The Behrens Trench is an open, underwater canal used to move concentrated brines by gravity flow from GSLM's west evaporation pond to their pump station at Promontory Point.
WATER DENSITY VERSUS LAKE ELEVATION

The graphs show average yearly lake elevation (feet above mean sea level) and water density (g/cm³), a measure of salinity or salt content, for the south (site AS2) and north (site LVG4) arms of the lake from 1984 through 1996 (see map). The density of the south arm, which is fed by fresh-water tributaries, varies inversely with lake elevation. The north arm, which is fed by salty south-arm water, is more saline and less influenced by lake level. Farmington and Bear River Bays are much less saline than either the north or south arms of the lake.

MINERAL-EXTRACTION INDUSTRIES

Six mineral-extraction industries currently operate on Great Salt Lake (table 2). Cumulatively, these industries produced nearly 2.8 million tons of products during 1995, valued at about $300 million.

SALT LOAD AND POTENTIAL RESOURCES

Great Salt Lake contains about 4.5 billion tons of salt. Major changes in lake conditions, such as the 1980s flooding, breaching the Southern Pacific Railroad (SPRR) causeway in 1984, and West Desert pumping in 1987, have altered the balance of salt between the two arms. Raising the SPRR causeway during the 1980s reduced the permeability of the causeway and the bi-directional transfer of brines between the southern and northern arms. Because of this, there has been a constant loss of salt from the south arm of the lake to the north arm since 1994. The reduction in salinity is of great concern to the south-arm mineral-extraction industries and to the lake’s multi-million dollar brine shrimp industry.

A buried, wedge-shaped body of natural sodium sulfate (mirabilite) extends westward from Promontory Point, beneath the SPRR causeway. Sodium sulfate is found cementing the nearshore sediments at shallow depths at numerous locations around the perimeter of the lake.