

Discussion regarding shipment of mineral concentrates through the Port of Skagway using sealed container/Rotainer loading systems – Prepared by John Walsh and Andrew Cremata

1. Conventional movement of mineral concentrates in Alaska (zinc/lead – Red Dog Mine; copper/zinc – Port of Skagway until 2023) from the mine site to tidewater generally consists of movement of processed commodity via truck or railroad from the mine site to portsite. At the portsite, materials are stored within a concentrate warehouse. Loading of the mineral from the storehouse aboard the shipping vessel is conducted using a series of conveyor belts. History has shown that considerable material spillage occurs resulting in documented environmental contamination, health risks, and increasing public concerns here in Alaska and across the globe.
2. Legacy environmental impacts have been extensively identified at the Port of Skagway over the years by AIDEA, the Department of Environmental Conservation, MOS, White Pass, and other entities at significant cost. A bibliography of reports can be compiled for further review but ready evidence is available at

<https://dec.alaska.gov/Applications/SPAR/PublicMVC/CSP/SiteReport/401>

https://dec.alaska.gov/Applications/SPAR/PublicMVC/CSP/Download?documentID=53688&fileName=401_2015.06.01%20SedimentCharacterizationRpt.pdf

3. Unless entirely remediated, legacy contaminated port basins require added vigilance and costs. When future dredging is undertaken, whether dredging to maintain desired dockside depths or to increase draft at the portsite, treatment of contaminated material could be required. Avoiding further contamination at and near the portsite is obviously an important priority.
4. Designing new port infrastructure in the Port of Skagway provides the opportunity for the community and industry to explore options for the conventional and historical movement of mineral concentrates through the townsite and onto transport vessels. Considerations include:
 - a. Optimization of limited port lay-down acreage without the need for permanent ore storage facilities
 - b. Reduction of upfront capital expenditure at the port site
 - c. Containerized ore shipment allows for mobile load operations with movable rolling stock thereby liberating the port site for other purposes when ore shipment is not underway
 - d. Containerized shipment of ore allows for off-site container storage and just-in-time load operations when the transport ship is in port
 - e. Increased port versatility enables greater services to a variety of port customers

- f. Containerized shipment of ore improves material handling certainty, especially in windy environments
 - g. Reducing environmental risks associated with the movement of mineral concentrate
 - h. Increased mastery of port operations through the use of containerized ore shipment
5. Developments within the transport and mining industry have yielded new, improved methods of ore transport using sealing containers, often referred to as “Pit to Ship.” Sealed containers are already required for the shipment of mineral concentrates containing lead.

Intermodal Solutions Group: <https://pittoship.com/>
<https://pittoship.com/containerised-bulk-handling/>

Comparison of conventional to sealed container operations: <https://pittoship.com/wp-content/uploads/EE-Enclosed-Storage-RAM-Spreaders2-1.pdf>

6. Numerous mining companies and ports have adopted protocols requiring the movement of mineral concentrate using sealed containers and Rotainer tipping equipment, whereby the hoisted contained is directly dumped into the hull of a bulk ore carrier, vastly reducing the risks of fugitive dust release and spillage exposure associated with the use of conveyors and elevators.

Fraser Surrey – Vancouver: https://www.dpworldcanada.com/news_posts/western-canadas-first-terminal-with-rotating-container-techonology/

Codelco - <https://www.drycargomag.com/ringing-the-changes-containerized-transport-of-bulk-commodities>

Manzanillo - <https://hutchisonportstimsa.com/en/news/timsa-celebrates-10-million-tons-of-mineral-bulk/>

7. For the first time in its history, Skagway operates its own waterfront. The establishment of sustainable ports requires thorough development and adherence to protocols and operations. Additionally, planning for sustainable port viability requires port operators to look beyond the immediate term and consider

<https://ishippingandtrade.springeropen.com/articles/10.1186/s41072-021-00101-6>

8. By establishing a policy for handling mineral concentrates at the Port of Skagway, the mineral concentrate industry can more predictably plan mine operations and shipping logistics as they complete feasibility studies for proposed mining operations. Skagway mineral concentrate handling standards also protect future generations of Skagway residents and ensure past mistakes that caused significant environmental and economic damage aren't repeated.