



King County

Department of Natural Resources and Parks
Wastewater Treatment Division

NORTH MERCER ISLAND/ENATAI Sewer Upgrade Project

Installing the Siphon across the East Channel of Lake Washington

The new pipeline crossing the East Channel will be an “inverted siphon” – essentially a U-shaped pipeline with high ends on the shorelines and a low point in the middle along the lake bottom. Called the East Channel Siphon, it will consist of three parallel pipes buried just below the lake bottom on the north side of the I-90 bridge. It will replace the aging pipeline on the south side of the bridge, which is too small to carry the amount of sewage expected by 2060. The new line’s three pipes will have plenty of capacity for future sewer flows.

Its position on the north side of the bridge moves it out of the way of many other utilities on the lake bottom south of the bridge and lines it up better to connect to a tunneled pipeline that’s going to be installed between the Bellevue shoreline and the Swayolocken Pump Station on the Mercer Slough.



EAST CHANNEL CROSSING OVERVIEW

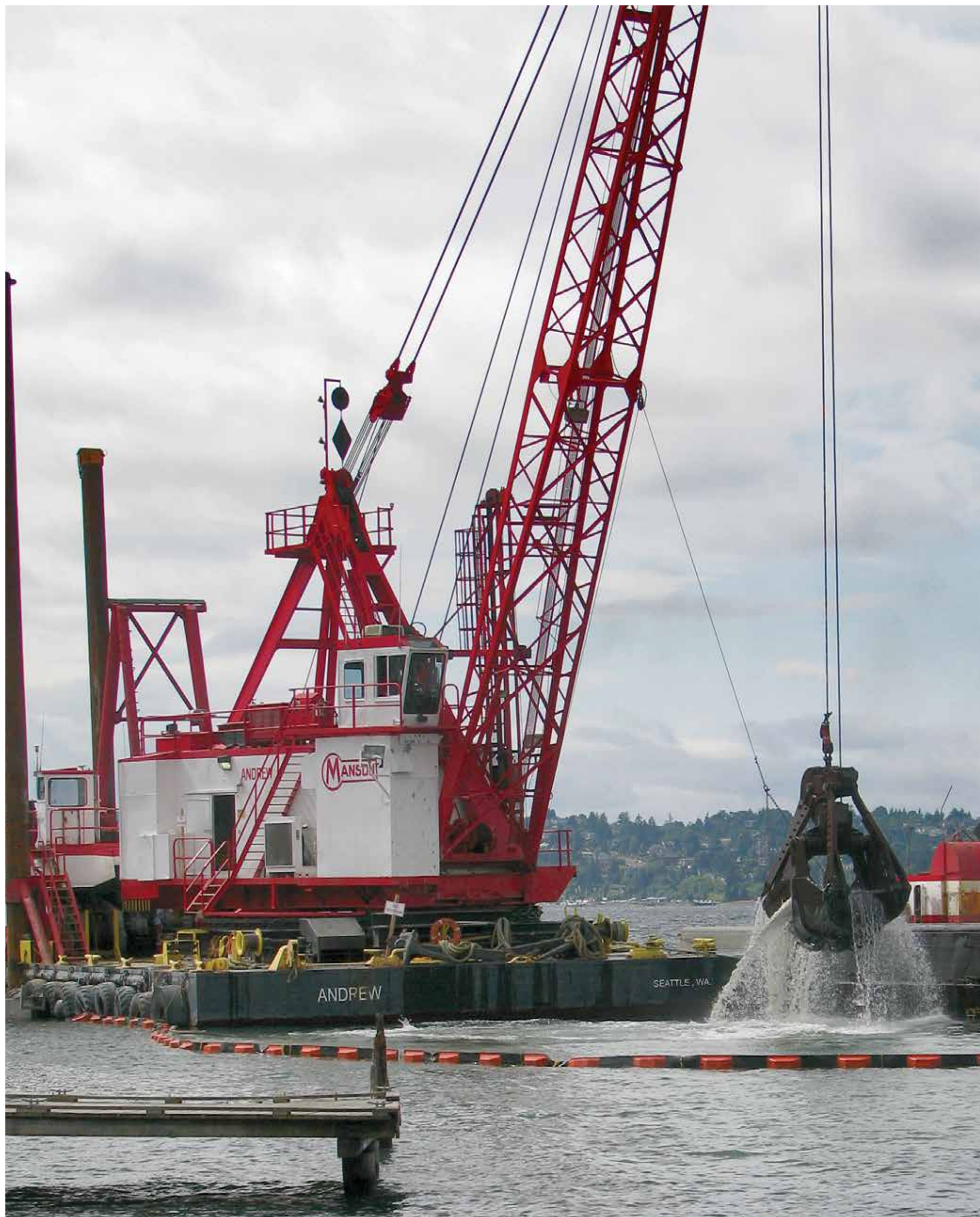


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How do you bury a pipe across the bottom of a lake?

Installation of a new siphon across the East Channel will use well-tested “cut and cover” construction methods involving divers underwater and work crews on barges on the surface.

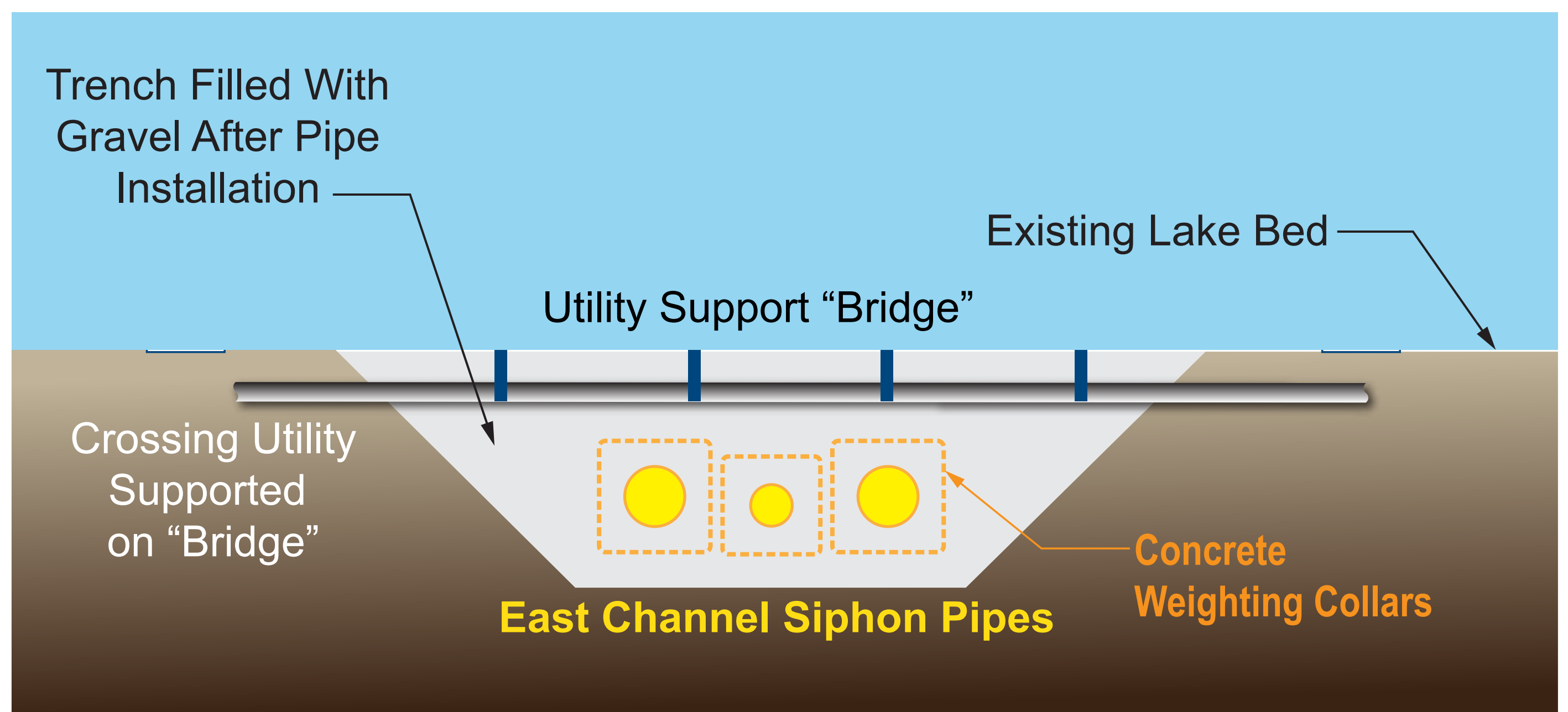
First, divers will locate any utilities on the lake bottom that the new pipeline will have to cross. Water jets will be used to dig out the soil around utilities, then a bridge will be built over the dug-out area. The utilities will be attached to the bridge to support them as the new sewer pipeline is installed underneath them.



CLAMSHELL DREDGE

A barge on the lake surface with a clamshell dredge will move across the channel digging a trench in the lake bottom. Excavated soil will be placed onto another barge to be hauled away and gravel will be dropped into the trench to make a bed for the pipes to lie on.

With the trench and bedding prepared, the workers on the surface will float segments of the new pipeline above the trench and let them fill with water. The weight of the water, along with concrete collars that will be wrapped around the pipes at some points, will let the pipe sink to the bottom. Once it's lying in the trench, divers will bolt together the individual segments. Finally, the clamshell dredge will add more gravel into the trench to fill it back up to the original level of the lake bottom.



SIPHON SECTION