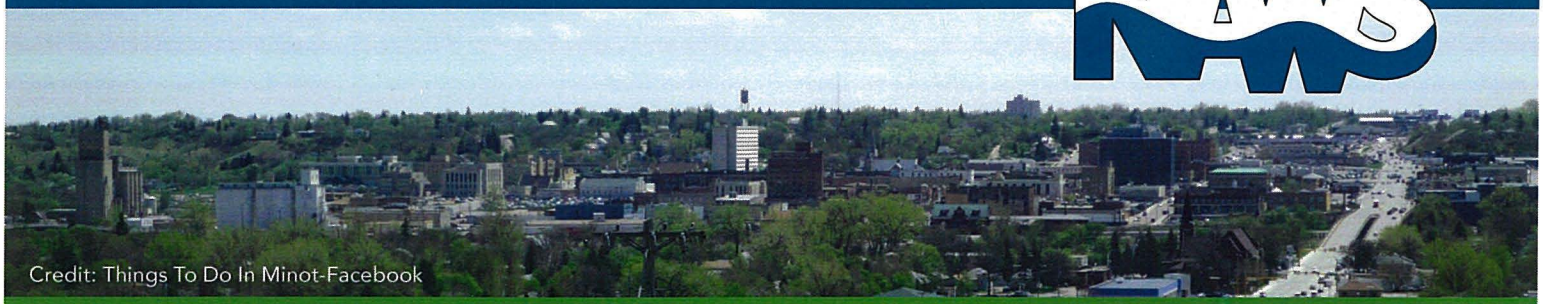
NORTH DAKOTA'S NORTHWEST AREA WATER SUPPLY PROJECT

NAWS



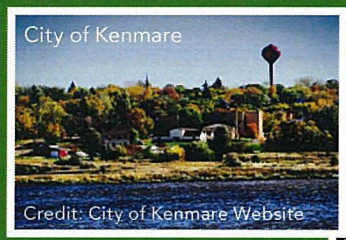
Credit: Things To Do In Minot-Facebook

PROJECT EVOLUTION

In order to address long-standing water supply and quality problems experienced by residents of northern North Dakota, the Northwest Area Water Supply (NAWS) project was authorized by the Garrison Diversion Reformulation Act of 1986 and the Dakota Water Resources Act of 2000 under the Municipal, Rural, and Industrial (MR&I) Grant Program. And even before that, as part of the federal Flood Control Act of 1944, water supply was planned for the region along with construction of the Missouri River mainstem dams.

In 1991, the state passed into law a bill creating the NAWS Advisory Committee, while giving the North Dakota State Water Commission (SWC) the authority to construct, operate, and manage the project. In 1993, Houston Engineering, was retained as the pre-final design team for the NAWS project.

Construction of NAWS began on April 5, 2002, with a main line and associated features being built between the city of Minot and Lake Sakakawea. Later in 2002, lawsuits were initiated (see last page).



City of Kenmare

Credit: City of Kenmare Website

PURPOSE & NEED

Prior to the NAWS project, communities within the NAWS project area (see following page) were supplied by groundwater, were constrained by water quality and quantity issues, and did not meet secondary drinking water standards. Total dissolved solids (TDS) are elevated throughout the project area, and many communities also experience elevated levels of iron, manganese, sodium, sulfate, and other contaminants. Since 2008, the city of Minot has been providing water from the city's groundwater wells to the communities of Berthold, Burlington, Kenmare, Sherwood, and Mohall, and to rural water systems including West River, All Seasons, Upper Souris, and North Prairie to temporarily alleviate some of the area's most severe problems. However this is not a long-term suitable water supply. For example, Berthold's groundwater from the Fort Union aquifer was found to be unsuitable as a public supply due to high levels of sodium and TDS, and Kenmare's water supply contained arsenic levels that exceeded primary drinking water standards. Currently, an interim water supply is being provided by the city of Minot through temporary water service contracts that are scheduled to expire in 2018, although the contracts may end sooner because groundwater in the Minot and Sundre aquifers are being withdrawn at levels that exceed sustainable rates.

PROJECT USERS

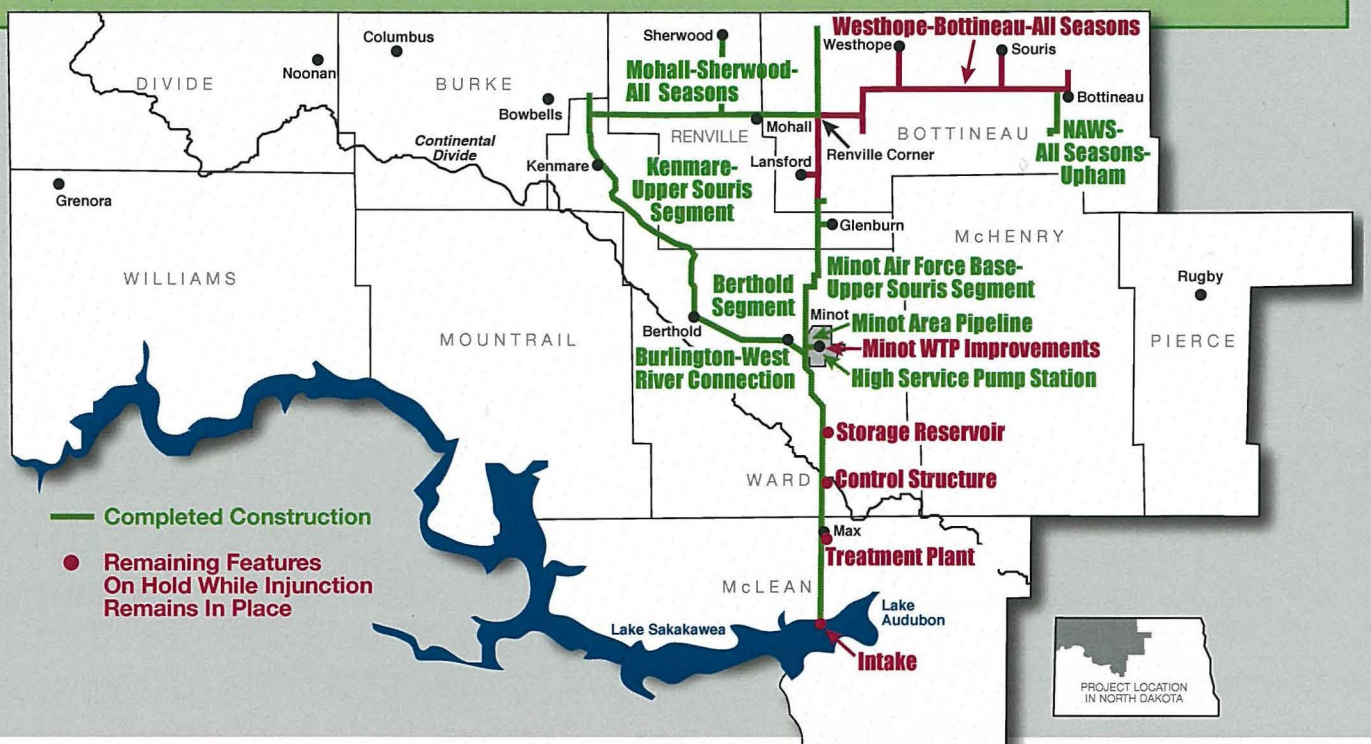
NAWS is designed to service a project area of 81,000 people, (63,000 in urban areas). While population projections for the service area were based upon long-term historical trends in the region, namely outmigration and rural to urban migration, the oil and energy development that the state is currently experiencing means projections used in the original project scoping may be conservative. For example, population projections in the EIS were to the year 2060 when water use is estimated to be 32% higher than today. However, in a 2012 study conducted by North Dakota State University, the seven counties in the area where NAWS will ultimately provide service are projected to increase in population by 35% by 2025.

PUBLIC WATER SYSTEMS CURRENTLY BEING SERVED

Minot, Burlington, North Prairie, West River, Berthold, Upper Souris Water Users District, Kenmare, Sherwood, Mohall, All Seasons-Antler, Minot Air Force Base, Des Lacs

COMMUNITIES TO BE SERVED IN THE FUTURE

Westhope, Souris, Bottineau, Lansford



NAWS EXISTING PROJECT FEATURES

- Approx 230 Miles Of Pipe (185 Distribution, 45 Raw Water Transmission)
- 1 High Service Pump Station (2 million gal storage)
- 2 Ground Storage Reservoirs (1.25 million gal storage)
- 1 Elevated Storage Reservoir (1 million gal storage)
- 4 Booster Pump Stations
- Upgrade of Minot's Water Treatment Plant (Filtration, Backwash, and Controls System)
- 4 MGD (million gallon per day) In Use (2013)

NAWS WATER USE (COMPARISON)

Missouri River System Capacity = 69.4 MAF (million acre feet)

Projected Average Annual NAWS Water Use In 2060 = 0.0136 MAF

Average Annual NAWS Water Use = 0.02% of Total Missouri River System Capacity

PREFERRED ALTERNATIVE

The NAWS project will be of sufficient size to deliver a maximum daily flow of 26 million gallons per day. The water pipeline from Lake Sakakawea to Minot will be 45 miles of 30-inch and 36-inch diameter pipe. This pipeline includes a three million gallon water storage reservoir and a booster pump station with pretreatment facilities. The remainder of the project will consist of some 250 miles of pipeline ranging in size from 36 inches to 4 inches in diameter, as well as eight storage reservoirs and 12 pump stations. In general, the pipeline will be routed to follow highway and other road alignments in the project area. The preferred alternative identified by the Bureau of Reclamation in the supplemental EIS (2015) includes the already-completed project components, a bulk distribution system, the South Prairie Storage Reservoir, an intake and pump station at Lake Sakakawea, and a conventional water treatment plant and pump station.

MINOT AQUIFER

The Minot aquifer has been used as a source of public water supply by the city for the past 95 years, in conjunction with the Sundre aquifer and the Souris River. Although Minot holds a permit to withdraw water from the Souris River, the river is no longer used as a regular source to meet municipal demands due to treatment difficulties and unreliability of the river (quantity and quality). In 1994, the SWC estimated the sustainable yield of the Minot aquifer at 2.0 mgd; however, the continuing downward trend in aquifer levels during the period when withdrawals averaged 2.0 mgd indicates that the portion of the aquifer near the Minot wellfield cannot sustain this level of withdrawal or support additional withdrawals. Investigations have been conducted by the SWC and U.S. Geological Survey, but the sustainable yield of the Sundre aquifer is undetermined. The continuing downward trend of the water level during the period when withdrawals averaged 3.1 mgd indicates that the aquifer cannot sustain this level of withdrawal or support additional withdrawals. Both of the aquifers in the vicinity of Minot experience some water quality problems, including iron, manganese, sodium, sulfate, and TDS levels that exceed secondary drinking water standards. The future availability of aquifer water for the city of Minot is very uncertain both in terms of quantity and quality.

PROJECT CONSTRUCTION & FINANCING

The $205-$277 million NAWS project was intended to be funded on a cost-share basis with 65 percent federal funds coming from the federal Municipal, Rural and Industrial (MR&I) water supply program, and 35 percent through local funding. With the legal challenges facing the project and difficulties in the federal funding situation, the Water Commission has continued to advance the project with state funds. The city of Minot has been covering the entire local share through a 1 percent city sales tax. Those users who purchase water from the system will pay for the operating costs of the water delivery system.

Between 2002 and 2013, under court approval, 45 miles of main transmission line were built from Lake Sakakawea to Minot, along with 185 miles of bulk distribution pipeline and associated facilities for the surrounding service area. Other project features completed include an upgrade to the Minot water treatment facility, a high service pump station and a storage reservoir in Minot.

LEGAL CHALLENGES

In 2002, a legal challenge was filed by the Province of Manitoba, Canada to stop the construction of NAWS, claiming that the Environmental Assessment (EA) conducted for the project was inadequate under the National Environmental Policy Act (NEPA).

In 2005, a court order required the Bureau of Reclamation to complete additional environmental analysis related to water treatment for potential biological organisms. A second court order issued that year allowed construction to proceed on those project features that would not predetermine a future decision on water treatment to reduce the risk of transferring invasive species.

In 2006, the Bureau of Reclamation initiated an Environmental Impact Statement (EIS), analyzing different water treatment methods to address invasive species concerns. The Final EIS was published in December 2008.

In February 2009, the Final EIS and Record of Decision (ROD) were completed. Shortly thereafter, the Province of Manitoba filed a supplemental complaint contending that the Final EIS was insufficient. Additionally, the State of Missouri filed a complaint against the Department of the Interior and the U.S. Army Corps of Engineers (Corps) in the same U.S. District Court. The State of Missouri alleged that the Bureau of Reclamation's Final EIS was insufficient, and that the Corps had failed to complete a separate NEPA analysis for NAWS. The court then consolidated the Missouri suit with the Manitoba suit.

In March 2010, the court issued an order that the Bureau of Reclamation conduct further environmental review with respect to two specific issues: (1) the cumulative impacts of water withdrawals on Lake Sakakawea and the Missouri River; and (2) consequences of transferring potentially invasive species into the Hudson Bay basin. The court modified the 2005 injunction in 2013, halting further construction - pending the completion of further NEPA review.

Manitoba's main opposition to NAWS is based upon interbasin water transfers in North Dakota. The State of Missouri's main opposition is related to depletions of the Missouri River system.

City of Mohall Credit: City of Mohall Website

City of Bottineau
Credit: Greater Bottineau Area Chamber of Commerce

City of Minot

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