SPENCER J. COX
Governor

DEIDRE M. HENDERSON
Lieutenant Governor

State of Utah

DEPARTMENT OF NATURAL RESOURCES

JOEL FERRY
Executive Director

Division of Water Rights

TERESA WILHELMSEN
State Engineer / Division Director

MEMORANDUM

To: Spencer J. Cox – Governor, State of Utah
Legislative Management Committee
Natural Resources, Agriculture, and Environment Interim Committee

From: Teresa Wilhelmsen, P.E. – State Engineer / Director, Division of Water Rights

Cc: Deidre M. Henderson – Lieutenant Governor, State of Utah
Joel Ferry – Executive Director, Department of Natural Resources

Date: November 22, 2023

Re: Report on the Suspension of the Right to Appropriate Water from the Great Salt Lake and the Bear River, Weber River, and Jordan River Basins

EXECUTIVE SUMMARY

On November 3, 2022, Governor Cox issued a proclamation—upon the recommendation of the state engineer—suspending new appropriations for consumptive rights from surface and underground sources within the Great Salt Lake Basin. As part of the proclamation, the State Engineer was assigned to evaluate the circumstances relating to the proclamation, determine whether the proclamation should remain in effect, and submit a report to the Governor, the Legislative Management Committee, the Natural Resources, Agriculture, and Environment Interim Committee, and the Legislative Water Development Commission no later than November 1, 2023.

Although last year's record-breaking snowpack has eased the effects of the ongoing drought, the Great Salt Lake remains in a tenuous position. Consequently, the State Engineer recommends that the proclamation continue to remain in effect to ensure that surplus flows of the tributary rivers and streams remain dedicated to the Great Salt Lake and preclude new consumptive appropriations from the body of the lake itself.

STATE ENGINEER EFFORTS AND INITIAL FINDINGS

Pursuant to Utah Code § 73-2-1, the State Engineer is responsible for the general administrative supervision of the waters of the state. Accordingly, the State Engineer has adopted administrative policies throughout the Great Salt Lake Basin that strive to promote the development and beneficial use of the resource while protecting existing rights from impairment. As part of the ongoing efforts to evaluate the circumstances relating to the proclamation, the State Engineer has been reviewing existing policies, analyzing water right records and relevant hydrologic data, and conducting public meetings to solicit feedback from water users within the basin. Although additional analysis and collaboration is needed (and planned), the initial findings are detailed below.

Bear River Watershed

Since the issuance of the governor's proclamation, the State Engineer has undertaken a thorough review of the water rights data, relevant hydrogeologic studies, and existing policies and groundwater management plans within the Bear River watershed. Based on review of the data, it is apparent that the existing groundwater withdrawals are not currently exceeding the annual recharge of the respective aquifer on a basin-wide basis. However, the amount of water represented by groundwater applications in Cache Valley and Box Elder County are both approaching the limits of estimated groundwater recharge. As part of this effort, the State Engineer also conducted several outreach engagements with members of the public and various stakeholders within the watershed. The State Engineer has received valuable feedback as a result of these engagements and is continuing to collaborate with the stakeholders in order to determine what, if any, additional studies or policy modifications may be warranted.

It should also be noted that Utah is party to the Bear River Compact, which apportions the waters of the Bear River among Utah, Idaho, and Wyoming. Under the Compact, Utah has a remaining allocation of approximately 282,000 acre-feet of depletion from the Bear River that has not been developed. However, 220,000 acre-feet of that allocation is contemplated for use under the Bear River Development Act (Utah Code § 73-26-202). As the chair of the Utah delegation to the Bear River Commission, the State Engineer continues to administer the measurement, appropriation, and distribution of the Bear River in conformance with Utah law (including the governor's proclamation) and compact obligations.

Weber River Watershed

In the Weber River watershed, the State Engineer has conducted a similar analysis relating to the existing water rights, hydrogeologic studies, and groundwater management plans. Of particular note is the East Shore area, which includes portions of Davis and Weber counties that are situated between the Great Salt Lake and the Wasatch Range. The State Engineer adopted groundwater management plans in 1995 that limited the annual amount of groundwater withdrawals within the safe yield of the respective aquifer. However, despite the limitations imposed by the groundwater management plans, the East Shore aquifer continues to show signs of decline. Whether this is a result of decreased agricultural return flows due to increased urbanization, prolonged drought, or some other hydrogeologic phenomenon is unclear. The troubling aquifer trends are further compounded by the fact that the amount of groundwater represented by approved appropriations in the East Shore area far exceeds the safe yield of the aquifer. Consequently, the State Engineer has been conducting public meetings in the East Shore area in an effort to highlight these issues and solicit feedback from stakeholders. Additional study of groundwater conditions, coupled with refinement of existing appropriation policies, is necessary to protect existing rights and ensure the long-term stability of the aquifer.

Utah Lake / Jordan River Watershed

Among ongoing efforts in the Utah Lake and Jordan River watershed is the finalization of two hydrogeologic studies within Juab Valley and Goshen Valley. Both studies indicate that the valleys are experiencing significant groundwater declines that appear to be more pronounced in areas where the deficit between aquifer recharge and groundwater withdrawal is most pronounced. These deficits are primarily driven by the increased volume of groundwater pumping that has resulted from additional development coupled with the effects of prolonged drought. Since groundwater also constitutes a significant source of inflow to Mona Reservoir, the decline in aquifer levels within Juab Valley has had a corresponding negative impact on the amount of water available in the reservoir and the availability to use the water under existing senior surface rights. Based on the findings of the studies, the State Engineer is conducting refined analyses of the relevant groundwater data and existing water rights in the valleys in order to explore policy options that will prevent additional groundwater decline.

The State Engineer also continues to monitor conditions in other areas of the Utah Lake and Jordan River watershed and is currently developing strategies and prioritizing resources to study and address other concerns. These prospective efforts include determining the need for additional measurement infrastructure, developing distribution accounting models, and studying groundwater conditions and policies.

MEASUREMENT AND MODELING EFFORTS

Measurement Infrastructure Installations

Over the past year the State Engineer has installed 20 water measurement devices or telemetry infrastructure within the Great Salt Lake Basin. Some of the more noteworthy installations are detailed below:

- Northpoint Consolidated Canal (west of Salt Lake City International Airport): Installation of a velocity and depth sensor with associated telemetry to measure and report the amount of water the canal company is releasing to Great Salt Lake. This sensor, coupled with a data logger and cellular communication, allow for real-time monitoring of stream flow in a location that would typically be difficult to measure.

- Bear River Migratory Bird Refuge: Installation of two velocity and depth sensors with associated telemetry to measure and report outflows of the Bear River from within the Bird Refuge that are flowing to the Great Salt Lake. This allows for accurate measurement without any change to the Bird Refuge's operation of a check structure that is directly upstream of the culverts. In conjunction with a datalogger and cellular link, the real-time flow data is displayed on the Water Rights website.

- Shingle Creek (Upper Provo River): Installation of a data logger and telemetry equipment at the existing weir allows for real-time streamflow monitoring. Additionally, just downstream of the flume in the culvert under Highway 150, an ultrasonic depth sensor and microwave velocity sensor have been installed. Telemetry at both sites allows data to be collected at the culvert location via radio transmission, subsequently uploaded to the Water Rights database and website for real-time flow readings.

- Ogden Bay Waterfowl Management Area: Installation of velocity and depth sensors on 11 automated gates with associated telemetry to measure and report outflows of the Weber River from within the management area that are flowing to the Great Salt Lake. In conjunction with a datalogger and cellular link, the real-time flow data is displayed on the Water Rights website.

Measurement Infrastructure Gap Analysis

The State Engineer has also entered into a cooperative agreement with Utah State University to conduct a Measurement Infrastructure Gap Analysis within the Great Salt Lake watershed. The

objective of the Gap Analysis is to identify areas where additional measurement and telemetry is needed within the watershed and provide a prioritized list of potential projects.

Distribution Accounting Models

The State Engineer updated and released the distribution accounting models for the Lower Bear River and Little Cottonwood Creek to facilitate interstate and intrastate water distribution. Similar models for Hobble Creek, Spanish Fork River, and the Weber River are currently in progress (accounting models for the Provo River, Utah Lake, and the Jordan River are already in place). These models provide easy access to water measurement data, transparency in the distribution process, and tools to understand the relevant water rights.

STATE ENGINEER'S RECOMMENDATION

Based on the foregoing facts and analysis, it is the recommendation of the State Engineer that the proclamation should remain in effect to ensure that surplus flows of the tributary rivers and streams remain dedicated to the Great Salt Lake and preclude new consumptive appropriations from the body of the lake itself. Doing so will also provide additional time for further study of the relevant issues within the respective watersheds, development of additional management tools, and adjustment to administrative policies where necessary.