SNAKE CREEK EMBANKMENT

FACTS

LAKE AUDUBON

16,600
acres

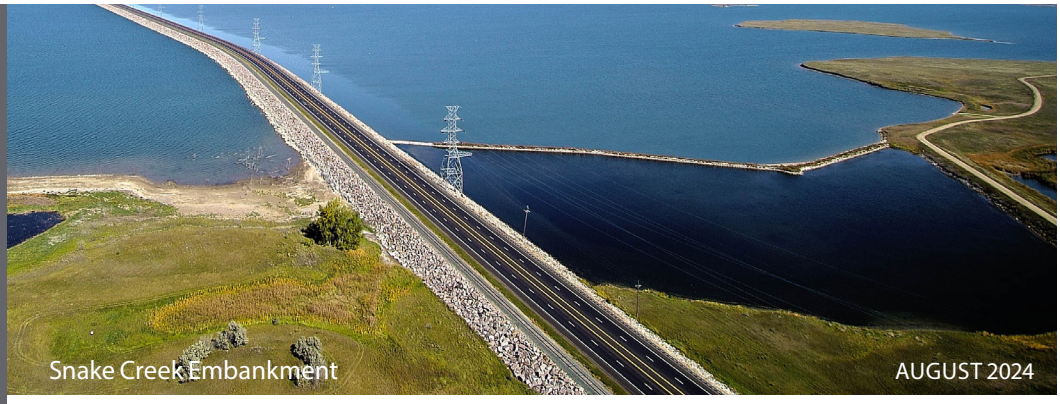
152
miles of shoreline

318,000
acre-feet of storage

SNAKE CREEK EMBANKMENT

2.5
miles long

85
feet high



SNAKE CREEK EMBANKMENT

HISTORY & BACKGROUND

To understand the history and purpose of the Snake Creek Embankment (SCE), it is first necessary to understand how it relates to the Missouri River reservoir system. Garrison Dam construction was completed in 1953 and formed Lake Sakakawea. Garrison Dam is part of the Missouri River mainstem system that includes six dam and reservoir projects authorized by the Flood Control Act of 1944. The dams are operated for the authorized purposes of flood protection, hydropower, water supply, water quality, irrigation, fish and wildlife, navigation, and recreation. As partial compensation for the 566,000 North Dakota acres inundated by Missouri River reservoirs (Sakakawea and Oahe), the Garrison Diversion Unit (GDU) was authorized by Congress in 1965. The GDU was proposed to irrigate over one million North Dakota acres, among other proposed benefits.

The GDU infrastructure related to SCE includes its rolled earthen embankment, outlet works, the Snake Creek Pumping Plant (SCPP), and Lake Audubon, which is a sub-impoundment of Lake Sakakawea - separated by the SCE.

OWNERSHIP & OPERATION

The SCE is owned and maintained by the U.S. Army Corps of Engineers (USACE). The SCPP, owned by the U.S. Bureau of Reclamation and operated by the Garrison Diversion Conservancy District (GDCD), diverts water from Lake Sakakawea across the SCE to Lake Audubon. SCPP is operated to maintain Lake Audubon's elevation between 1845-1847 feet in accordance with the Lake Audubon water control manual. Water from Lake Audubon is then diverted eastward for its federally-authorized uses through the McClusky Canal. The U.S. Fish and Wildlife Service manages Audubon National Wildlife Refuge (the south portion of Lake Audubon), while North Dakota Game and Fish Department manages Audubon State Game Management Area (the north portion of Lake Audubon).

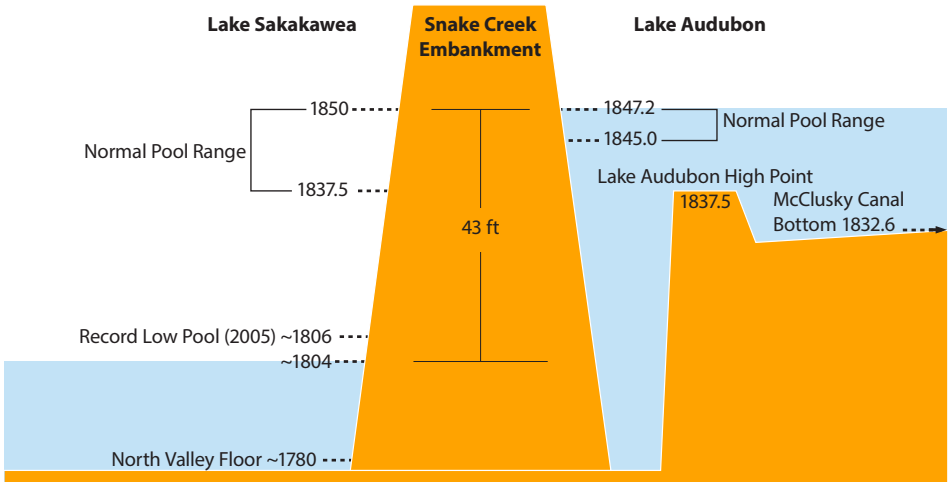
SCE & LAKE AUDUBON AUTHORIZED PURPOSES

- Irrigation
- Recreation
- Fish & Wildlife
- Augmentation Of Stream Flows
- Groundwater Recharge
- Municipal, Rural, & Industrial Water Supplies
- Transportation & Utility Corridor

CONTEMPORARY ISSUES

Today, water provided through the McClusky Canal contributes to the over 70,000 acres that are authorized for GDU irrigation, and also because of that water, fish, wildlife, and recreational opportunities abound, and a $1.5 billion project known as the Eastern ND Alternative Water Supply (ENDAWS) is currently being constructed to serve 50% of North Dakota's population with water. Without question, SCE is critical infrastructure in North Dakota. But the functionality of the SCE is under scrutiny by the State of North Dakota over the USACE's proposal of a non-structural fix - as described below.

In the early 2000s, drought conditions in the Missouri River Basin caused low reservoir levels - including a 41.1-foot lake level differential between Lakes Sakakawea and Audubon. This difference increased seepage underneath the SCE (dam foundation). At that time, it was discovered that multiple relief wells were not functioning properly because of deferred USACE maintenance. In response, USACE conducted studies to identify alternatives for future action. An engineering analysis concluded that limiting the lake level differential threshold to 43 feet would limit future risks. USACE implemented this non-structural management solution in 2019. However, USACE was directed by America's Water Infrastructure Act of 2020 to reassess this approach and consider a structural solution. USACE is currently completing this assessment. Under the current non-structural solution, if an extended drought triggers the 43-foot management threshold, then the USACE would usurp GDCD management of Lake Audubon elevation and may significantly impact service levels required for the function of drought resilience infrastructure serving central and eastern North Dakota. Therefore, DWR is working with the USACE to express concerns and identify a structural solution.



Pool differentials, like the one above, create seepage problems underneath Snake Creek Embankment.

NON-STRUCTURAL VS STRUCTURAL APPROACH

The non-structural approach USACE has implemented would drop water levels in Lake Audubon during extreme droughts to manage seepage underneath the SCE. However, any drop in elevation required for service of the McClusky Canal point-of-diversion would strand ENDAWS assets and impact other authorized purposes. This would occur during drought conditions for which these structures have been designed to supply water.

USACE estimates a structural fix for SCE to be $150 - $239 million, which would provide drought resilience and allow the function of ENDAWS during times of greatest need. The proposed non-structural solution would strand ~$3 billion worth of infrastructure to avoid a $150 - $239 million federal repair project.

Deferred USACE maintenance of SCE relief wells is at the heart of the SCE's performance issues. Without regular maintenance, relief wells can fail to manage water pressures effectively, leading to seepage problems.

For these reasons, a structural fix is important to ensure all authorized purposes are protected.

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