

What is a Tailings Impoundment?

If the ore used by a mine is high-grade material, then the operator may choose to process it in tanks for better recovery of metals rather than using a heap leach process. The ore is finely crushed and the metals are extracted from a slurry made of crushed rock, chemicals, and water. Once processing is complete, the barren slurry exits the mill facility and is conveyed via pipeline to the tailings impoundment. Although the recovery of desired metals via this process is typically better than the recovery from a heap leach pad, the metal recovery is not perfect and low levels of metals may still be present in the tailings material. As a result, it is not uncommon for an operator to reprocess tailings to recover additional values depending on the economics involved.

Current tailings impoundment design criteria require the impoundments to be constructed in a manner similar to that for process ponds. At a minimum, they are single lined with geosynthetic material to prevent the escape of solids or process solution entrained in the solids into the environment. Although currently not a regulatory requirement, a recent trend in Nevada has been the construction of double-lined and leak detected tailings impoundments.

A pond on the surface of the tailings impoundment is called the “supernatant pool”; an underdrain system reclaims this water so it can be pumped back to the mill for re-use. A “beach” of dried slurry forms in the impoundment as solids settle out of the water. See Figures 1 and 2.

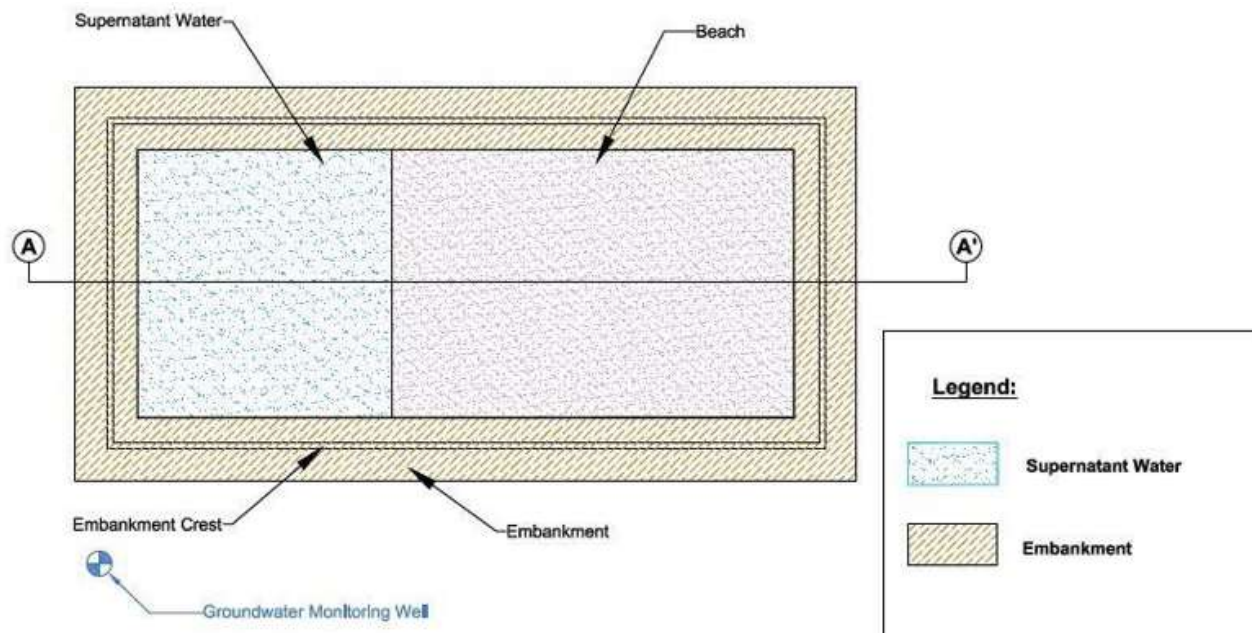


Figure 1: An idealized tailings impoundment consisting of a liner system, a “beach” of dewatered solids and a pond.

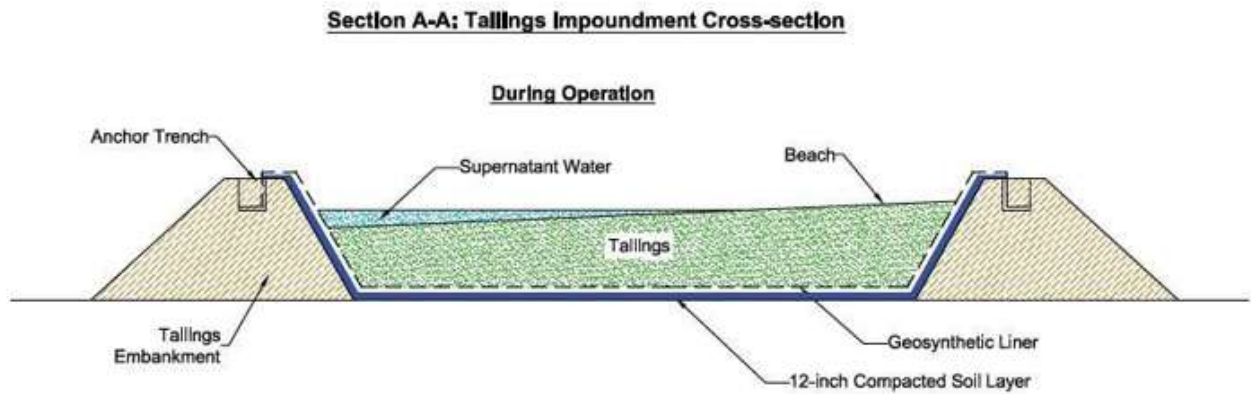


Figure 2: Side view of an idealized tailings impoundment showing the liner system.

Like heap leach pads, all tailings impoundments must have downgradient monitoring wells installed to ensure no contamination escapes the liner system. If any contamination is found, an enforcement action will most likely be issued and the operator will be required to remediate the problem immediately.