

# Historical Overview of Territorial, State, and Federal Legislation Impacting Utah Lake

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A detailed timeline of legislation that has impacted Utah Lake's ecological status

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## Introduction

Utah Lake is one of the largest freshwater lakes by surface area west of the Mississippi River and is the main tributary for the Great Salt Lake through its single outflow, the Jordan River.<sup>1</sup> Covering 145 square miles and averaging a depth of nine feet, Utah Lake is part of a watershed that is home to approximately 600,000 residents<sup>2</sup> and is used for irrigation, recreational fishing, and watersports. Utah Lake provides a critical habitat for numerous species, including 226 species of birds, 49 species of mammals, 18 species of fish, 16 species of amphibians and reptiles, and others. Approximately 10 million total fish reside in the lake, equal to the number of migratory birds that stay at the lake each year as a major part of the Pacific Flyway.<sup>3-4</sup>

Utah Lake was at its healthiest before settlers arrived in the region. The Timpanogos people were historic stewards of the lake, celebrating its unique ecosystem through an annual spring fish festival where tribes and bands of Utah's earliest people would gather to trade and build community with surrounding clans.<sup>5</sup> Since Utah's settlement in the 1800s, human interference and legislative actions have impacted the lake's water, land, and wildlife resources. Certainly some legislative actions have helped to prevent maltreatment of Utah Lake. However, other legislative actions have led to ecological decline and possible irreversible ecological transitions. The following territorial, state, and federal legislative timelines and their contextual significance will provide insight into connections between legislation and Utah Lake's current and future condition.

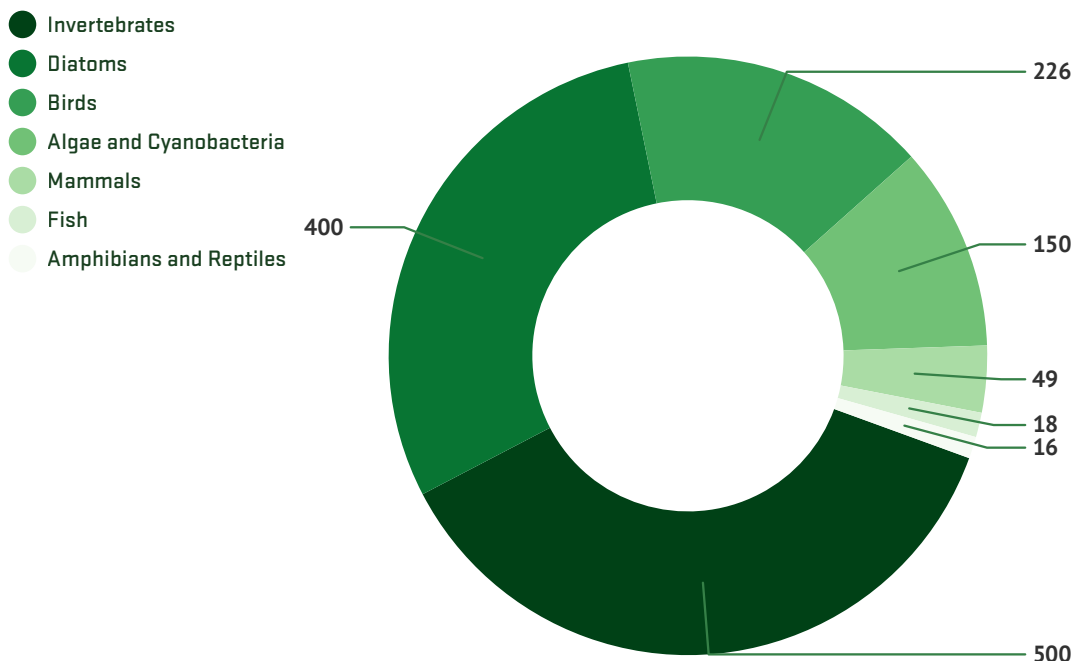
# Water Timeline

## Territorial Legislation

In 1853, legislation permitted the Provo Canal and Irrigation Company to redirect half of all the water in the Provo River (one of Utah Lake's main tributaries) to farmland.<sup>6</sup> In 1865, the territory allowed counties to form irrigation districts and redirect natural channels, including the smaller tributaries of Utah Lake.<sup>7</sup> Legislation gave ditch and canal owners right-of-way in 1866, enabling them to maintain and direct their waterways over public lands.<sup>8</sup> In 1872, Salt Lake County placed a dam at the Jordan River Narrows, the only river outflow of Utah Lake, for the purposes of irrigating land in Salt Lake County, functionally turning Utah Lake into a storage reservoir.<sup>9</sup> The dam was a source of contention between Utah County and Salt Lake County as flooding would occur in Utah County during high inflow periods. This eventually led to the 1885 Compromise Agreement specifying the maximum elevation of the lake to be 4,515 feet above sea level.<sup>10</sup>

After settlement, Utah Lake was unfortunately prone to severe contamination by human activities such as human waste, chemicals, and livestock waste (among others). Some legislative acts, however, indirectly aided in reducing the contamination of Utah Lake in early territory history. For example, an act in 1872 banned fishing with harmful chemicals.<sup>11</sup> Another similar act in 1876 prohibited fishing with explosives.<sup>12</sup> Other acts passed by the Utah Legislature directly protected Utah's water sources

## Total Species in Utah Lake



from contamination. For example, in 1876, legislators mandated the removal of unburied dead animals to at least a quarter mile away from any water supply.<sup>13</sup> In 1880, an act was passed criminalizing the introduction of harmful substances into water sources to ensure their safety for both fish and household use.<sup>14</sup> In 1886, an act preventing the polluting of water prohibited the erection of animal structures where their waste would drain into nearby waterways used for domestic purposes.<sup>15</sup> If corralling loose animals near domestic waterways or depositing substances like trash or manure would have similar results, it was also prohibited. Additions to the act preventing the polluting of water were made in 1892 that prohibited washing sheep in areas close to water sources used for domestic purposes.<sup>16</sup> It further mandated to corral, camp, or bed animals seven miles away from any water source used for domestic purposes to avoid contamination.

### 1972 Clean Water Act (Federal)

- Implemented pollution control programs
- National water quality criteria
- Now illegal to discharge pollutants into navigable waters

### 2018 America's Water Infrastructure Act (Federal)

- Improves drinking water and water quality
- Deepens infrastructure investments
- Enhances public health

## State and Federal Legislation

In 1945, the Utah Legislature authorized surveys to collect data on water use, drainage, and reclamation to support water conservation across the state.<sup>17</sup> This prompted considerable public conversation about the environmental conservation of Utah Lake. In 1947, state legislation funded flood-control projects aimed at preventing pollution and obstructions in Utah's natural waterways.<sup>18</sup> That same year, the Utah Water and Power Board Act declared all water within the state as public property, organizing bodies of water into various districts, with Utah Lake designated as part of the Provo River District.<sup>19</sup> This act was also among the first to address the decades of raw sewage disposal into Utah Lake. In 1948, the United States Surgeon General was authorized to cooperate with other government agencies to establish programs aimed at eliminating or reducing pollution in the nation's waterways. This legislation was known as the Federal Water Pollution Control Act.<sup>20</sup> The Utah Legislature passed the 1949 Water Conservancy Act Amendments to expand the powers of the state's water conservancy

districts, enabling them to construct, operate, and maintain water projects, and to collaborate with state and federal agencies on water conservation initiatives.<sup>21</sup>

The latter half of the twentieth century marked a time of environmental protection and action particularly at the federal level. The federal Watershed Project and Flood Prevention Act of 1954 authorized the Secretary of Agriculture to work with states and local agencies to plan projects that would help improve and conserve soil and water.<sup>22</sup> The federal Land and Water Conservation Fund was established in 1965 to be used for water conservation and to improve the surrounding natural areas so they could be used for recreation without being environmentally diminished.<sup>23</sup> The 1966 Clean Water Restoration Act provided federal funding for states and local agencies to initiate projects aimed at reducing and controlling water pollution.<sup>24</sup> A 1967 state law prohibited the disposal of human waste into recreational waters and adjacent lands, ensuring cleaner water quality.<sup>25</sup>

The 1970 Water Quality Improvement Act granted the federal government authority to set water quality standards and further regulate pollutants.<sup>26</sup> In 1972, significant amendments to the Federal Water Pollution Control Act introduced stricter regulations on pollutant discharge and established new standards for maintaining water quality in U.S. water bodies, marking the emergence of what became known as the Clean Water Act.<sup>27</sup> In 1973, the state passed the Water Pollution Act, expanding the powers of the Water Pollution Committee to meet federal standards and requiring the reporting of pollutant spills and discharges.<sup>28</sup> The 1976 Resource Conservation and Recovery Act further strengthened federal environmental protections by giving the Environmental Protection Agency (EPA) sole authority to manage hazardous (but not nuclear) waste and oversee its disposal in natural areas.<sup>29</sup> This federal act allowed for the EPA to regulate and remove the waste that Geneva Steel and other local manufacturers were dumping into Utah Lake and nearby tributaries. The EPA published water quality standards in 1983 and updated them in 1994 to establish guidelines for maintaining the quality of water intended for public use.<sup>30</sup> The 1996 federal Safe Drinking Water Act Amendments ensured public access to safe drinking water.<sup>31</sup> While Utah Lake is not used as drinking water, this act helped clean up its water quality by requiring owners and operators of public water systems to abide by the standards outlined in these amendments.<sup>32</sup>

The federal Water Resource and Development Act of 1986 overhauled the management of water resource projects, emphasizing infrastructure improvements, cost-sharing, and environmental protections, laying a foundation for more efficient project implementation.<sup>33</sup> In 1987, the Water Quality Act was passed as a quasi-amendment to the Clean Water Act, enhancing its regulatory framework by addressing issues such as pollution control, toxic pollution, and nonpoint source pollution, while also reinforcing the financial systems supporting water quality projects across the

United States.<sup>34</sup> In 2004, the Provo River Transfer Act transferred ownership of the Provo River and related water sources from the federal government to the State of Utah, empowering local governments to oversee conservation and pollution control efforts for tributaries feeding into Utah Lake.<sup>35</sup> The 2014 Water Infrastructure Finance and Innovation Act followed, establishing a federally backed credit program administered by the EPA to support eligible water and wastewater infrastructure projects.<sup>36</sup> In 2016, the Water Infrastructure Improvements for the Nation Act created and funded new water infrastructure projects within rivers and harbors.<sup>37</sup> Building on these efforts, the 2018 America's Water Infrastructure Act was passed, enhancing the Safe Drinking Water Act with over thirty additional programs designed to improve water quality, ensure access to safe drinking water, and prioritize public health.<sup>38</sup>

In 2006, the Watershed Restoration Initiative (WRI) began operating underneath the Utah Department of Natural Resources and became officially codified during the 2022 legislative session. The WRI was established to improve Utah's watershed health and biological diversity, water quality and yield, and opportunities for sustainable use of natural resources.<sup>39</sup> Stemming from this WRI legislation, many projects for Utah Lake and its tributaries have improved water quality and yield.

### Objectives of the Watershed Restoration Initiative

- Improve the quality of Utah's watersheds and biological diversity
- Improve water quality and yield
- Improve opportunities for sustainable use of natural resources

Responsibility for management of Utah Lake has changed hands several times over the years. Initially, the Division of Forestry, Fire, and State Lands (FFSL) oversaw the lake as a state resource. In 2007, the state passed a concurrent resolution to establish the Utah Lake Commission (ULC).<sup>40</sup> However, the ULC had limited authority; it could only make plans and recommendations and needed to coordinate with other agencies (such as FFSL) to implement them. In 2022, the Utah Lake Authority (ULA) was established to replace the ULC and cooperatively manage the lake, with FFSL acting as the lake trustee.<sup>41-42</sup> The ULA was given greater authority to make independent decisions and implement plans without relying on other agencies. Its responsibilities include managing the lake's resources, ensuring recreational opportunities, and maintaining the lake's ecological health. The ULA was amended the following year to solidify the requirements for serving on its board.<sup>43</sup> Unlike the ULC, the ULA can also raise funds independently rather than depending solely on state and federal grants.<sup>44</sup> While changes in management have caused setbacks and

delayed improvement projects, having a dedicated entity focused on Utah Lake brings hope for future restoration efforts. The ULA continues to cooperate with other government entities and community members to achieve its goals.

More Utah Code was written in 2022 to include standards for water quality throughout the state.<sup>45</sup> In 2024, the Water and Irrigation section of the Utah Code was also updated to include comprehensive laws governing all water resources within the state.<sup>46</sup> Most recently, in 2024, the Utah Lake and Great Salt Lake Study Amendments mandated a study by the Utah Division of Forestry, Fire, and State Lands to assess water quality and conservation strategies for Utah Lake.<sup>47</sup> Also in 2024, the Water Efficient Landscaping Requirements were enacted in Utah, restricting government agencies from using overhead spray irrigation near the lake or in areas designated for recreational use, further safeguarding water resources.<sup>48</sup>

### Contextual Significance

Pollution resulting from sewage disposal and industrial/agricultural runoff have contributed to Utah Lake's decline in water quality. Early legislators strove to reduce contamination of the Lake's tributaries that were used for domestic purposes. However, the legislation still permitted the disposal of most pollutants directly into Utah Lake. Over time, this negligent behavior significantly decreased the health of the lake's ecosystem.

From the arrival of the settlers up to the late 1960s, it was common practice to discharge raw sewage into Utah Lake. Most bodies of water, like Utah Lake, are capable of "self-cleaning," meaning they can break down and neutralize pollutants. However, as Utah County's population grew and sewage production increased, Utah Lake eventually became overloaded with organic material.<sup>49</sup> Soon after a study conducted in 1948 by Dr. Dean Anderson of Brigham Young University determined that "the waters in multiple areas of Utah Lake were being seriously polluted," Utah County cities began surveying locations to build sewage treatment plants.<sup>50</sup> By the late 1960s, all major cities that were discharging sewage into Utah Lake had built wastewater treatment plants, and by 1967 raw sewage was no longer being directly discharged into Utah Lake.<sup>51</sup>

Another major source for high nutrient input into Utah Lake is agricultural runoff. Agricultural runoff occurs when water from irrigation, rain, and snowfall collects fertilizers, minerals, pesticides, and herbicides from farmland and carries these substances into nearby water bodies or groundwater sources. Using fertilizer has been a critical part of successful farming practices, yet just as with sewage discharge, the increase in population alongside the increase of chemical applications in modern farming practices have contributed to the overloading of nutrients and subsequent eutrophication of Utah Lake.

Eutrophication is a common cause for freshwater bodies to experience increases in algal growth leading to potential harmful algal blooms. Algal blooms can be caused by the overgrowth of cyanobacteria (also known as blue-green algae), which are naturally occurring microorganisms found in fresh water. These microorganisms are an important part of nutrient cycling within the lake's ecosystem. Cyanobacteria photosynthesize and produce oxygen, cycle carbon and nitrogen, and they thrive in the warm, shallow, nutrient dense waters of Utah Lake. During times of optimal temperature and increased nutrient loading, they will often multiply and experience exponential growth, called an algal bloom. After blooming, cyanobacteria eventually die off causing the production and release of cyanotoxins that can be harmful in large quantities to humans and wildlife.<sup>52</sup> The decomposition of dead cyanobacteria also substantially decreases oxygen levels in the lake, negatively affecting aquatic wildlife.<sup>53</sup>

Other forms of toxins, such as heavy metals, have been found from non-biological sources such as the manufacturing industries around Utah Lake. From 1944 to 2001, Geneva Steel operated a steel mill in what is now Vineyard, Utah, a city that rests on the banks of Utah Lake. Geneva Steel originally manufactured and enhanced national steel production during World War II. In the late 1980s, students and community members began to protest the contamination of the air and water quality in Utah County.<sup>54</sup> According to a study done by the Environmental Working Group, just between 1990 and 1994 Geneva Steel released 266,468 pounds of toxic chemicals—ammonia and phenol—into Utah Lake.<sup>55</sup> Ammonia and phenol are highly toxic to aquatic creatures and they negatively impact humans and wildlife as they are corrosive to the skin, eyes, and respiratory system. Work to reverse the harm done by Geneva Steel to the lake has been a focus of restoration efforts since the mill stopped operating in 2001. Today, the lake has been cleaned up from much of the toxic waste, but there is still work to be done.

## Fish & Wildlife Timeline

### Territorial Legislation

The earliest legislation impacting the wildlife at Utah Lake was enacted in 1853. The act granted county courts jurisdiction over fisheries, allowing them to establish policies intended to prevent the unnecessary destruction of fish.<sup>56</sup> In 1862, another act made it so the county courts could designate the location of fish traps in water bodies and provide permits for their placement. However, no fish traps were permitted in the Jordan River (Utah Lake's only outflow).<sup>57</sup> Legislation regulated the harvesting of fish and fowl in 1872 by banning certain species from being harvested completely or by setting seasonal boundaries specifying appropriate sizes for the seines used to catch fish. This act also prohib-

ited using harmful chemicals for fishing and safeguarded fish migration and spawning routes by requiring fishways to be placed in dams. Legislators also tried to incentivize private owners to establish private fisheries in exchange for being tax exempt for a period.<sup>58</sup> In 1874, additions to the Act for Fish and Fowl further defined how to create fishways and manage private fisheries. This act also specified that redirecting water sources, like streams, from their natural course for purposes other than irrigation or mechanical use was prohibited to help support natural fisheries.<sup>59</sup>

In 1874, the first county fish commissioners were appointed. The commissioners' job was to enforce legislation related to the environment and create policies at the county level that helped protect natural resources.<sup>60</sup> In 1880, legislation required the placement of screens to prevent fish from entering artificially diverted waterways.<sup>61</sup> Legislation in 1886 stated that trout less than six inches were not to be killed.<sup>62</sup> The commissioner over fish and fowl was renamed in 1888 to being over fish and game. This more accurately represented his duties to include all wildlife.<sup>63</sup> The first territorial fish and game commissioner was appointed in 1890, performing duties like those of county commissioners mentioned earlier, but with jurisdiction over the entire territory.<sup>64</sup>

### 1915 Fish and Game Law (State)

- Protection of wildlife from exploitation
- Strict controls on hunting and fishing seasons

### 1934 Fish and Wildlife Coordination Act (Federal)

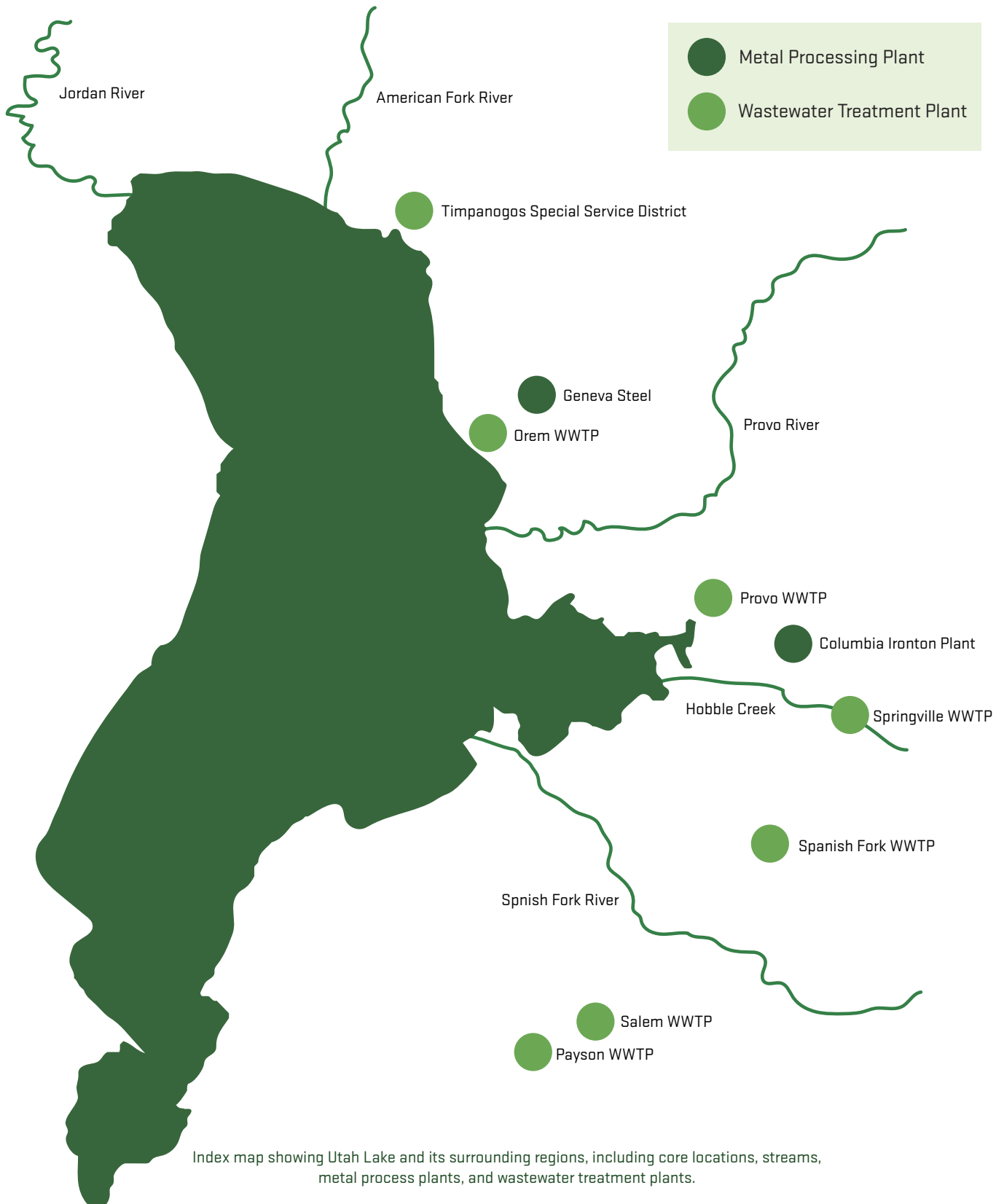
- Requires assessment of impacts on wildlife for proposed water projects
- Protects wildlife from modifications of natural bodies of water

### State and Federal Legislation

In 1896, one of the first pieces of official state legislation created the positions of state and county fish and game wardens. These were appointed by the governor and approved by the legislative body and were responsible to oversee laws and ordinances regarding wildlife. Importantly, these fish and game wardens were given authority to manage the "collection, propagation, culture and distribution" of fish in the state.<sup>65</sup> The building of fish hatcheries was authorized by the state commissioner of hatcheries in 1899 to help breed fish already native to Utah.<sup>66</sup>

In 1899, the position of state fish and game commissioner was created. A commissioner was appointed in each legislative session

# Utah Lake Index Map





who was responsible for supervising all of the state's bodies of water and protecting all fish and game within the state.<sup>67</sup> In 1915, the Fish and Game Law was passed to regulate wildlife management and hunting within Utah. This law established the need for hunting and fishing licenses, setting hunting seasons for specific species, and limiting the number of fish and wildlife harvested in each period.<sup>68</sup> Fishing and hunting licenses were required beginning in 1919, making it unlawful to kill game animals within the state without a license.<sup>69</sup> That same year, the legislature passed a law that declared fishing via poison, explosives, lime, drugs, or electricity unlawful.<sup>70</sup> In 1923, the state legislature repealed the 1919 law regarding fishing and hunting licenses to pass a more comprehensive version. This version specified who could acquire a hunting license, it further regulated how to fish or hunt, and it set a window of time for the sale of catches and seasons for hunting and fishing.<sup>71</sup>

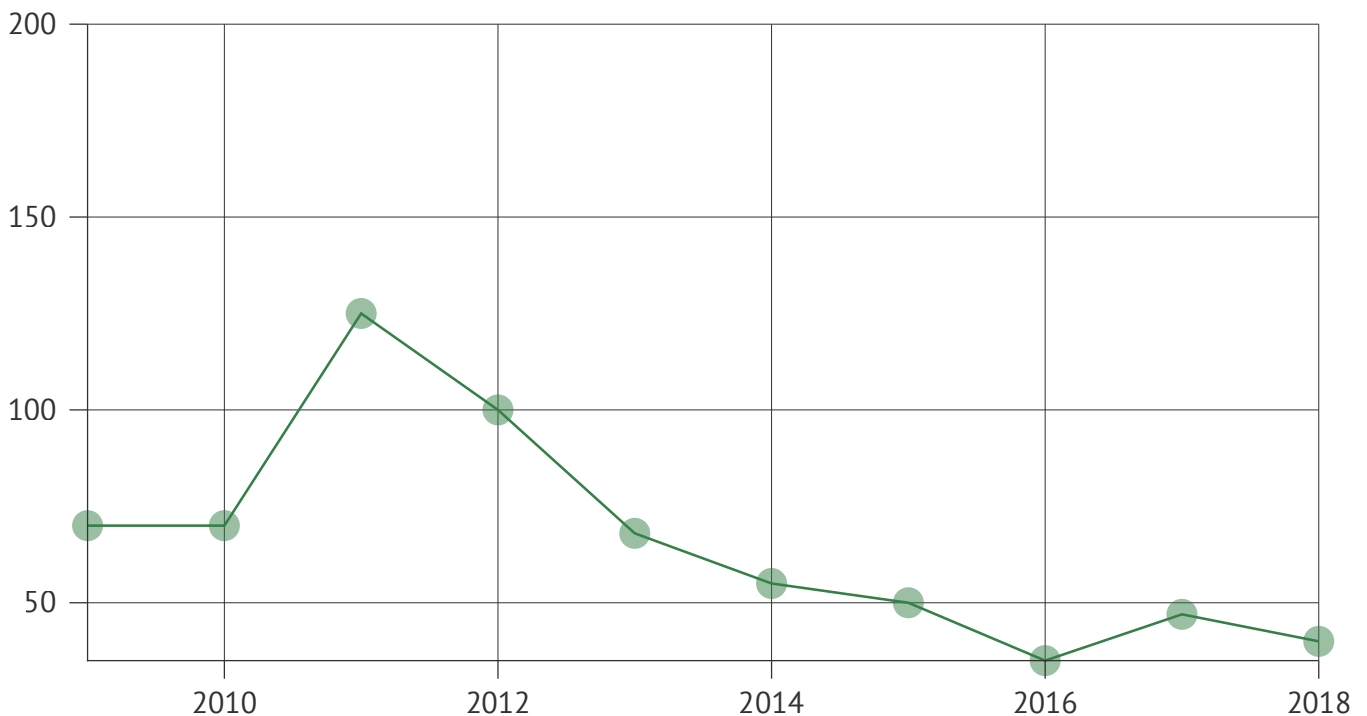
In 1934, the Fish and Wildlife Coordination Act allowed the United States Fish and Wildlife Service to evaluate and reduce the impact of water resource development projects on fish and wildlife. It also provided federal assistance for states to research the impact of municipal utilities on fish and wildlife.<sup>72</sup> In 1939, three state laws were passed regarding the protection of fish and wildlife. The first, passed in January of that year, granted the fish and game commissioner the authority to conduct wildlife restoration projects with the federal government.<sup>73</sup> The second, passed in February, clarified the definition of "game animal."<sup>74</sup> The third,

passed in March, allowed for landowners to collect fees for birds, specifically pheasants, that were killed on their property. These landowners could establish "posted hunting areas" on their own land and could also dissolve these areas at their discretion.<sup>75</sup> In 1941, the law established a fish and game commission to be run by a director. The commission was given authority to enforce the rules and regulations established by the state, including imposing fines and issuing arrest warrants.<sup>76</sup> The 1950 Dingell-Johnson Act provided federal funding for fish management and restoration projects, which helped improve water quality in areas used for recreational fishing.<sup>77</sup> In 1973, the Endangered Species Act was passed to protect endangered species and their habitats, including those at Utah Lake.<sup>78</sup>

### Contextual Significance

In 1776, European explorer Silvestre Velez de Escalante, a Spanish missionary, was guided by two Timpanogos people through Utah Valley on his way to Monterey, California. In September of that year, the group traversed Spanish Fork Canyon and made their way into Utah Valley.<sup>79</sup> Escalante describes Utah lake in a journal entry; "This lake of Timpanogotzis abounds in several kinds of good fish, geese, beaver, and other amphibious animals . . ." <sup>80</sup> The pre-settlement period described by Escalante is considered the lake's peak of ecological stability, particularly for wildlife. Soon after the settlers' arrival, there began to be changes in the lake's biota.<sup>81</sup>

## Common Carp Abundance



"The lake, which must be six leagues wide and fifteen leagues long, extends as far as one of these valleys. It runs northwest through a narrow passage, and according to what they told us, it communicates with others much larger. This lake of Timpanogotzis abounds in several kinds of good fish, geese, beaver, and other amphibious animals which did not have an opportunity to see. Round about it are these [Native Americans], who live on the abundant fish of the lake . . . Besides this, they gather in the plain grass seeds from which they make atole, which they supplement by hunting hares, rabbits and fowl of which there is great abundance here. There are also buffalo not very far to the north-northwest." —Silvestre Velez de Escalante

The settlers altered the habitats of many native fish living in Utah Lake and its tributaries. Water coming into the lake from any natural river or stream was often redirected for domestic purposes, typically irrigation. This generally restricted or destroyed existing fish migration and spawning routes, causing a significant population decline in native fish. Water pollution resulting from agricultural, industrial, or domestic activities also eventually made the lake unsafe for fish or wildlife.

A pivotal moment of change for Utah Lake was when common carp were introduced to the lake in the 1880s by the federal government to provide another source of food for the settlers of the Utah territory.<sup>82</sup> The introduction of non-native species like carp significantly disrupted the ecology of native fish. A combination of the above actions in conjunction with the 1930s dust bowl

ultimately led to the extinction of the Utah Lake Sculpin and the extirpation of eight other fish species.<sup>83</sup> Today, only three native fish remain: the June Sucker, Utah Sucker, and Utah Chub. By 2010, carp represented 90% of Utah Lake's total fish biomass.<sup>84</sup>

Many pesticides known as "forever chemicals" were first introduced to Utah Lake in the twentieth century. Pesticides are used to treat agriculturally and domestically harmful insects, animals, and vegetation. However, when pesticides are carried into bodies of water as a result of runoff, they negatively impact non-target wildlife by affecting their reproductive capabilities and overall health.<sup>85</sup> Once pesticides are absorbed into the body of a fish, any animal that eats the fish will absorb its pesticides, known as bioaccumulation. This perpetuates the spread of the toxic chemicals.<sup>86</sup>

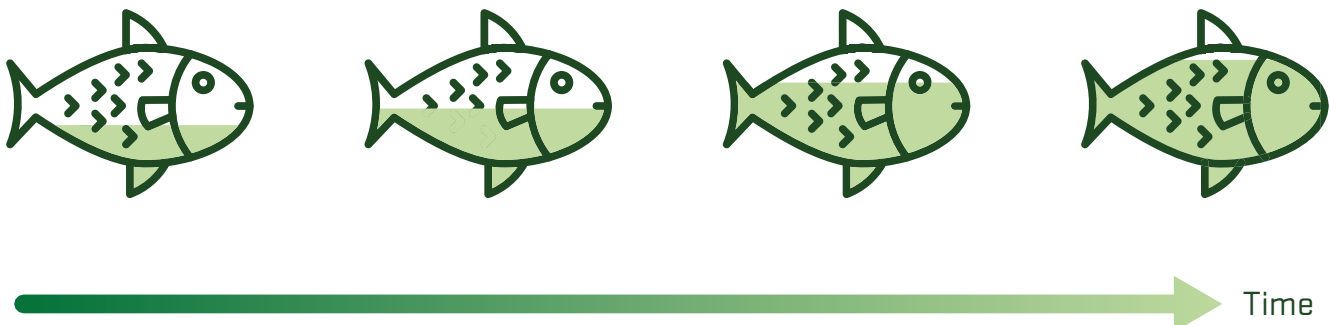
Midges, insects often mistaken for mosquitoes, have been the object of pesticide use at Utah Lake. They can be found in clusters around certain parts of the lake. Midges are bottom dwellers, and juveniles will burrow into lake sediment. Adult midges will emerge in the evenings from the lake to form swaths and mate. Although these insects are a nuisance, they are a primary source of food for many of the diverse wildlife at Utah Lake. Additionally, midges feed on algae, which can have top-down control of algae growth and could potentially lead to reducing the severity of algal blooms in Utah Lake.<sup>87</sup> In the past, the state has tried to treat mosquitoes with pesticides but has mistakenly sprayed midges instead.<sup>88</sup> This is not only bad for midges, which in turn affects millions of birds, but it also contaminates the water surrounding their habitats.

## Land Timeline

### Territorial Legislation

In 1854, territorial legislation made it the responsibility of a surveyor to designate herd grounds for domestic livestock.

### Bioaccumulation





The act gave authority to probate judges to license and collect bonds from herdsman who were given responsibility to care for specific animals on their designated grounds.<sup>89</sup> From 1855 to 1857, legislation granted several herd grounds to various people but all herd grants were repealed in an 1859 act that transferred the responsibility to designate and grant herd ground to county courts.<sup>90-95</sup> This legislation contributed to animals overgrazing the land which degraded the vegetation surrounding waterbodies and in upland areas, contributing to runoff.

### State and Federal Legislation

In 1862, the Homestead Act was passed to allow any citizen or intended citizen to claim up to 160 acres of land in the western United States for the purposes of living and for cultivating the land to grow crops, raise livestock or otherwise build land "improvements."<sup>96</sup> This legislation encouraged westward expansion and agricultural development. The 1866 Mining Act, like the Homestead Act, allowed people to claim unused land for mining exploration. This mining act was specific to unmined areas and those taking advantage of this law were required to do labor on the mine to qualify. The act also gave "first in time, first in right"

#### 1937 Pittman-Robertson Wildlife Restoration Act

- Funding for wildlife habitat restoration and conservation
- Funding for feeding, resting and breeding grounds

#### 1976 Federal Land Policy and Management Act

- Moved management of public lands to Bureau of Land Management
- Provides provisions for environmental resource protection
- Encourages public involvement in land use planning

to the surrounding water to be used for mining operations.<sup>97</sup> Some parts of the act were later repealed by the Federal Land Policy and Management Act of 1976.<sup>98</sup> Both the Homestead Act and the Mining Act were instrumental in the settlement and economic development of the western United States, including Utah.

In 1877, the Desert Land Act amended the Homestead Act of 1862 by decreasing the amount of land offered. The United States

Congress also refined the requirements to irrigate land in dry areas in the western parts of the United States. This legislation played a crucial role in the development of agriculture in arid regions.<sup>99</sup> Around the same time, the Supreme Court decided *Illinois Central Railroad v. Illinois*.<sup>100</sup> This case reaffirmed the doctrine of public trust, stating that natural resources such as shorelines, waterways, and air are held in trust by the state government for public use and benefit. This policy guarantees that the public will have continual access to resources such as Utah Lake, and that natural resources will be free from commercial exploitation.

In 1937, the Bank-Jones Farm Tenant Act was passed and gave farmers the right to claim damaged lands and rehabilitate them for future farm use. By doing so, they agreed to help maintain the land and the surrounding natural resources including rivers, lakes, reservoirs, and dams.<sup>101</sup> The 1937 Pittman-Robertson Wildlife Restoration Act provided funding from Congress to support efforts to conserve and protect wildlife and improve their habitats. The bill defines many different habitat areas including "water trails . . . water access . . . [and] water adaptable as feeding, resting, or breeding places for wildlife."<sup>102</sup>

The 1976 Federal Land Policy and Management Act established rules and guidelines for the management of public lands by the Bureau of Land Management.<sup>103</sup> The act requires that resources be managed for multiple uses and sustained yields such as recreation, grazing, and wildlife habitats. Additionally, the act includes measures for protecting environmental and cultural resources, and details procedures for the disposal and acquisition of public lands, with a focus on retaining lands in federal ownership unless disposal aligns with the national interest.<sup>104</sup> In 1987, the *Utah Division of State Lands v. United States* Supreme Court case ruled that Utah has the right to the bed underneath Utah Lake under the equal footing doctrine.<sup>105</sup> This doctrine ensures that all states admitted to the United States after 1789 are afforded the same rights and privileges as the original 13 states.

In recent years, many pieces of legislation have been passed, debated, and repealed in regard to natural resources and land affecting Utah Lake. In 2017, the Utah House passed a concurrent resolution that acknowledged the state of the lake and stressed the importance of making efforts to restore it.<sup>106</sup> The next year, the Utah Lake Amendments were passed that allowed the Division of Forestry, Fire, and State Lands to sell state lands to private entities for projects that would further restore Utah Lake.<sup>107</sup> In 2022, a bill was passed that modified the 2018 amendments to make it harder for the Division of Forestry, Fire, and State Lands to dispose of Utah Lake land by requiring approval from the state legislature and the governor.<sup>108</sup> Ultimately, the 2018 amendments were repealed in 2024.<sup>109</sup>

### Contextual Significance

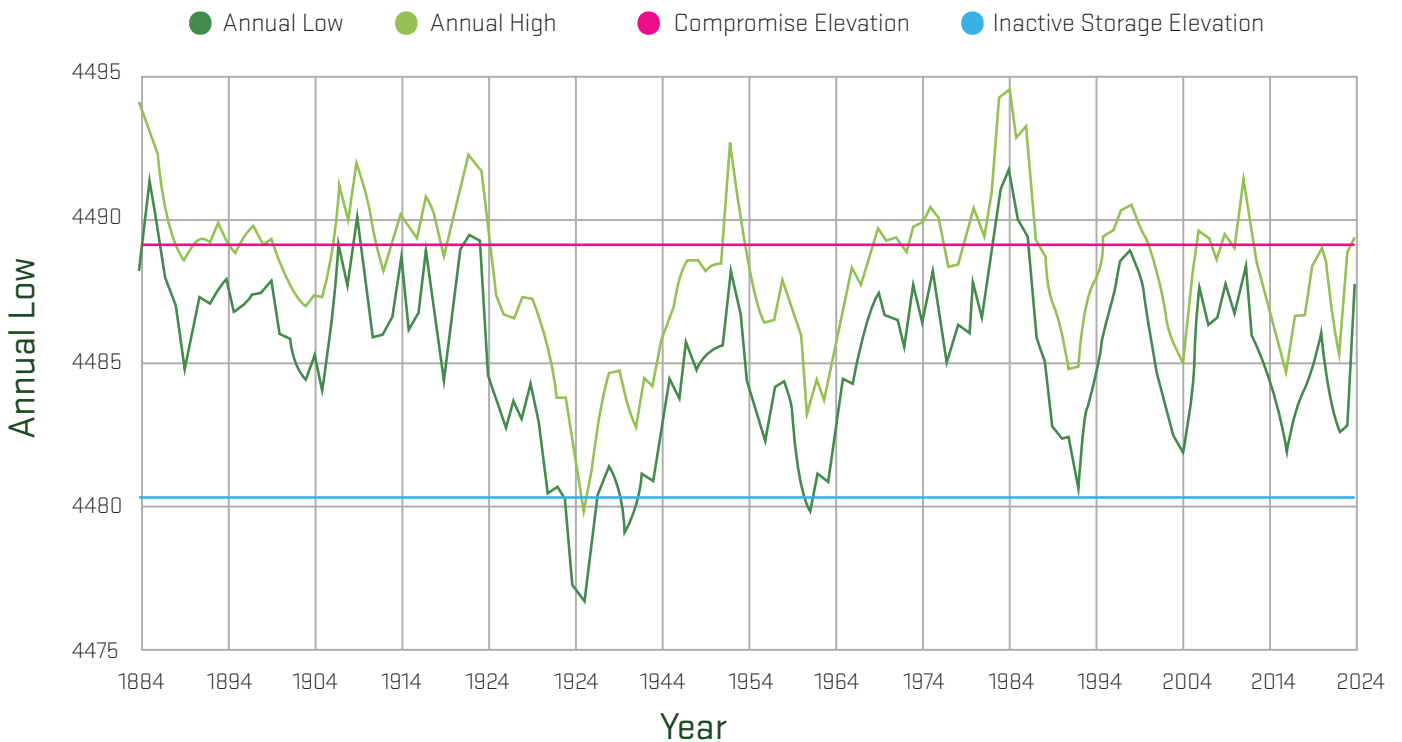
Invasive plant species have had significant impacts on the decline of Utah Lake's ecosystem structure and function. *Phragmites australis subsp. australis*, known as phragmites or the common reed, are a non-native plant species that have made the shoreline and surrounding wetlands of Utah Lake their home. These tall, dry reeds were accidentally introduced to the region in the nineteenth century and they pose a great fire risk. They tend to grow in clumps and, after drying out, provide a lot of fuel for fires to spread rapidly through them. For much of Utah Lake's history, the seventy-five-mile shoreline was inaccessible because of dense non-native phragmites' growth. In recent years, as much as 70% of phragmites have been reduced to make way for native plants.<sup>110</sup> Still, non-native phragmites leave less room for native plants to thrive as they compete for resources, and they threaten the habitats of migratory birds and fish species like the June Sucker. Additionally, non-native phragmites invasions also help create stagnate water which serves as breeding grounds for mosquitoes

which may carry diseases.<sup>111</sup> It's possible that with the continued presence of non-native phragmites, water levels in the lake could decrease with the increased risk of wildfire, thereby altering critical wetland habitat and nutrient cycling.

Historical overgrazing in upland areas has contributed to increased invasive plant establishment leading to severe wildfires and to water pollution from resulting runoff. Overgrazing prevents the replenishment of native perennial grasses and increased soil erosion, leading to inadequate vegetation cover. Vegetation that is loosely connected hinders the spread of natural fires that help regulate infilling.<sup>112</sup> This process over time has contributed to increases in woody plant establishment and increases in invasive annual plants such as cheatgrass. Fires that occur in densely vegetated areas with many large trees can burn much hotter and can spread farther than in areas that are more sparsely vegetated. After fires, the soil becomes hydrophobic and easily transported via precipitation and water runoff. This can result in increased landslides that contribute significantly to erosion of the landscape. As erosion occurs, sediments are carried into streams and rivers,

## Utah Lake Historic Lake Levels

1884-2024 Annual Water Levels



increasing nutrient loading and degrading the water's quality for irrigation, wildlife, and domestic use. Downstream, fish often die in water affected by these conditions.<sup>113</sup> In the early 1930s, after years of drought, overgrazing, and subsequent increased plant mortality, heavy rain pushed sediment, untethered by natural vegetation, into Utah Lake tributaries.<sup>114</sup> Much of the sediment from these mudslides ended up in Utah Lake. The increased sediment due to overgrazed landscape conditions accelerated the rate at which the lakebed elevation rose. As Utah Lake is a shallow basin lake, these punctuated events can lead to large cascading effects on water quality and habitat health.

Habitat health as related to harmful algal blooms (HABs) have been a priority of many proposals related to Utah Lake. Proposals have attempted to address HABs (such as by dredging the lake or by using chemicals to prevent them), but no solution has been firmly decided or seen any long-term benefits other than restoration of the wetland habitat and native fisheries. Scientists warn against ecological disturbances in the lake that would likely cause further harm through cascading effects in the ecosystem.

A proposal that gained recent notoriety was the Utah Lake Island Project, controversially named the Utah Lake Restoration Project (ULRP), which proposed dredging Utah Lake in order to increase the water depth. As of today, the maximum water elevation of the lake is set to be 4,489 feet above sea level.<sup>115</sup> Increasing the elevation solely by increasing water input could flood surrounding domestic land. The controversial ULRP proposal planned to dredge the lake and use the dredged sediment to build a variety of islands within the lake to be used for commerce and recreation. They utilized H.B. 272 that allowed for the sale of public state land, to provide a foundation for their proposal. However, in 2022, Utah's Division of Forestry, Fire and State Lands declared the project unconstitutional and against the "public trust doctrine" and canceled the project.<sup>116</sup>

In addition to dredging, there have been discussions for using chemicals to kill or prevent algal blooms, but no concrete plans have been developed. Other efforts to find treatment for algal blooms have been made in the form of research projects and pilot testing of mechanical, biological and chemical solutions. Brigham City, Utah, has partnered with a company called BlueGreen Water Technologies to focus on using oxygenation to get rid of algal blooms.<sup>117</sup> The company has said it will look at Utah Lake to see if their product will be effective.<sup>118</sup> The Utah Division of Water Quality is also wrapping up an eight-year Utah Lake Water Quality Study to seek out long-term solutions for algal blooms and water quality improvements.<sup>119</sup>

## Conclusion

Utah Lake's history reflects a complex interplay between human activity, policy and legislation, and natural ecosystems. Significant ecological changes have occurred due to human activities, and

Utah Lake is far from pre-settlement conditions. The arrival of settlers in 1847 marked the beginning of large-scale offenses to the lake's ecosystem, including the overharvesting of native fish species; the introduction of non-native plant and fish species; and pollution from agricultural, industrial, and domestic activities. These actions, combined with early legislative efforts that often lacked the foresight to protect the lake, led to severe ecological degradation.

Over time, the territorial, state, and federal governments of the United States have implemented various policies aimed at managing and restoring Utah Lake. While early efforts were often reactive and limited in effectiveness, more recent legislation has been guided by research and a better understanding of the lake's environmental challenges. The creation of the Utah Lake Authority and the implementation of comprehensive water management laws underscore a growing commitment to restoring and preserving the lake's ecological health.

Today, the focus for Utah Lake is on balancing human development needs while protecting its natural resources. Continued efforts to control pollution, restore native species, and manage water resources are crucial for the lake's future. As Utah Lake faces ongoing challenges, like the impacts of climate change and a growing population, it remains a vital resource that requires vigilant stewardship to ensure its health and sustainability for future generations.

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