

# Caltech Submillimeter Observatory Decommissioning Materials Storage and Waste Management Memo

October 31, 2024

This document serves to summarize the measures taken to store materials and manage wastes generated during the decommissioning of the CSO. The daily Hawaiian Cultural Monitor (HCM) and weekly Independent Decommissioning Project Manager (IDPM) reports are good resources for understanding how these measures were executed in practice, as is the time lapse video available at

[http://www.cso.caltech.edu/wiki/cso/outreach/facility\\_deconstruction](http://www.cso.caltech.edu/wiki/cso/outreach/facility_deconstruction)

The *Log of Materials Removed from UH Management Areas* (CSO Materials Removed Summary.pdf) details the amounts, composition, and destination of waste materials.

## Materials Disposition at the Summit during Deconstruction

The main observatory building was deconstructed by a high-reach excavator with hydraulic shears. This approach had the advantage of being very time-effective, but it generated material and debris at such speed that it could not be loaded into containers or trucks for removal as it was being generated. Rather, the excavator would deposit the material in the center of the observatory and then occasionally --- once or twice per day --- load the material into trucks for removal. Material was deposited directly into trucks so that it could be hauled out the same day. Up to 4-5 truck trips were made per day to minimize accumulation of material at the summit. Once loaded, the trucks used dust covers to prevent dispersal during transport.

In instances in which debris was kept overnight at the summit, it was stored in the body of the enclosure (or what was left of it), covered with plastic, and weighted down. The enclosure was rotated to block against the expected prevailing winds.

For foundation demolition, the debris consisted of concrete and rebar. A hydraulic hammer was used to break up the foundation into small enough pieces for loading into trucks. Again, hammering would occur for some period of time until enough material had accumulated and then hammering would stop while a truck was loaded for material to haul off.

Some separation of materials was performed at the summit before trucking. Aluminum and steel were separated from landfill-destined above-ground construction debris (gypsum board and other materials), rebar was separated from concrete, and metal conduits were grouped with other scrap metal material. Scrap metal was stored in a roll-off bin on site until enough material had accumulated to warrant transport off site.

The soil surrounding the cesspool and under the asphalt of the parking lot (where the high-reach excavator had suffered a hydraulic fluid release — see the *Removal Action Report* for detail) had to be sampled for contamination and segregated while the samples were analyzed. This soil was placed on 10 mil thick plastic and covered with similar plastic. The cesspool soil showed no contamination and was subsequently transported to the Batch Plant or used on site. The soil

under the asphalt, where modest contamination had been identified<sup>1</sup>, was initially stored in the same manner on plastic and then was transferred to plastic-lined roll-off bins. Once it was determined that the contamination in the removed soil was below acceptable limits<sup>2</sup>, some of the soil was transferred to two dump trucks while some was left in a roll-off bin. All three loads were transported to the landfill for disposal. The *IDPM Summary Report* and *Removal Action Report* provide more detail on these instances.

## Materials Transport

Trucks departing the site were secure with dust covers to prevent dispersal of material. In most instances, they proceeded directly to their destination. There were two instances of overnight storage: One concrete and demolition debris load and the soil loads were stored overnight at DeLuz Trucking. The former occurred because the truck departed the summit too late to reach the landfill before end of day. The soil loads were held overnight while waiting for landfill approval for drop-off.

## References

LEI, 2024a. Soil Sampling and Analysis Report, Caltech Submillimeter Observatory Decommissioning Project, Mauna Kea Summit, Mauna Kea, Big Island, Hawaii. June 28, 2024.

LEI, 2024b. Confirmation Soil Sampling and Analysis After the Removal of Soils with COPC Above HDOH Tier 1 EALs, Caltech Submillimeter Observatory Decommissioning Project, Mauna Kea Summit, Mauna Kea, Big Island, Hawaii. June 28, 2024.

Both references above are available from

[http://www.cso.caltech.edu/wiki/cso/outreach/facility\\_deconstruction](http://www.cso.caltech.edu/wiki/cso/outreach/facility_deconstruction)

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<sup>1</sup> 540 mg/kg Total Petroleum Hydrocarbons (TPH) – Oil, above the Hawai‘i Department of Health Tier 1 Environmental Action Level of 500 mg/kg (LEI, 2024a)

<sup>2</sup> No detection with Practical Quantitation Limit of 100 mg/kg (LEI, 2024b)