

CSPE: The Worlds Oldest Floating Cover, Still Performing After 40 Years

Hinkle Reservoir Potable Water Storage Granite Bay, California, USA

CSPE LINER & FLOATING COVER

Installed in 1980, the Hinkle Reservoir floating cover in the San Juan Water District is believed to be the worlds oldest floating cover in continuous operation. It remains a testimony to the outstanding durability of the CSPE manufactured by Burke Industries.

BACKGROUND INFORMATION & CHALLENGES

- Located northeast of Sacramento, California, USA in a region known for hot, arid summers, with high UV exposure.
- Originally built in 1916 as open water concrete storage.
- Critical for the supply of potable water to 265,000 residents.
- Reconstruction of the storage facility commence in 1979, when floating cover technology was in its infancy.
- The irregular shape of the storage required consideration during the cover design phase.
- The Liner and cover systems required design life was 25 years.
- The Material manufacturer, Burke Industries, was heavily involved in the installation process.



SOLUTION

In 1979, floating cover technology was in its infancy, and the designer drew on the extensive development that DuPont had undertaken with Burke Industries during the formulation of chlorosulphonated polyethylene (CSPE), a flexible synthetic rubber material. CSPE was understood to be a durable material that would withstand aggressive weathering, be resistant to chlorine, and would contain no chemicals that could leach out and contaminate the water supply. It was anticipated that CSPE would achieve the water district's 25 year lifetime requirement while also providing excellent value. Financial analysis undertaken by San Juan Water District at the time revealed the CSPE floating cover option was between 60% and 80% cheaper than the alternative options of a fixed steel roof or multiple steel tanks.

The design, fabrication, and construction methodology used during this project remains relevant to this day with international installations using the same methods.



RESULT

With a 25-year life expectancy at the time of construction in 1980, no one ever expected the CSPE liner, and cover system would still be going strong 40 years later! Routine inspection and maintenance has complimented the long term durability of the cover and is a credit to San Juan Water District. With its minimal maintenance requirements, the operational costs are meager. It is believed to be the oldest floating cover in continuous operation in the world and has significantly outlasted similar installations constructed from alternative materials worldwide. As a result, the water district will only accept CSPE as a suitable liner and floating cover material.

The liner and cover are slated for replacement in 2021 in conjunction with rehabilitation and upgrade of the inlet and outlet structures, gates, and baffle walls.

REFERENCES & OTHER RESOURCES:

CSPE Floating Cover Project Profiles – [View Here](#)

CSPE Material Specifications – [View Here](#)

150 Years of Water: The History of the San Juan Water District, by Gary Pitzer – [View Here](#)

Anticorrosive Rubber Lining: A Practical Guide For Plastics Engineers, Case Study 3 *Forensic Study* Hinkle Reservoir: A Pioneer User of Hypalon Rubber as a Floating Cover Reservoir Membrane (Pg 222-223), Chellappa Chandrasekaran, 2017.

Hinkle: A Pioneer in Floating Cover Reservoirs, San Juan Water District, 2003

CSPE Performance & History in Long Term Potable Water Storage Applications – [View Here](#)