered to collect any sediment and welding fragments. The water will be collected, tested, and disposed of by the pipeline contractor.

Hazardous Waste

The majority of the hazardous waste generated during construction will consist of liquid waste, such as flushing and cleaning fluids, passivating fluid (to prepare pipes for use), and solvents. Some hazardous solid waste, such as welding materials, will also be generated.

Flushing and cleaning waste liquid will be generated when pipes and boilers are cleaned and flushed. Passivating fluid waste is generated when high temperature pipes are treated with either a phosphate or nitrate solution. The volume of flushing and cleaning and passivating liquid waste generated is estimated to be one to two times the internal volume of the pipes cleaned. The quantity of welding, solvent, and paint waste is expected to be minimal.

The construction contractor will be considered the generator of hazardous construction waste and will be responsible for proper handling of hazardous waste in compliance with all applicable federal, state, and local laws and regulations, including licensing, personnel training, accumulation limits and times, and reporting and recordkeeping. The hazardous waste will be collected in satellite accumulation containers near the points of generation. It will be moved daily to the contractor's 90-day hazardous waste storage area, located at the

[2] Construction is anticipated to last 29 months, however the initial 4-5 months of grubbing/clearing etc. is not anticipated to generate appreciable metal waste.

site construction laydown area. The waste will be removed from the site by a certified hazardous waste collection company and delivered to an authorized hazardous waste management facility, prior to expiration of the 90-day storage limit.

5.14.4.1.2 Operation Phase

During HHSEGS operation, the primary waste generated will be nonhazardous solid waste. However, varying quantities of both solid and liquid hazardous waste will also be generated periodically. The types of waste and their estimated quantities are discussed below.

Nonhazardous Solid Waste

The majority of nonhazardous waste will be condensate polishing vessels and deionization trailers from the onsite water treatment unit. HHSEGS will also produce maintenance and generating facility wastes, typical of power generation operations. These will include rags, broken and rusted metal and machine parts, defective or broken electrical materials, empty containers, the typical refuse generated by workers and small office operations, and other miscellaneous solid wastes. The quantity generated is estimated to be about 235 tons per year excluding sewer sludge. Large metal parts will be recycled.

Nonhazardous Wastewater

A water balance diagram is provided in Figure 2.2-4. It illustrates the expected wastewater streams and flow rates for the HHSEGS facilities.

In addition, sanitary wastewater from sinks, toilets, and other sanitary facilities will be collected and discharged to an onsite septic tank with overflow into a leach field. The septic tank system will be serviced as needed by a sanitary service provider.

Stormwater runoff will be managed in accordance with the site specific SWPPP.

Plant Drains-Oil/Water Separator. General facility drainage will consist of plant raw water use such as equipment washwater, equipment leakage, and drainage from facility equipment areas. If cleaning chemicals are not used, water from these areas will be collected in a system of drains, hub drains, sumps, and piping and routed to the oil/water separator, and then to the waste collection tank. From there, the water will flow through a filter system to thermal evaporators. Remaining wastewater (approximately 1,358 gallons per day) will be disposed of offsite at an approved facility.

Hazardous Waste

Hazardous waste generated at the site will include waste lubricating oil, used oil filters, and chemical cleaning wastes. They will consist of alkaline and acidic cleaning solutions used during chemical cleaning of the boiler system turbine. These wastes generally contain high concentrations of heavy metals and will be collected for offsite disposal.

Nonhazardous and hazardous wastes that potentially would be generated at the facility are summarized in Table 5.14-3.

TABLE 5.14-3
Potential Wastes Generated during HHSEGS Operation

Waste	Origin	Composition	Estimated Quantity	Classification	Disposal
Lubricating oil	Small leaks and spills from the steam turbine lubricating oil system and routine maintenance of the steam turbine	Hydrocarbons	200 gallons per steam turbine, or 600 gallons per maintenance event	Hazardous	Recycled by certified oil recycler
Lubricating oil filters	Steam turbine lubricating oil system	Paper, metal, and hydrocarbons	1,500 pounds per year	Hazardous	Recycled by certified oil recycler
Solvents, paint, adhesives	Operation of facility	Varies	180 pounds per month	Hazardous	Recycle at a permitted TSDF
Deionization Trailer unit	Water Treatment Process	Metal and resins	Trailers will be changed out every 2 weeks	Non-Hazardous	Recycled by water treatment manufacturer
Condensate polishing vessels	Water Treatment Process	Metal and resins	Vessels will be changed out every 2 weeks	Non-Hazardous	Recycled by water treatment manufacturer
Oily rags	Maintenance, wipe down of equipment, etc.	Hydrocarbons, cloth	900 pounds per year (~800 rags per year)	Hazardous	Recycled by certified oil recycler
Oil sorbents	Cleanup of small spills	Hydrocarbons	600 pounds per year	Hazardous	Recycled or disposed of by certified oil recycler
Operating Area Wash Down	Evaporator System concentrate derived from plant oily wash down water (wash down is first treated by O/W separator)	Detergents, Soluble oil, suspended solids	679 gallons per day for each power Station/field (combined total of 1,358 gallons/day)	Non-Hazardous	Transported off-site for disposal by certified solid waste treatment facility
Onsite sanitary sewage treatment system	Sanitary wastewater will be discharged to an onsite septic tank and overflow into an underground leach field	Sanitary wastewater	700 gallons per day for each power station/field	Non-Hazardous	Contents of septic tank will be removed by sanitary hauler as needed

5.14.4.2 Waste Disposal Sites

Nonhazardous solid waste (often referred to as solid waste, municipal solid waste, or garbage) will be recycled or deposited in a Class III landfill. Hazardous wastes, both solid and liquid, will be delivered to a permitted offsite TSDF for treatment or recycling or

deposited in a permitted Class I landfill. The following subsections describe the waste disposal sites feasible for disposal of HHSEGS wastes.

5.14.4.2.1 Nonhazardous Waste

One solid waste non-exclusive service provider to the HHSEGS project site is C & S Waste Solutions' Pahrump Valley Disposal in Pahrump, Nevada, (Lanshaw, 2011). The Inyo County Integrated Waste Management Department also has several franchises with haulers that serve the area around the project site, including Pahrump Valley Disposal, Preferred Disposal, Ben's Sanitation (Tehachapi), and Ridgecrest Sanitation (Lanshaw, 2011).

Trucks may transport garbage to Sloan Transfer Station, located approximately 30 miles from the HHSEGS site in Clark County, Nevada. Sloan Transfer Station serves as a transfer point that services the Apex Regional Landfill on the north side of Las Vegas, Clark County, Nevada, approximately 50 miles northwest of the Sloan Transfer Station and approximately 80 miles northeast of the project site (SWMA, 2011). Both facilities are owned and operated by Republic Services. Additionally, the Inyo County Integrated Waste Management Department operates Tecopa Landfill, located 1 mile east of Tecopa, California, on Tecopa Road, approximately 20 miles west of the project site. Tecopa Landfill can accept mixed municipal waste, construction and demolition waste, and green materials (CalRecycle, 2011a).

Table 5.14-4 provides additional details regarding solid waste disposal facilities in the vicinity of the project site.

TABLE 5.14-4
Solid Waste Disposal Facilities in the Vicinity of the HHSEGS Site

Landfill/MRF/ Transfer Station	Location	Class	Permitted Capacity (cubic yards)	Remaining Capacity (cubic yards)	Permitted Throughput (tons per day)	Estimated Closure Date	Enforcement Actions Taken
Republic Services Sloan Transfer Station [a]	Clark County, NV (Outside of Sloan, NV)	N/A	No Cap	No Cap	No Cap	N/A	None
Apex Regional Landfill [a]	Clark County, NV (Outside of Las Vegas, NV)	I	5,967,744	4,840,019	No Cap	1/1/2175	None
Tecopa Landfill [b]	Tecopa, CA	III	119,090	37,048	1	12/31/2150	Yes [c]

[a]Nevada information from Southern Nevada Health District Solid Waste and Compliance (SWMA, 2011).

[b]California information from CalRecycle Solid Waste Information System Database (SWIS) (CalRecycle, 2011a).

[c]Tecopa Landfill received a violation on 03/08/2011 for Title 27 full permit review (permit review is past due), and has a current enforcement action for permit review application with required compliance by 04/01/2011. Operator has submitted a signed application and will submit the updates in the near future (CalRecycle, 2011a).

5.14.4.2.2 Hazardous Waste

Hazardous waste generated at HHSEGS will be stored at the facility for less than 90 days. The waste will then be transported by a licensed hazardous waste transporter to a TSDF. Some of these facilities can only store waste, some can treat the waste to recover usable products, and others can dispose of the waste by incineration, deep-well injection, or landfilling. (Incineration and deep-well injection are not currently permitted in California.) Hazardous waste facilities with capacity to accept HHSEGS waste are listed below.

California

According to the DTSC, 61 facilities in California can accept hazardous waste for treatment or recycling (DTSC, 2011). For disposal purposes, California has the following three hazardous waste (Class I) landfills.

Chemical Waste Management, Inc. Kettleman Hills Landfill

This facility accepts Class I, II and III waste. Kettleman Hills operates both hazardous and nonhazardous waste landfills at its facility. Currently, the hazardous waste landfill, identified as B-18 Landfill, is permitted for and will accept all hazardous wastes except radioactive, medical, and unexploded ordnance. As of December 2007, the B-18 Landfill had a remaining capacity of 1.5 million cubic yards out of the total 10.7 million cubic yards of capacity (CalRecycle, 2011a). However, an expansion of the B-18 Landfill and a new hazardous waste landfill at Kettleman Hills (B-20) is currently in the permitting phase (WM, 2011).

Clean Harbors Buttonwillow Landfill

This Class I landfill is permitted at 14.3 million cubic yards (CalRecycle, 2011a; Buoni, 2009) and has approximately 9.2 million cubic yards of remaining capacity as of April 2009 (Buoni, 2009). At the current deposit rate, the landfill is permitted to accept waste until 2040 (CalRecycle, 2011a). Buttonwillow has been permitted to accept all hazardous wastes except flammables, polychlorinated biphenyls (PCBs) with a concentration greater than 50 parts per million, medical waste, explosives, and radioactive waste with radioactivity greater than 1,800 picocuries (Buoni, 2009). The landfill is permitted for 352,000 cubic yards of hazardous waste annually. They accept approximately 300,000 cubic yards of hazardous waste per year, which breaks down to approximately 1,000 cubic yards of hazardous waste per day (Atkinson, 2008).

Clean Harbors Westmoreland Landfill

This facility is not currently open and accepting waste because the Buttonwillow facility can accommodate the current hazardous waste generation rate. The facility is, however, available in reserve and could be reopened if necessary. The landfill's conditional use permit prohibits the acceptance of some types of waste, including radioactive (except geothermal) waste, flammables, medical waste, PCBs, dioxins, air- and water-reactive wastes, and strong oxidizers.

Nevada

US Ecology operates a hazardous waste treatment and recycling facility at US Ecology Nevada, Inc, in Beatty, Nevada.

US Ecology Beatty Landfill, Nevada

The US Ecology Beatty disposal facility, located 100 miles northwest of Las Vegas, Nevada, accepts hazardous and PCB mixed wastes, as well as bulk solids and containerized waste. The facility also maintains an onsite laboratory to perform required analytical analyses, pretreatment recipe formulation, and waste treatment verification (US Ecology, 2011).

In addition to hazardous waste landfills, there are numerous offsite commercial liquid hazardous waste treatment and recycling facilities in California and Nevada. All project-related hazardous waste will be removed and delivered to an approved facility.

5.14.4.3 Waste Management Methods and Mitigation

The handling and management of waste generated by HHSEGS will follow the hierarchical approach of source reduction, recycling, treatment, and disposal. The first priority will be to reduce the quantity of waste generated through pollution-prevention methods (e.g., high-efficiency cleaning methods). The next level of waste management will involve the reuse or recycle of wastes (e.g., used oil recycling). For wastes that cannot be recycled, treatment will be used, if possible, to make the waste nonhazardous (e.g., neutralization). Finally, offsite disposal will be used to dispose of residual wastes that cannot be reused, recycled, or treated. The following subsections present methods for managing both nonhazardous and hazardous waste generated by HHSEGS.

5.14.4.3.1 Construction Phase

Nonhazardous solid waste generated during construction will be collected in onsite dumpsters and taken to the Republic Services Sloan Transfer Station, Apex Regional Landfill, Tecopa Landfill, or another local landfill. Recyclable materials can be segregated and transported by construction contractors or other private haulers to an area recycling facility.

Wastewater generated during construction will include sanitary waste and could include pressure testing water and stormwater runoff. Sanitary waste will be collected in portable, self-contained toilets.

Most of the hazardous waste generated during construction will consist of liquid waste, such as flushing and cleaning fluids, passivating fluids, and solvents. Some solid waste in the form of welding materials and dried paint may also be generated. Nonhazardous materials will be used whenever possible to minimize the quantity of hazardous waste generated. The construction contractor will be the generator of hazardous construction waste and will be responsible for proper handling in compliance with all applicable federal, state, and local laws and regulations, including licensing, training of personnel, accumulation limits and times, and reporting and recordkeeping. The hazardous waste will be collected in satellite accumulation containers near the points of generation. This waste will be moved daily to the contractor's 90-day hazardous waste storage area, located at the plant construction laydown area. The waste will be delivered to an authorized hazardous waste management facility, prior to the expiration of the 90-day storage limit.

5.14.4.3.2 Operation Phase

The primary waste generated during the operation phase will be nonhazardous wastewater. Other nonhazardous solid waste will also be generated, as well as varying quantities of

liquid and solid hazardous waste. Handling and mitigation of these wastes is described in the following subsections.

Nonhazardous Wastes

Wastewater from facility sinks and toilets will be discharged to an onsite septic tank with overflow into an underground leach field. Treated wastewater will be used in local landscaping, and the septic tank system will be serviced as needed by a sanitary service.

Equipment washwater will be passed through an oil/water separator, and then to the waste collection tank. This washwater, combined with the nonhazardous plant wastewater will be recycled through an onsite water treatment system consisting of condensate polishing vessels and a deionization trailer. Recycled plant wastewater will be used for steam boiler makeup water, mirror washing, and other facility processes. Plant wastewater not evaporated by the thermal evaporation unit will be disposed of offsite at an approved facility.

Stormwater runoff will be directed to an onsite infiltration/evaporation area and will be managed in accordance with the project's stormwater management plan (see Section 5.15, Water Resources). The generation of nonhazardous wastewater will be minimized through water conservation and reuse measures.

Nonhazardous solid waste or refuse will be collected and deposited in a local landfill. Whenever possible, recycling will be implemented throughout the facility to minimize the quantity of nonhazardous waste that must be disposed of in a landfill.

Hazardous Wastes

To avoid the potential effects on human health and the environment from the handling and disposal of hazardous wastes, procedures will be developed to ensure proper labeling, storage, packaging, recordkeeping, and disposal of all hazardous wastes. The following general procedures will be employed:

- HHSEGS will be classified as a hazardous waste generator. Prior to facility startup, application will be made to DTSC for a California hazardous waste generator identification number.
- Hazardous wastes will not be stored onsite for more than 90 days and will be accumulated according to CCR Title 22 requirements.
- Hazardous wastes will be stored in appropriately segregated storage areas surrounded by berms to contain leaks and spills. The bermed areas will be sized to hold the full contents of the largest single container and, if not roofed, sized for an additional 20 percent to allow for rainfall. These areas will be inspected daily.
- Hazardous wastes will be collected by a licensed hazardous waste hauler, using a hazardous waste manifest. Wastes will only be shipped to authorized hazardous waste management facilities. Biannual hazardous waste generator reports will be prepared and submitted to DTSC. Copies of manifests, reports, waste analyses, and other documents will be kept onsite and remain accessible for inspection for at least 3 years.
- Employees will be trained in hazardous waste procedures, spill contingencies, and waste minimization.

- Procedures will be developed to reduce the quantity of hazardous waste generated. Nonhazardous materials will be used instead of hazardous materials whenever possible, and wastes will be recycled whenever possible.

Specifically, hazardous waste handling will include the following practices. Handling of hazardous wastes in this way will minimize the quantity of waste deposited to landfills.

- Waste lubricating oil will be recovered and recycled by a waste oil recycling contractor. Spent oil filters and oily rags will be recycled.
- Condensate polishing vessels and deionization trailers will be recycled by the supplier.
- Oily wastewater from the oil/water separator not evaporated by the thermal evaporation unit will be disposed of offsite at an approved facility.

5.14.4.3.3 Facility Closure

When HHSEGS is closed at the end of its operating life cycle, both nonhazardous and hazardous wastes must be handled properly. Closure can be temporary or permanent. Temporary closure would be for a period of time greater than the time required for normal maintenance, including overhaul or replacement of the steam turbine. Causes for temporary closure could be a disruption in the supply of natural gas, flooding of the site, or damage to the plant from earthquake, fire, storm, or other natural causes. Permanent closure would consist of a cessation in operations with no intent to restart operations and could be due to the age of the plant, damage to the plant beyond repair, economic conditions, or other unforeseen reasons. Handling of wastes for these two types of closure are discussed below.

Temporary Closure

For a temporary closure, where there is no release of hazardous materials, facility security will be deployed on a 24-hour basis, and the CEC will be notified. Depending on the length of shutdown necessary, a contingency plan for the temporary cessation of operations will be implemented. This plan will be prepared prior to HHSEGS startup. The plan will be developed to ensure conformance with all applicable LORS and the protection of public health and safety and the environment. The plan, depending on the expected duration of the shutdown, could include draining all chemicals from storage tanks and other equipment and the safe shutdown of all equipment. All wastes will be disposed of according to applicable LORS, as discussed in Section 5.14.2.

Where the temporary closure is in response to facility damage, or where there is a release or threatened release of hazardous waste or materials into the environment, procedures will be followed as set forth in the Hazardous Materials Business Plan (HMBP). The HMBP is described in Section 5.5, Hazardous Materials Handling. Procedures include methods to control releases, notification of applicable authorities and the public, emergency response, and training for generating facility personnel in responding to and controlling releases of hazardous materials and hazardous waste. Once the immediate problem of hazardous waste and materials release is contained and cleaned up, temporary closure will proceed as described for a closure where there is no release of hazardous materials or waste.

Permanent Closure

The planned life of the generation facility is 25 years, though operation could be longer. When the facility is permanently closed, the handling of nonhazardous materials will be part of a general closure plan that will attempt to maximize the recycling of all facility components (see Section 2.5). Unused chemicals will be sold back to the suppliers or other purchasers or users. All equipment will be drained of chemicals and shut down to protect public health and safety and the environment. All nonhazardous wastes will be collected and disposed of in appropriate landfills or waste collection facilities. All hazardous wastes will be disposed of according with the applicable LORS. The site will be secured 24 hours per day during the HHSEGS decommissioning activities.

5.14.5 Cumulative Effects

A cumulative effect refers to a proposed project's incremental effect together with other closely related past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the proposed project (PRS Section 21083; 14 CCR Sections 15064(h), 15065(c), 15130, and 15355). Cumulative projects are described in Section 5.6.7 and include the Element Power Solar Project, the St. Therese Mission, and the Pahrump Valley General Aviation Airport. Construction of the St. Therese Mission project had commenced at the time of preparation of this Application for Certification, and the construction schedule for the other projects is not currently known. It is expected that the implementation of standard mitigation measures will reduce waste management impacts to a less-than-significant level, and it is anticipated that waste management impacts from the cumulative projects, if any, would be mitigated to a less-than-significant level.

The HHSEGS facility will generate nonhazardous solid waste that will add to the total waste generated in Inyo County, California. However, due to HHSEGS location, nonhazardous solid waste will be disposed of in both Inyo County, California and Clark County, Nevada. Therefore a discussion of landfill capacity for both counties is discussed below.

There is adequate recycling and landfill capacity in both California and Nevada to recycle and dispose of the waste generated by the HHSEGS project. It is estimated that the plant will generate approximately 280 tons of solid waste during construction and about 240 tons a year from operations. Compared to the total amount of solid waste landfilled in Inyo County in the year 2010 of 18,068 tons (total reported through three quarters of 2010; 2009 total was 16,194 tons) and Clark County landfill capacity of 1,360,000,000 tons, HHSEGS's contribution will represent less than 1 percent of total waste disposal capacity in Clark County and less than 1.5 percent of the total waste disposal capacity in Inyo County (CalRecycle, 2011b and SWMA, 2011). Therefore, the impact of the project on solid waste recycling and disposal capacity is not anticipated to be significant. The increased demand on solid waste recycling and disposal capacity by the HHSEGS will not result in significant cumulative waste management impacts.

Hazardous waste generated during operation of HHSEGS will consist of waste oil, filters, and fluids used to clean the boilers and steam turbines and will total approximately 4 tons annually. The waste oil and filters will be recycled or disposed of offsite. Hazardous waste treatment and disposal capacity in California and Nevada is more than adequate based on the amount of hazardous waste disposal space available, as described in Section 5.14.4.2.2. Therefore, the effect of HHSEGS on hazardous waste recycling, treatment, and disposal

capability is not anticipated to be significant. The increased demand on hazardous waste recycling, treatment, and disposal capability by the HHSEGS would not result in significant cumulative waste management impacts.

5.14.6 Mitigation and Monitoring

The environmental impacts caused by wastes generated during construction and operation of the facility are expected to be insignificant. Generated waste, both nonhazardous and hazardous, will be monitored during project construction and operation in accordance with the monitoring and reporting requirements mandated by the applicable regulatory permits.

5.14.7 Involved Agencies and Agency Contacts

Several agencies, including EPA at the federal level and DTSC and NDEP at the state level, regulate nonhazardous and hazardous waste and will be involved in the regulation of the waste generated by HHSEGS. The waste laws are administered and enforced primarily through the Inyo County Department of Environmental Health Services, which is the designated CUPA. The persons to contact for nonhazardous and hazardous waste management are listed in Table 5.14-5.

TABLE 5.14-5
Agency Contacts for Waste Management

Issue	Agency	Contact
Hazardous Waste		
Hazardous Waste Compliance and Inspections	Inyo County Department of Environmental Health Services	Mark Long, CUPA Program Manager Inyo County Environmental Health Services Department 168 N. Edwards Independence, CA 93526 (760) 878-0361 mlinyoehs@gnet.com
Nonhazardous Waste		
Solid Waste and Recycling	Inyo County Integrated Waste Management Department	Kelly Lanshaw, Inyo County Integrated Waste Management Department 163 May Street Bishop CA 93514 (760) 873-5577 klanshaw@inyocounty.us

5.14.8 Permits Required and Permit Schedule

Information regarding the storage of hazardous wastes at the project site will be included in the HMBP submitted to the Inyo County Environmental Health Services Department as described in Section 5.5, Hazardous Materials Handling. In addition, the Inyo County Environmental Health Services Department requires the permit listed in Table 5.14-6.

TABLE 5.14-6
Permits Required and Permit Schedule for Waste Management

Permit	Agency Contact	Schedule
Aboveground Storage Tank Permit	Mark Long Inyo County Environmental Health Services Department 168 N. Edwards, Independence, CA 93526 (760) 878-0361 mlinyoehs@gnet.com	Prior to storage of hazardous wastes in aboveground storage tanks.

5.14.9 References

Atkinson, Mark/Clean Harbors - Buttonwillow Landfill. 2008. Personal communication with John Putrich/CH2M HILL. August 26.

Buoni, Marianna/Clean Harbors - Buttonwillow Landfill. 2009. Personal communication with Megan Sebra/CH2M HILL. April 2.

California Department of Resources Recycling and Recovery (CalRecycle). 2011a. Solid Waste Information System (SWIS). http://www.calrecycle.ca.gov/SWFacilities/Directory/. April.

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Inyo County Code. 2011. Monitoring and Diversion of Construction and Demolition Debris Title 7, Chapter 7.11. http://www.qcode.us/codes/inyocounty/. March.

Lanshaw, Kelly/Inyo County Integrated Waste Management Department. 2011. Personal communication with Karen Parker/CH2M HILL. March 24.

Long, Mark/ Inyo County Department of Environmental Health Services. 2011. Personal communication with Jessica Brandt/CH2MHILL (March 24) and Ashraf Shaqadan/CH2M HILL (April 7).

Nevada Department of Environmental Protection (NDEP). 2011. *Bureau of Waste Management, Solid Waste Branch*. http://ndep.nv.gov/bwm/index.htm and http://ndep.nv.gov/bwm/solid.htm. April.

Ninyo and Moore. 2011. Phase I Environmental Site Assessment (ESA) Hidden Hills Solar Facility, Old Spanish Trail Highway and Gold Street, Inyo County, California. July 5.

Postle, Paul/Fire Chief, Southern Inyo County Fire District. 2011. Personal communication with Ashraf Shaqadan/CH2M HILL. March 29.

Southern Nevada Health District Solid Waste Management Authority (SWMA). 2011. http://www.southernnevadahealthdistrict.org/solid-waste/index.php. April.

US Ecology. 2011. US Ecology Nevada, Inc, Beatty, Nevada, Hazardous Waste Treatment and Disposal. http://www.americanecology.com/beatty.htm. April.