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Great Salt Lake Wetlands

Harms from Utah Inland Port Development

A report from: Stop the Polluting Ports, Great Salt Lake Audubon, Utah Physicians for a Healthy Environment, Center for Biological Diversity Written by: Becky Burrage, Heather Dove, Brian Moench MD, Lauren Griffeth, Chandler Rosenberg, Deeda Seed. **Update by:** Becky Burrage, Deeda Seed, Brian Moench MD, Joan Gregory



Introduction

In the waning hours of the 2018 Utah legislative session, a bill was passed with little public notice or involvement that is evolving into a dramatic, negative impact on Utah's environment and public health. The bill established the Utah Inland Port Authority (UIPA) and gave it the mission of publicly subsidizing industrial development, especially massive warehouse farms and the logistics industry.

Key legislators at the time proudly proclaimed that they were “building the plane while flying it.” In other words, they acknowledged UIPA’s mission had been poorly vetted. Four years later, the heart of the plan, a transloading facility on Salt Lake City’s west side was abandoned despite UIPA signing a costly long term lease on the property. A highly critical state audit of UIPA’s fiscal performance led to the resignation of the director. Then, under a new director, UIPA changed the plan to multiple sites scattered along the Wasatch Front and the rest of the state. But this plan is no more viable or realistic than the previous plan, yet also promises a much more destructive environmental footprint. This report offers an updated, more detailed look at that expected footprint.

Most of the sites chosen for development are on top of or near critical wetlands that surround Great Salt Lake. Since the bill was passed, the fate of Great Salt Lake has become increasingly dire, and through multiple media reports international attention has focused on a lake trajectory that if allowed to continue, the lake will degenerate into a toxic dust bowl. While state lawmakers seem to understand to some degree the necessity of saving the lake, and are implementing modest water conservation efforts, UIPA’s strategy for subsidizing industrial development completely undermines those efforts.

The fate of Great Salt Lake is intertwined with the fate of its wetlands. These wetlands support an amazing array of wildlife, and help to keep our air and water clean and healthy, through filtration and dust suppression.

Science shows it is very hard to artificially recreate the ecological functions of wetlands, so once they’re gone, they’re gone. A year ago we set out to ring the alarm bell regarding the harm being inflicted on wetlands by UIPA taxpayer subsidized ‘fast tracked’ industrial development in, and adjacent to Great Salt Lake wetlands. At that time approximately 53,000 acres were imperiled. Twelve months later that number has grown to over 77,000 acres.

This growth in wetlands threatened by bulldozers occurred even as UIPA adopted a “Wetlands Policy” expressing concern about wetlands and created the mechanism for a small fund to protect some. Most of the attention is being paid to areas next to private duck clubs adjacent to Farmington Bay. For the other inland port project areas containing wetlands, only a small percentage will be saved.

This saga is unfolding in the area where most Utahns live, about 3 million of us, so the consequences are significant. And it's unfolding in certain places, such as the Tooele Valley, that doesn't have the water to support its intended growth, and where wells are running dry already.. This is a catastrophe in the making. UIPA has gone from "building the plane while flying it" to building the plane while crash landing it on Utah's future quality of life.

We are calling for a halt to state subsidized industrial development in, and adjacent to, Great Salt Lake wetlands.

Great Salt Lake Basin Wetlands

November 2023

The Utah Inland Port Authority became the single greatest threat to the wetlands of the Great Salt Lake.

December 2024

The threat posed by Utah Inland Port Authority taxpayer subsidized development of wetlands has *grown* over the last year as UIPA has increased the size of Great Salt Lake Basin project areas.

A year ago we wrote that "not only does Great Salt Lake face ecological collapse, but so too do the wetlands that surround the lake. We cannot save the lake if we sacrifice its wetlands." And, that "the current greatest driver of harm to Great Salt Lake wetlands is coming from an agency the state created: the Utah Inland Port Authority." Unfortunately, a year later this remains true as the threat from UIPA grows.

By definition, wetland areas are either permanently or seasonally saturated by surface or groundwater. As developable land becomes more scarce and more expensive in the Great Salt Lake Basin, developers are looking at wetlands as new locations to develop industrial projects. But developing land and constructing buildings in and adjacent to wetlands is expensive because of extra structural

requirements necessary to achieve soil stabilization. To offset extra costs, developers are looking for public subsidies and other taxpayer funded help from UIPA. These undeveloped wetland areas usually do not have the necessary infrastructure in place such as paved roads, sewer lines, electricity, stormwater drainage, wastewater treatment, etc., which would further increase their costs. But using public money, UIPA intends to come to the aid of these corporate developers.

There are many reasons to be concerned about using public money to create public harm by destroying wetlands with industrial development. We explore those issues in this report, and give updates on the situation as it stands in December 2024.

In this updated report we've also identified new concerns about the impact of UIPA's subsidized industrial development on water resources in the Great Salt Lake Basin. Both water quantity and quality are implicated. Wetlands provide irreplaceable services for the environment (scientists refer to these as "ecosystem services") including filtering and helping to manage water, as well as providing critical wildlife habitat.

The scientists tell us that the Great Salt Lake is in crisis and that substantive steps have to be taken immediately if there is hope for the lake to survive. In December of 2024, after the hottest summer ever recorded, the lake is 4,192 feet. The effects of the demise of the GSL are beyond calculation.

The best comparison we have is Owens Lake in California that was approximately 1/19th the size of GSL with a small fraction of the surrounding population compared to the Wasatch Front. Owens Lake dried up in 1926. Los Angeles county and the state of California have spent over 2.5 billion dollars to mitigate the effects of the blowing dust with ongoing annual costs in the millions of dollars.

There are many keys to saving the GSL. It begins with saving the wetlands surrounding the lake.

In this report we will describe why preserving and protecting wetlands is in the public interest in terms of creating and maintaining a healthy environment for humans and wildlife.

In 2024 the Utah Inland Port Authority (UIPA) is *still* the single biggest driver of wetland destruction and impairment in the Great Salt Lake Basin.



The industrial development planned and subsidized by UIPA will damage wetlands and surrounding areas in multiple ways. Wetlands and adjacent lands are destroyed and paved over during the building process. The new impermeable surfaces of the development create storm water pollution. New industrial development depletes water resources and creates noise and light pollution. The cars, trucks and locomotives servicing this development generate pollution. All of this combines to make the directly impacted area, as well as surrounding land inhospitable to healthy life.

Given that Great Salt Lake is in crisis and on the verge of ecological collapse, the last thing the state should be doing is subsidizing the destruction of wetlands next to the lake.

On some level the state recognizes the need to protect wetlands, as there are federal regulatory obligations under the federal Clean Water Act. Over the years the state has funded wetland restoration and protection in a variety of ways. For example, as a part of the [Great Salt Lake Watershed Enhancement Trust, the state has created a “wetland grant program”](#) to conserve and restore wetlands. That program recently funded \$8.5 million for 8 projects to improve and protect “some 13,000 acres.”

Yet at the same time GSL and its wetlands face a crisis. The state is poised, through UIPA, to subsidize, with public money, the impairment of approximately 77,282 acres of wetlands at locations near or next to Great Salt Lake.

Specifically, the state is busy expediting the destruction of wetlands by creating Utah Inland Port Project Areas in and adjacent to wetlands at a staggering pace.

The History of UIPA

The entire history of UIPA for seven years has been fraught. The responsibility for that lies largely with the Utah Legislature. [UIPA was created through legislation passed quickly and with little public comment during the 2nd to last evening of the 2018 Utah Legislative Session.](#) At that time UIPA was squarely focused on Salt Lake City and grabbing control over 16,000 acres in the northwest quadrant with a poorly developed concept of what an “inland port” actually is, and what they were planning to do.

[In 2019 the UIPA statute was amended to allow for the creation of “satellite ports”](#) at locations outside of Salt Lake City, although again, the concept was vague. In 2021, UIPA launched a misguided plan to build [a transloading facility next to the Union Pacific intermodal facility](#). This idea was also poorly vetted and after bonding for \$150 million the project collapsed, [leaving UIPA with a monthly lease payment of \\$120,000 for 40 years](#).

What is happening now in the [Salt Lake City location](#) is a lot of new warehouse construction and all the attendant pollution (eventually this could end up being over 152 million square feet of new warehouse space). All the negative impacts to Great Salt Lake, the south shore and Farmington Bay wetlands are relevant at the Salt Lake City location.

The one piece of good news in our updated 2024 Wetlands Report, is that this area is now receiving attention and some additional protection, through the “Shoreline Heritage Area Preservation Plan” supported by local and state government, as well as UIPA. It is not yet clear what the impact of this will be, but it’s a step in the right direction.

The Salt Lake City “inland port” location is 1.5 miles from the Great Salt Lake’s official boundary (meander line). Over 26,588 acres of wetlands could be harmed by this industrial development.



UIPA is expanding harm to wetlands through expanded project areas

Spanish Fork: Inland Port in and next to Utah Lake wetlands

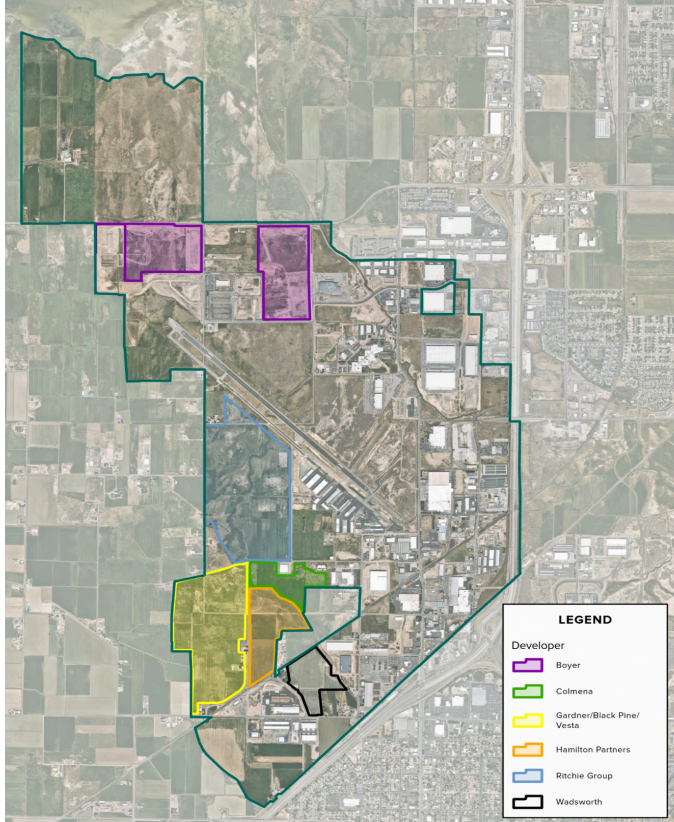
In July 2023, UIPA approved [a new project area in Spanish Fork](#) consisting of 2,298 acres riddled with wetlands and adjacent to another approximately 1,200 acres of wetlands.. In January 2024, ~ 300 acres of wetlands were added into the project area. As a result, the project area is now next to Utah Lake. The northern boundary is 1.2 miles from Utah's June sucker habitat restoration area on (Lower Hobbie Creek Wildlife Protection Area). The June sucker is a species listed as "threatened" under the Endangered Species Act. [Many millions have been spent to save the](#)

[June sucker](#) and the effort has gone well, with the June sucker population growing so that in 2021 they were downlisted from “Endangered” to “Threatened”.

UIPA’s plan is to help a group of prominent Utah developers, many of whom are getting subsidies in other inland port project areas, to fast track development of 8.5 million square feet of new warehouse space, which based on traffic studies from other similar sized warehouse development, could cause tens of thousands of additional vehicle trips in the area per day, with many of these being diesel trucks.

In addition to outright destruction of wetlands of all sorts (playa, mudflat, fringe, etc.) the impervious surfaces, water pollution, air pollution, urban heat island effects, and other harms caused by massive industrial development will harm humans, as well as the ecology of Utah Lake and Provo Bay, as well as the threatened June sucker and many other species.



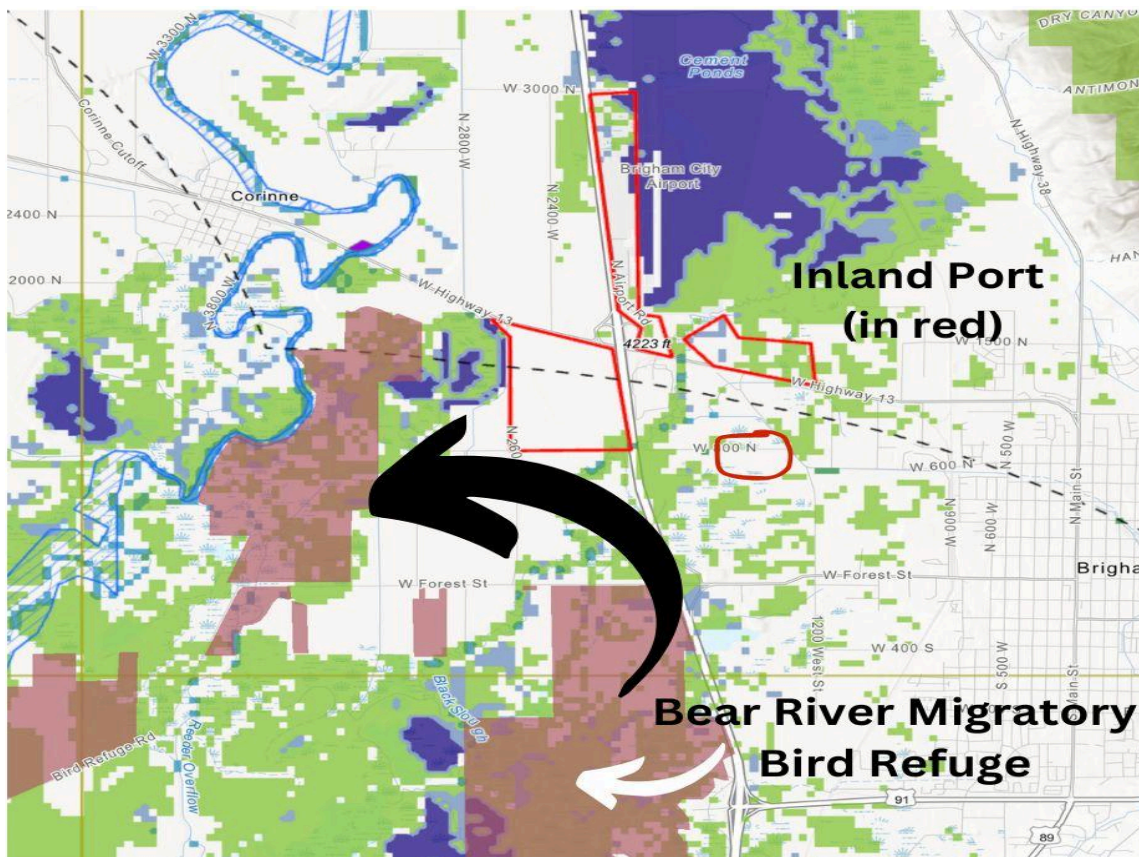


Map Key

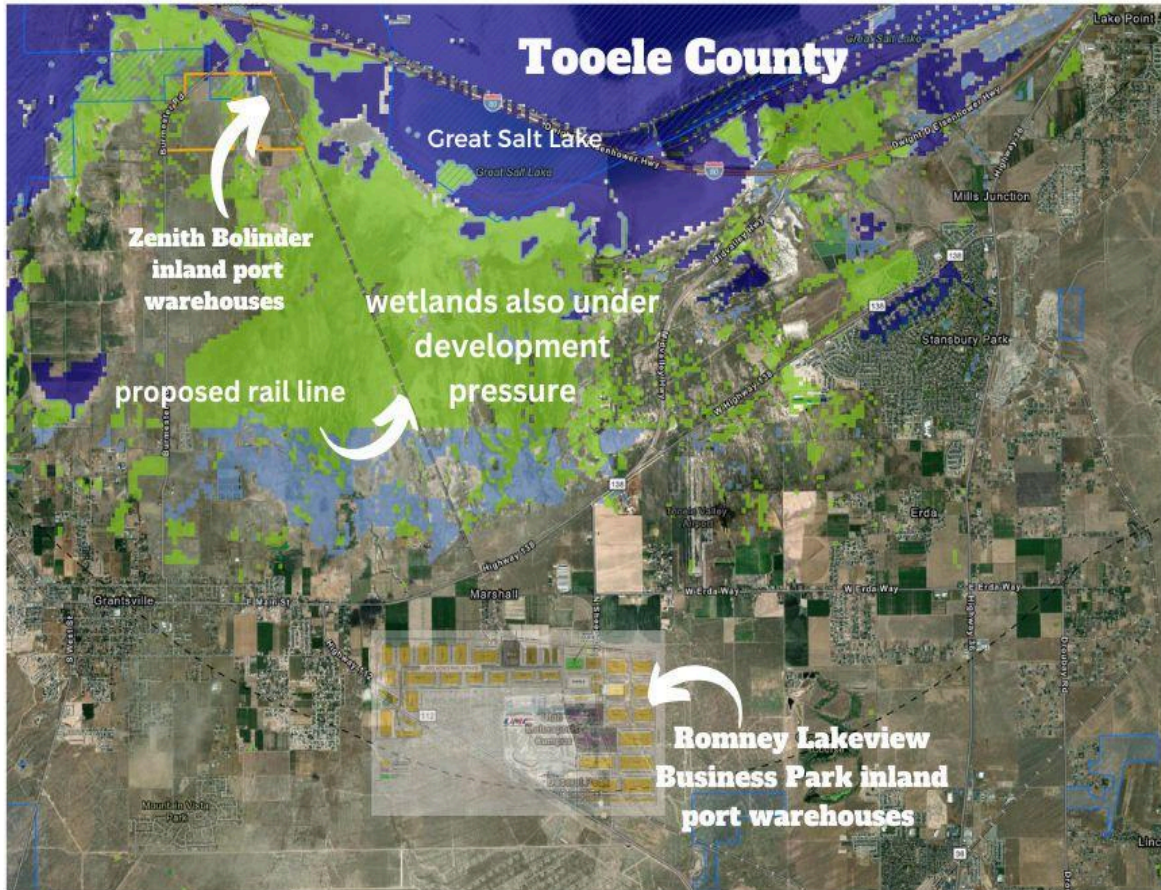
Map #	Developer	Acres	Project SF	Status
1	Boyer	122.9	2,127,175	N/A
2	Ritchie Group	143.1	2,505,929	Groundbreaking Q3 2023
3	Gardner / BlackPine / Vesta	126.3	2,047,600	Groundbreaking Q4 2023
4	Colmena	24.7	401,808	N/A
5	Hamilton Partners	50.2	680,160	N/A
6	Wadsworth	53.2	808,200	Groundbreaking Nov. 2022
Total		520.4	8,570,872	

Box Elder County: Inland Port on the doorstep of Bear River Migratory Bird Refuge

In August 2023, [UIPA approved several locations in Box Elder County](#), with one location being half a mile from Bear River Migratory Bird Refuge and another having the Malad River running through it. Project areas in and adjacent to wetlands account for about 693 acres located .5 miles from the Bear River Migratory Bird Refuge. The project areas were expanded in October 2024 now to include 1,500 acres. Approximately 1,600 acres of wetlands about the UIPA Project Areas.



Tooele County: A proposal for a massive subsidized industrial development proposal next to Great Salt Lake and Great Salt Lake wetlands



In October 2023, UIPA introduced plans for Tooele County Project Areas, the now 243 acre [Tooele Valley Project Area](#) , ¼ of a mile from Great Salt Lake, to be developed by Zenith Bolinder (the Bolinders are the father and uncle of Utah State Representative Bridger Bolinder) and the now 500 acre [Grantsville City “Twenty Wells” Inland Port Project Area](#) which is the Lakeview Business Park (LBP) being developed by the Romney Group (owned by Senator Mitt Romney’s son Josh) and another 150 acre new project area called “Broken Arrow” next to wetlands. Between the Zenith Bolinder location and the LBP lie 7,000 acres of wetlands also

being eyed for industrial development. All locations are within the boundary line for inclusion in the GSLWET wetlands grant program.



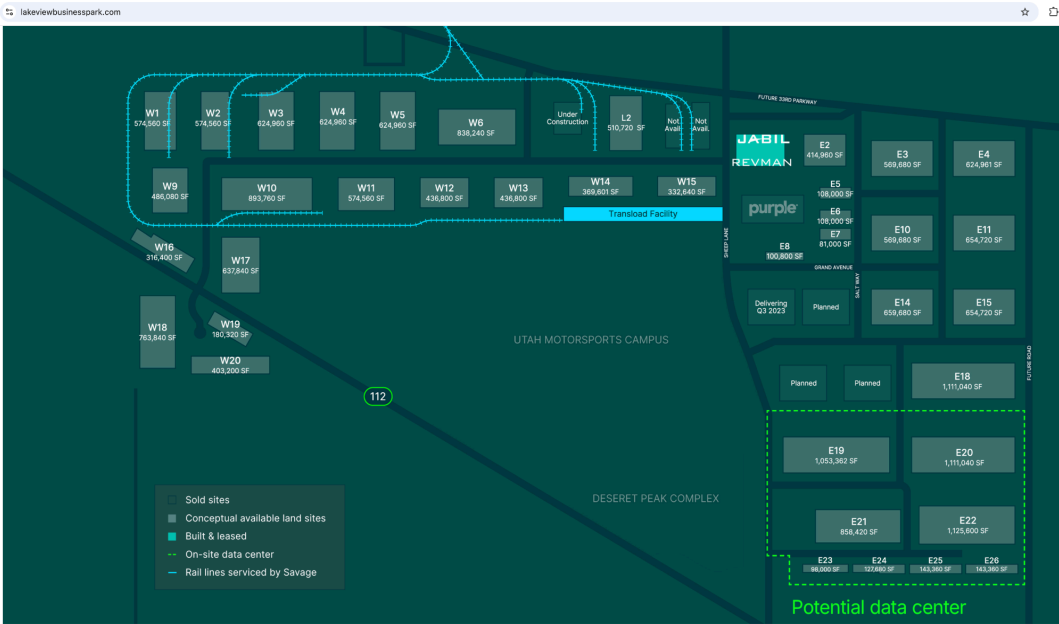
The Tooele Valley project areas are particularly alarming because of the limited water resources available in the Tooele Valley which is dependent on aquifers and wells for water. The water currently being used is all that is available and drought may be diminishing even that. When combined with the fact that Tooele County was [Utah's fastest growing county in 2023](#), the situation becomes even more precarious.

Tooele County's elected leaders are suggesting the problem will be solved by getting water from [somewhere else](#), such as a water district. But even if Tooele succeeds in that pursuit, it will mean much less water going into Great Salt Lake, and that much less water for wetlands protection.

In multiple ways UIPA is making matters even worse. Developers are advertising an interest in high water consumptive uses such as data centers, they are planning a

wastewater treatment plant next to the wetlands on the edge of the lake, a road over wetlands, and a railroad through wetlands.

Lakeview Business Park:



In 2005, a team of scientists working for the Utah Geological Survey, published a report on the wetlands in Tooele Valley concluding:

“ Our studies indicate the wetlands in Tooele Valley are endangered. The threats posed are drought, and increased development due to population growth, which could dramatically affect the amount of water that the wetlands receive. We cannot predict modifications in climate with certainty, but we can plan appropriately for future development.” ¹

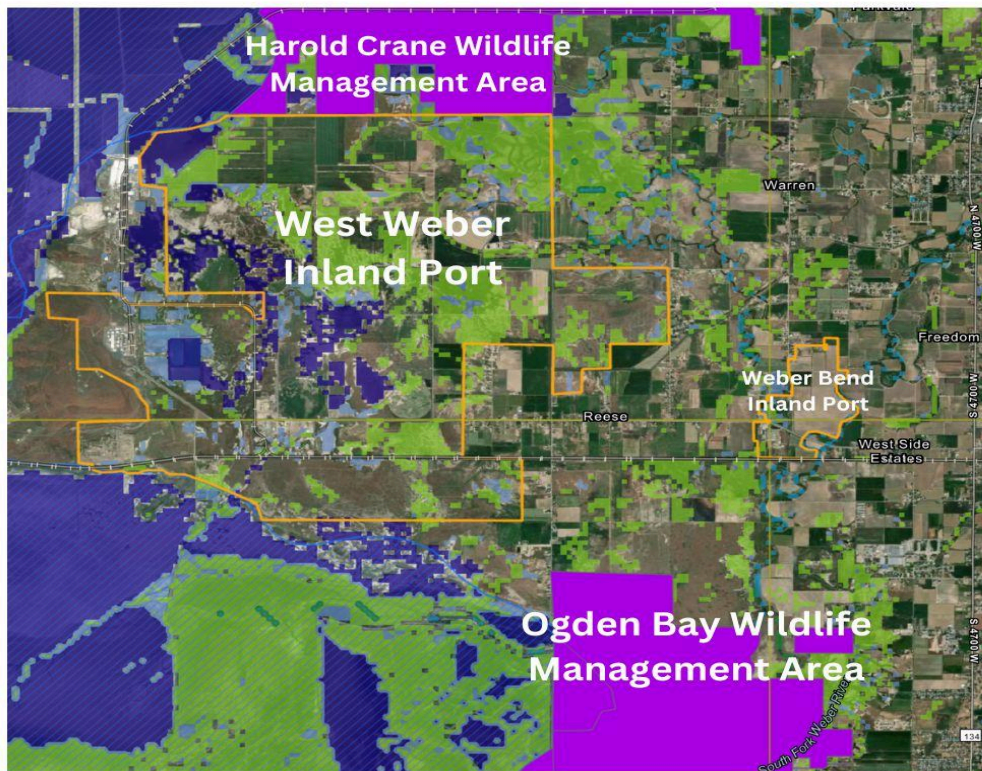
Unfortunately, the planning they called for in 2005 is not happening, and as a result not only are wetlands endangered, but so too is the ability of Tooele County residents to access enough water.

1. [Burk, Neal, Bishop, C., Lowe, M., Wetlands in Tooele Valley, Utah: An Evaluation of Threats Posed by Ground-water development and Drought, Utah Geological Survey, p.28. 2005.](#)

The Lakeview Business Park is now advertising that they are backed by Prologis, "the largest high quality logistics real estate company in the world." This suggests that all the concerns about the environmental consequences of this proposed development are even more likely to materialize.

Weber County: A proposal for massive industrial development next to Great Salt Lake and next to two state wildlife management areas

In August 2023 the [Weber County Commission passed a resolution supporting a 903 acre inland port project area next to Great Salt Lake](#), on January 2, 2024 they passed a resolution expanding the project area to 9000 acres and in May 2024, UIPA created [the West Weber Project Area](#). All of this industrial development will be wedged between two state funded wildlife management areas - the Harold Crane Wildlife Management Area and the Ogden Bay Wildlife Management Area.



In 2024, the estimated cumulative impact of ALL of these project areas would harm approximately 77,282 acres of wetlands.

Figure 1. Wetland Impact by UIPA Project Area

Location	Status	Project Area Acres As of 12/24	Distance from GSL	Acres inside GSLWET wetlands grant line	Wetland acres abutting project area	Total acres impacted
SLC	Approved 3/18	16,172	1.57 miles	4,832 north of I-80, 3,756 south of I-80	>18,000	26,588
Box Elder	Approved 8/23 Expanded 10/24	724 ²	6 mi from GSL, .5 mi from BRMBR	180	4,773	5,497
Tooele	Approved 12/23 Expanded 5/24	242 ³ 500 ⁴ 150 ⁵	.25 mi	892	7,000 to se 3,400 to nw	12,397
Weber	Approved 5/24	9,000	Next to it	9,000	20,000	29,000
Sub-total GSL		26,788		14,910	53,173	73,482
Spanish Fork	Approved 7/23 Expanded 1/24	2,600	Next to Utah Lake	NA	~1200	3,800
Grand total GSL Basin		30,584			54,373	77,282

² Brigham City location only

³ Zenith Bolinder LLC, construction started

⁴ Lakeview Business Park/Romney Group, construction started

⁵ Broken Arrow

Water: How Will Inland Port Industrial Development Impact Water Quality and Quantity

Significant questions exist about the impact of inland port industrial development on water resources, in terms of quantity and quality.

The situation with the SLC Inland Port Jurisdictional Area is a cautionary tale. Because of the confusion and uncertainty created by the state's rush to take control of the area through the creation of UIPA, issues related to stormwater pollution prevention were never worked out and 6 years later there are serious questions about how stormwater pollution is being managed.

Also in the first frenzy of development SLC received multiple applications from developers seeking to build things that would use large amounts of water, such as server farms and bottling plants. One bottling plant intended to use 2 million gallons of water a day. Fortunately SLC passed an ordinance restricting new industrial water users to 200,000 gallons a day.

In some other UIPA project area locations this 200,000 gallons a day cap is mentioned as a goal, but not required. Thus intensive water consumption by industrial users could create considerable harm. In particular UIPA's expansion into Tooele and Weber Counties raises major concerns for Great Salt Lake Wetlands and the water supplies in both. But of course even a consumptive limit of 200,000 gallons a day means little if you are allowing that allotment to 1,000 businesses. It is the proverbial death by a thousand cuts, In this case the death of Great Salt Lake by a thousand cuts.

Great Salt Lake faces ecological collapse due to lack of water

In 2022, Great Salt Lake dropped to a record elevation of 4188'—the lowest level on the state's contingency charts.⁶

The depletion of water is even more severe than it appears because groundwater is not included in these estimates. Approximately 26 million acre-feet have been lost from the lake itself, but twice that amount is estimated to have been lost from the aquifers around the lake due to water table drop.⁷ These empty aquifers could slow the rate of rebound after runoff is increased.

Despite record precipitation in 2023, the lake is still in critical condition at 4192' elevation. This level is considered “adverse” for wetlands, the lake's biology, recreation access, boating, brine shrimp harvesting, mineral extraction, visitor spending, and public safety.⁸

While recent legislative changes to Utah's water management will likely contribute to water conservation in the coming decades, they are not adequate to help the lake through its current crisis. In fact, if legal, financial, and technical support is not provided for water users to implement these changes, the new policies could have little to no influence on Great Salt Lake in 2024 and 2025. For example, conservation in 2022 and 2023 increased streamflow to the lake by less than 100,000 acre-feet, with most conserved water held in reservoirs or consumed elsewhere in the watershed.^{9 10}

⁶ <https://pws.byu.edu/great-salt-lake>

⁷ <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2021JB022020>

⁸ <https://webapps.usgs.gov/gsl/>

⁹ <https://agu.confex.com/agu/fm22/meetingapp.cgi/Paper/1195985>

¹⁰ <https://www.sltrib.com/news/environment/2022/12/08/water-districts-vowed-send/>

Given the current crisis at GSL, the public needs more information on how the proposed port expansions will impact GSL's wetlands before the state allows this development.

The importance of GSL Wetlands

According to the Utah Division of Wildlife Resources, the wetlands surrounding GSL are "of international importance." There are approximately 360,000 acres of wetlands below the GSL "meander line" (the official surveyed edge of the lake), in addition to 546,697 acres of open water and 3,540 acres of upland wetlands representing 26% of the 1.37 million acres below the meander line.¹¹

As an important zone of transition between uplands and the open water of Great Salt Lake, they serve as an important buffer zone and habitat for wildlife, and provide other ecosystem services including flood control, improving water quality, and facilitating biogeochemical processing.

Similar to the way trees and forests are referred to as the "lungs of the earth," wetlands have been referred to as the "kidneys of the earth" for their ability to filter out pollution from water. Three processes are key to this benefit: sediment trapping, nutrient removal, and chemical detoxification.

Wetland sediments allow capture of contaminants like heavy metals because heavy metals are often attached to soil particles. Wetlands can sequester, absorb and utilize excess nutrients like nitrogen and phosphorus carried towards water bodies by agricultural and lawn fertilizers, and sewage and septic systems which help prevent algae and cyanobacteria growth. This ability has prompted many municipalities to build wetlands for that specific purpose.

¹¹ <https://ffsl.utah.gov/wp-content/uploads/OnlineGSL-CMPandROD-March2013.pdf>

Because of their low oxygen environment, wetlands feature slow decomposition of organic matter producing extraordinary carbon capture capability. They can store as much as 20-40 times the amount of carbon as agricultural soils, and they can store it for hundreds of years. As such they play an important role in climate protection.¹²

On the other hand, disturbing or losing wetlands releases that carbon into the atmosphere. Moreover, when wetlands are warmed or disturbed, they release three of the most potent greenhouse gasses: CO₂, methane, and nitrous oxide.¹³

Great Salt Lake wetlands support millions of migratory birds as they migrate between northern breeding grounds and winter locations. They also serve as habitat for a large number of nesting birds — including the world’s largest breeding population of white-faced ibis and one of western North America’s largest breeding colonies of American white pelicans.¹⁴ According to the US Fish and Wildlife Service, these wetlands are also home to five species of amphibians and reptiles as well as fish (carp, suckers, and catfish), muskrats, and a high diversity of invertebrates.¹⁵

It is estimated that for every 1-foot decrease in lake levels, approximately 44,000 acres of mudflats are exposed¹⁶, reducing the amount of shorebird habitat.

UGS research indicates that wetlands and springs along the eastern and southern shore and Locomotive Springs along the north shore of GSL are sustained by

¹² Lal, R., Kimble, J., Levine, E. & Stewart, B. Soils and Global Change CRC Press (1995)

¹³ USGCRP. Second State of the Carbon Cycle Report. (2018). Available at:

<https://carbon2018.globalchange.gov/chapter/13/> (Accessed: 21st June 2019)

¹⁴<https://if-public.deq.utah.gov/WebLink/DocView.aspx?id=392798&dbid=0&repo=Public&searchid=6a06277a-0cf4-40b1-8a57-291210a26e29>

¹⁵

https://www.researchgate.net/publication/342681911_Great_Salt_Lake_Shorebirds_Their_Habitats_and_Food_Base

¹⁶ https://link.springer.com/chapter/10.1007/978-3-030-40352-2_9

shallow, unconfined aquifers, which are connected to deep basin fill aquifers.¹⁷ Shallow groundwater levels in wetlands surrounding GSL are affected by drought, declining GSL levels, groundwater pumping and a shift from agricultural water use to municipal and industrial. Municipal and industrial pumping would further exacerbate the reduction in subsurface inflow during long periods of drought.¹⁸

Modeling the water budget of fringe wetlands in Salt Lake, Tooele, and Davis counties suggests that subsurface inflow is most affected by long-term drought (20-year).

With so much widespread recognition of the imperative of protecting GSL and its ecosystem, inland port development adjacent to GSL Wetlands will be a direct new threat, counter to all other efforts to save the lake.

Tooele County faces significant water related challenges

Unlike other counties in the GSL Region, Tooele County relies on well water and is not part of a water district. The county has been struggling with water issues as these wells are running dry.

Tooele has attempted to improve their condition by using ARPA funding to connect existing wells but county officials have expressed the need to join an existing water district to source water in the future. In January 2023, the town of Stockton in Tooele County was under a building moratorium due to water shortages. Farmers did not plant crops in 2021 and 2022 due to mountain springs drying up.

The wetlands in Tooele Valley have been classified as endangered due to threats from drought and increased development – conditions that have worsened since this classification in 2005. A Tooele Valley wetlands assessment found that wetland

¹⁷ https://ugspub.nr.utah.gov/publications/special_studies/ss-117/ss-117.pdf

¹⁸ <https://ffsl.utah.gov/wp-content/uploads/OnlineGSL-CMPandROD-March2013.pdf>

hydrology in Tooele has been impacted the most by the numerous roads, canals, and ditches in the area, and that agricultural land use is more beneficial to wetland health and functionality than industrial or urban land use.¹⁹

Weber County also faces significant water related challenges

Despite 2023's record water year, the Weber Basin has been in a historic drought in recent years.

In September 2021, the Davis and Weber Counties Canal Company shut off secondary water supply due to unprecedented drought conditions. This set a record for earliest the company has ever had to shut off water. Shutoffs were incited by the depleted Weber River.²⁰

In April 2022, Weber had endured 3 consecutive years in which they received less than 10% of the volume of runoff from snow to keep in reservoirs (~10,000 acre-feet of the average 222,000 af) and reservoirs sat at about 30% of capacity.²¹ To compensate for these losses, the Weber Basin Water Conservancy District relied further on groundwater wells but expressed concern about significant drawdown after 4 years of increased pumping.

Before investing public money in these projects, UIPA and their supporters in the legislature must be honest with the public about the harm this will cause to communities and water supplies in both Tooele and Weber Counties. We do not have sufficient data on the groundwater in Tooele and whether the community could even sustain this project without causing irreparable damage to its already

¹⁹ https://ugspub.nr.utah.gov/publications/special_studies/ss-117/ss-117.pdf

²⁰<https://www.fox13now.com/news/local-news/davis-and-weber-counties-shut-off-secondary-water-supply-early-due-to-unprecedented-drought>

²¹<https://www.deseret.com/utah/2022/4/3/23006424/west-drought-water-restrictions-secondary-culinary-so-d-reservoir-storage-water-rights-utah-weber>

threatened water supply.

Other consequences of these wetland-based inland port areas of subsidized industrial developments include air pollution, noise and light pollution, and increased use of pesticides.

Pesticide Harm to Wetlands Associated with Expansion of the Utah Inland Port Authority

One of the major concerns associated with expansion of UIPA control around GSL wetlands is increasing pressure to use more and more pesticides. This is because more people will be working in proximity to large numbers of mosquitoes that thrive in those wetlands near GSL and other wetlands where new UIPA projects are being built. Furthermore, there is already increasing pressure to use herbicides in a desperate attempt to eradicate invasive phragmites in the wetlands surrounding the lake.²²

The EPA acknowledges that pesticides are one of the primary pollutants known to degrade wetlands and water quality. The EPA also notes that "although wetlands are capable of absorbing pollutants from the surface water, there is a limit to their capacity to do so".²³ Pesticides can leach into the soil, contaminating ground and surface waters. An influx of pesticides can overwhelm this system, leading to significant damage to aquatic ecosystems. Increased pesticide use could affect a wide variety of species that live in and around GSL wetlands.

The most commonly used pesticides that kill adult mosquitoes are organophosphates and pyrethroids, and these are also the pesticides most frequently used by the mosquito abatement districts that operate near GSL wetlands.²⁴ These are broad-spectrum toxins that impact not only the targeted

²² Utah Division of Fire, Forestry and State Lands. Phragmites at a Glance. <https://ffsl.utah.gov/wp-content/uploads/2024-Phrag-Fact-Sheet-FINAL.pdf>

²³ https://www.epa.gov/sites/default/files/2021-01/documents/threats_to_wetlands.pdf

²⁴ <https://xerces.org/press/new-report-provides-guidance-on-mosquito-management-that-protects-people-and-wetlands>

mosquitoes, but also invertebrates, fish, amphibians, birds and insects (including endangered butterflies). Many of these organisms, like midges, are food sources for the millions of migratory birds that depend on the GSL habitat. Pesticides that kill the immature mosquitoes (larvicides) are thought to be less toxic than organophosphates and are widely used near the local wetlands, however these chemicals can also adversely affect the wetland community.

Pesticides that make their way into local water sources throughout Utah, some of which involve freshwater wetlands, pose potential health risks to communities that rely on these sources for drinking water and recreational activities.²⁵ The US Geological Survey points out that "pesticides released into the environment for agricultural and non-agricultural purposes can contaminate surface water and groundwater, which are critical sources of drinking water."

Although many of the pesticides used in this country dissolve in water, some of them "adhere to sediment and persist for years in the bed sediments of streams and lakes, recording the history of contaminant use in watershed."²⁶

Some pesticides break down into by-products that are even more toxic and persist longer in the environment. Not surprisingly, pesticides have been identified as a component of the dust from the dry lake beds of GSL, and it's likely these chemicals are part of the toxic dust that is contaminating the air people in the area breathe.²⁷

Regarding human health risks, pesticide use has been at best controversial since the 1962 publishing of Rachael Carson's book, *Silent Spring*. The idea that widely distributing biological poisons would leave beneficial plants, animals, and humans unharmed never made scientific sense, and in recent decades, a growing body of research confirms they do damage to far more of the biological world than just

²⁵ <https://geology.utah.gov/water/wetlands/wetlands-in-utah/>

²⁶ <https://www.usgs.gov/mission-areas/water-resources/science/pesticides-and-water-qualit>

²⁷ <https://utahstatemagazine.usu.edu/environment/toxic-dust-a-growing-problem/>

pests. But now the danger of the use of pesticides is likely exponentially greater.

A second dimension of concern emerged in the 1990s with research that showed many pesticides were also endocrine disruptors, i.e. they mimicked or antagonized critical human hormones at extremely low dose exposure, adding an entirely new level of scientific evidence of their harm to human health. Endocrine disruptors have been identified as causing a wide spectrum of harm, especially at the earliest, most critical stages of human development; in utero, infancy, and childhood. Clinical consequences include developmental disorders, reproductive toxicity, multiple cancers, immunosuppression, and damage to the brain and nervous system.

In response, in 1996, Congress mandated EPA test all pesticides for endocrine disruption potential. Twenty-eight years later that still has not happened and EPA's regulatory process largely ignores the issue.²⁸ Independent researchers meanwhile have strengthened the evidence of harm from endocrine disruptors.

A third dimension of public health harm from pesticides has emerged in the last few years that almost certainly dwarfs the previous two. Scientists from throughout the world are finding "forever chemicals" (per- and polyfluoroalkyl substances i.e. PFAS chemicals) in many of the most commonly used pesticides. The presence of PFAS can be both intentional and inadvertent, i.e. intentionally incorporated into the active ingredient, as inactive ingredients used to enhance efficacy, or from leaching from storage containers.²⁹

²⁸ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9189695/>

²⁹ <https://www.sciencedirect.com/science/article/abs/pii/S0269749121018972?via%3Dihub>
<https://eastcoastwaterquality.com/news/maine-data-reveals-pfas-pesticides-trend/#>
<https://doi.org/10.1016/j.hazl.2022.100067>
<https://ehp.niehs.nih.gov/doi/10.1289/EHP13954>

Nearly one third of pesticide active ingredients approved by EPA in the last ten years are PFAS.³⁰ Another study found that 70% of pesticides allowed on the market since 2015 contain PFAS compounds.³¹

There is already widespread PFAS pesticide contamination of every component of the global environment, including drinking water and the food supply.³²

Nearly 100% of humans carry PFAS in their blood in very disturbing amounts, including newborns, and pesticides are a major reason.³³ Like with other endocrine disruptors, women, fetuses, infants, and children are more susceptible to the health hazards of pesticides and PFAS.³⁴ European scientists said, “The extent of this contamination is shocking. It is a result of political failure at many levels.”³⁵

Forever compounds are so toxic that in 2022, the US EPA stated that for the two main PFAS categories, PFOS and PFOA, their “safe levels” in drinking water were .02 and .004 parts per trillion, respectively. To give that a visual reference, .02 ppt is one drop of water in a lake the size of 6 Rose Bowl stadiums, and .004 ppt is one drop of water in a lake the size of 30 Rose Bowl stadiums.

³⁰ <https://ehp.niehs.nih.gov/doi/10.1289/EHP13954>

³¹ <https://www.sciencedirect.com/science/article/pii/S0025326X23007439>

³²

<https://www.pan-europe.info/resources/reports/2024/07/tfa-forever-chemical-water-we-drink#:~:text=TFA%20values%20in%20mineral%20and,PFAS%20contamination%20in%20the%20water>

³³ https://www.atsdr.cdc.gov/pfas/hcp/clinical-overview/?CDC_and

<https://www.ewg.org/news-insights/news/2023/07/study-exposure-toxic-forever-chemicals-during-pregnancy-increase-s-odds>

³⁴ <https://eu.boell.org/en/PesticideAtlas-gender>

³⁵ <https://www.pan-europe.info/resources/reports/2024/05/tfa-water-dirty-pfas-legacy-under-radar>



It is naive for anyone to assume that pesticide spraying over GSL wetlands does not reach the main residential areas of the Wasatch Front. Pesticides have been shown to travel thousands of miles across oceans and to other hemispheres.³⁶

Pesticides are a major reason why forever chemicals have become so ubiquitous in the global atmosphere that rainwater everywhere on earth has become contaminated with "forever chemicals" to the point where it is no longer safe to drink-anywhere.³⁷

PFAS contamination is reason enough to suspend landscape pesticide spraying. But developing inland ports near, and on top of GSL wetlands will increase pressure to expand their use.

³⁶ Unsworth J. et al. Significance Of The Long Range Transport Of Pesticides In The Atmosphere October 2000 Pest Management Science 58(3). DOI:10.1351/pac199971071359

³⁷ <https://www.euronews.com/green/2022/08/04/rainwater-everywhere-on-earth-unsafe-to-drink-due-to-forever-chemicals-study-finds>

Increasing pesticide use invariably promotes resistance within target insects and plants, which ignites a spiraling chemical arms race, with higher doses and more toxic chemicals required to achieve the same result, accelerating the cascade of harm across the biological world. For example, the most recently commercially sold iteration of Roundup, replacing glyphosate with four different herbicides, is now 45 times more toxic than the previous version from 2023.³⁸

In an extensive report about pesticides and health risk, Utah Physicians for a Healthy Environment summed up the problem with this statement: " In recent years numerous medical experts and entire medical societies have made strong position statements regarding the danger to humans of even small doses of chemicals, and their link to obesity, cancer, heart disease, birth defects, reproductive pathology, and neurological and brain disorders such as Parkinson's, impaired intellect, autism and attention deficit disorder." ³⁹ Pesticides are at the top of the list of toxic chemicals that humans should avoid.

In short, widespread industrial development of GSL's wetlands stimulated by UIPA would bring more people in daily contact with mosquitoes and increase pressure for more and more pesticide use. The end result will be more harm to the GSL ecosystem, its wildlife, including the birds, and to the residents of the entire state.

³⁸ <https://www.thenewlede.org/2024/10/bayers-new-roundup-products-more-toxic-than-prior-formulations-says-new-report/>

³⁹ <https://www.uphe.org/priority-issues/mosquito-pesticide-spraying/>

How Industrial Development Impacts People and Wildlife: Noise and Light Pollution



@Scott Baxter

Should these inland ports be developed, the totality of imminent wetland destruction will be staggering. This press to destroy wetlands is in direct contradiction to the state's efforts to save GSL and its natural resources. Most of these proposed ports lie within 7 miles of the meander line – an area identified by the state's Great Salt Lake Water Trust as an area that is prime wetland habitat eligible for conservation. The wetlands within the 7-mile-line generally consist of edge habitats that support far more diversity of birds than does the open water of the Lake. Thus, these edge areas are hugely important to the health and survival of the birds and other wildlife that inhabit them.

From 1850 to the 1980s, Utah lost over 30% of its wetlands⁴⁰ Wetland loss since the 1980s has accelerated due to massive development around the Lake and some experts now estimate that over 90% of the state's original wetlands have been destroyed. According to state officials the wetlands around Great Salt Lake currently represent 75% of all that remains in Utah.⁴¹ Should these ports be developed, we will further degrade and greatly diminish what is left of the habitat that is critical for the 12 million migrating birds that utilize the Lake as an essential stopover. Great Salt Lake is the crossroads of the West for the avian world. It is well understood that these migrating birds will not survive if they cannot access the resources that they have relied on and co-evolved with for millennia.

There are some species at the Lake that represent the majority of the population found in North America and in some instances, the Western Hemisphere. Species that are particularly vulnerable if we lose more habitat at the Lake include the Eared Grebe, the Wilson's Phalarope, the Red-necked Phalarope, the Marbled Godwit, the Snowy Plover, the Northern Pintail, the Tundra Swan, the Green-winged Teal, the Common Goldeneye and the California Gull.

The state's GSL Ecosystem Program (GSLEP) has stated that its GSL Conservation Objective is to "develop an informed, perceptive and enduring constituency working toward long term GSL ecosystem health and 'harmony between men and land'." UIPA's planned proliferation of industrial development on many of the remaining wetlands of Great Salt Lake countermands that objective.

In addition to wholesale destruction of wetlands, the many planned inland ports around the Lake will cause a dramatic increase in both light and noise pollution. Detrimental human and wildlife health impacts from light and noise pollution have been well documented.

⁴⁰ <https://geology.utah.gov/water/wetlands/health-and-restoration/>

⁴¹ <https://geodata.geology.utah.gov/pages/download.php?direct=1&noattach=true&ref=7918&ext=pdf&k=>

[Artificial light exposure at night can negatively affect human health, increasing risks for heart disease, obesity, depression, sleep disorders, diabetes, breast cancer, childbirth complications and more.](#)⁴² Plants and animals [depend on Earth's daily cycle of light and dark to govern life-sustaining behaviors such as reproduction, nourishment, sleep, and protection from predators.](#)⁴³

Migrating birds in particular suffer greatly from light pollution. Artificial light disturbs the birds' ability to navigate by way of the stars and moon. Birds can become confused, lose their way and die. Additionally insects, which are a primary source of food for birds and other animals, are drawn to artificial light and are instantly killed upon contact with those light sources. This again can greatly disturb bird migration and can result in birds arriving too soon or too late to take advantage of the peak insect cycles that are critical for staging, breeding and rearing young. The [National Science Foundation reported](#) on a recent study that "found that light pollution causes birds to begin nesting up to a month earlier than normal in open environments such as grasslands and wetlands, and 18 days earlier in forested environments. The consequence could be a mismatch in timing -- hungry chicks may hatch before their food is available."⁴⁴ Other studies have documented that noise and light pollution can profoundly alter bird reproduction.⁴⁵

Noise pollution will surely increase at these proposed industrial developments. Inland ports, especially those served by rail, are generally 24/7 operations. Birds are averse to noise and human commotion and will abandon feeding and grounds and nests as a result.⁴⁶

The totality of wetland habitat loss, artificial nighttime light, noise pollution and human commotion in these areas proposed for inland ports and industrial

⁴² <https://darksky.org/resources/what-is-light-pollution/effects/human-health/>.

⁴³ <https://darksky.org/resources/what-is-light-pollution/effects/wildlife-ecosystems/>

⁴⁴ <https://new.nsf.gov/news/noise-light-pollution-affect-breeding-habits-birds>

⁴⁵ <https://news.umich.edu/large-scale-nest-study-shows-that-noise-and-light-pollution-alter-bird-reproduction/>

⁴⁶ <https://news.umich.edu/large-scale-nest-study-shows-that-noise-and-light-pollution-alter-bird-reproduction/>

developments would land a devastating blow to the birds, other wildlife and Great Salt Lake. Given that the state is focused on saving GSL and all its biological treasures, it is inconceivable that the state is now considering this massive amount of wetland habitat destruction.

Noise pollution is the second largest environmental cause of human health disorders after air pollution.⁴⁷ Unwanted noise is interpreted by the brain as stress, increasing stress hormones such as cortisol and epinephrine, raising blood pressure and stimulating the production of inflammatory cells. Over time that accelerates arterial plaque accumulation increasing the risk of stroke and heart attacks.⁴⁸ As little as five years of increased traffic noise in particular significantly increases the risk of major cardiovascular events, such as strokes and heart attacks.⁴⁹

Noise of a passing freight train can produce noise that reaches 117 decibels compared to a quiet room of 27 decibels. But the brain's perception of a train's noise is 500 times greater, because the decibel scale is logarithmic, not linear. Loud noise can even trigger immediate heart attacks. The risk of dying from a heart attack increases 4.3% for every 10 dB increase in chronic road traffic noise, starting at just 35 dB.⁵⁰

Night time noise is particularly harmful because it disrupts and fragments sleep even if the person is not aware of it. Noise pollution impairs cognition. When experienced in early childhood it can impair neurologic development, increases the risk of attention deficit disorder, and can have a life-long negative effect on education and academic achievement. The noise of trains in an otherwise calm

⁴⁷ <https://www.who.int/europe/news-room/fact-sheets/item/noise>

⁴⁸ Münzel T, et al. Cardiovascular effects of environmental noise exposure, *European Heart Journal*, Volume 35, Issue 13, 1 April 2014, Pages 829–836, <https://doi.org/10.1093/eurheartj/ehu030>

⁴⁹ Osborne M, et al. A neurobiological mechanism linking transportation noise to cardiovascular disease in humans, *European Heart Journal*, Volume 41, Issue 6, 7 February 2020, Pages 772–782, <https://doi.org/10.1093/eurheartj/ehz820>

⁵⁰ Vienneau D, et al. Transportation noise exposure and cardiovascular mortality: 15-years of follow-up in a nationwide prospective cohort in Switzerland. *Environ Int.* 2022 Jan;158:106974. <https://doi.org/10.1016/j.envint.2021.106974>. Epub 2021 Nov 11. PMID: 34775186.

rural or suburban setting can be particularly harmful because there is little ambient noise to dampen the jarring effect.⁵¹

Concern about noise pollution is particularly germane to UIPA's project areas because they are planned for areas that are currently bucolic and relatively quiet. UIPA claims that one of the reasons why they are focusing on wetlands for project areas is that is where train infrastructure exists. Moreover, distribution warehouses will become centers of truck traffic and its associated noise 24/7. All of this adds significantly to the human health threat to residents of these project areas.

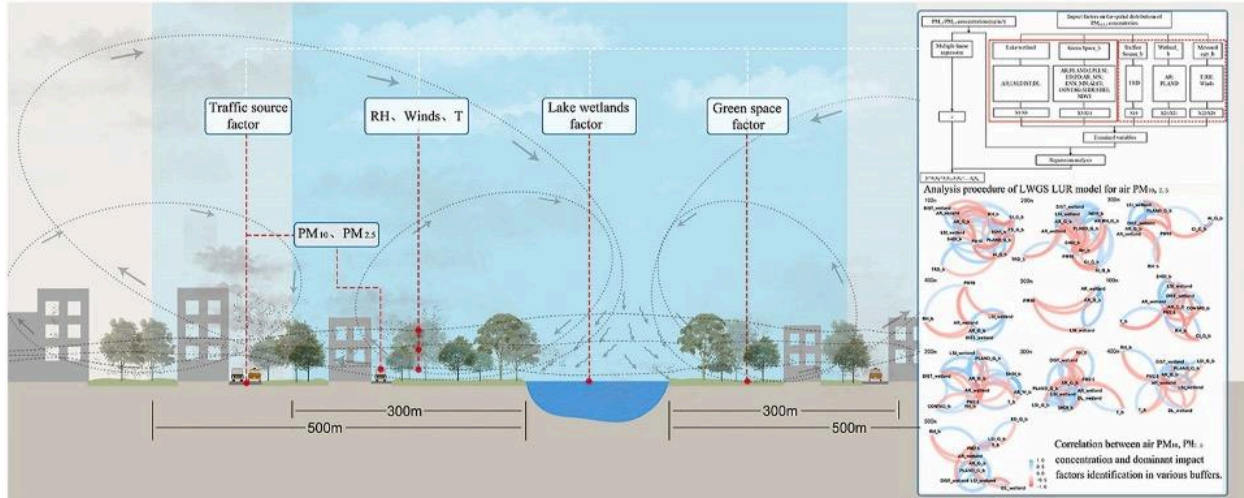
Air Pollution

It is beyond the scope of this report to detail the extent of the human health hazards of current levels of Wasatch Front air pollution. But sacrificing tens of thousands of acres of wetlands throughout the state, especially surrounding the GSL, will exacerbate the air pollution exposure of the majority of the state's population.

Wetlands reduce particulate pollution from the airshed.⁵² In fact, the presence or absence of wetlands can be used to predict levels of particulate matter pollution in an area.

⁵¹<https://www.nytimes.com/interactive/2023/06/09/health/noise-exposure-health-impacts.html>

⁵² Zhao L, Li T, Przybysz A, Guan Y, Ji P, Ren B, Zhu C, Effect of urban lake wetlands and neighboring urban greenery on air PM10 and PM2.5 mitigation, Building and Environment, Volume 206, 2021, 108291, ISSN 0360-1323, <https://doi.org/10.1016/j.buildenv.2021.108291>. (<https://www.sciencedirect.com/science/article/pii/S0360132321006909>)



(Image credit: see Zhao et al., 2021)

Moreover, wetland restoration is a viable strategy for metropolitan areas to lower PM2.5 levels in very localized areas. For example, smaller wetlands were shown to have a noticeable impact on PM2.5 levels for up to 1,000 meters of the surrounding area. Larger wetlands can have a similar impact on much greater distances.⁵³

By increasing relative humidity, wetlands can promote particulate matter settling.⁵⁴ Beyond the loss of wetlands, turning tens of thousands of acres of open space and wetlands into seas of asphalt and concrete contributes to air pollution irrespective of the vehicles that travel on them.

Not surprisingly, laying hot asphalt releases toxic volatile organic compounds (VOCs) such as benzene, toluene, ethyl benzene, and xylene. But even years later, when exposed to sunlight and summer temperatures, asphalt continues to emit toxic VOCs and "secondary organic aerosols" (SOC) which are major components of

⁵³ Acharya P, Krishna Gayen B, Dutta D. (2022, May). Can wetlands be an effective option to reduce the particulate matter pollution in the air in urban spaces?. NASA/ADS.

<https://ui.adsabs.harvard.edu/abs/2022EGUGA..24.8380A/abstract>

⁵⁴ Qiu D, Liu J, Zhu L, Mo L, Zhang Z, Particulate matter assessment of a wetland in Beijing, Journal of Environmental Sciences, Volume 36, 2015, Pages 93-101, ISSN 1001-0742,

<https://www.sciencedirect.com/science/article/abs/pii/S1001074215002697?via%3Dihub>

PM2.5. In fact, this phenomenon was calculated as equal to, or even exceeding the contribution of tailpipe emissions to summertime PM2.5 in Los Angeles.⁵⁵

Obviously, this is a source of pollution that will not be reduced or eliminated by future fleet electrification. Furthermore, recent studies have shown that PM2.5 just from tire, brake, and road surface wear, and other vehicle mechanical friction probably also exceed the PM2.5 from tail pipes. Electric vehicles generally produce more of this category of pollution because they are heavier.

Through another path, water consumption secondary to these project areas will increase ozone formation. Increased water consumption, inherent in all this increased industrial and business activity, will further deplete the size of the Great Salt Lake. The many consequences of that trend include not only the well recognized increased dust storms from the expanded dry lake bed, but also an increased solar reflectivity which is a catalyst for the formation of ozone.

UIPA claims its new project areas will be good for Wasatch Front air quality by shifting goods shipments from trucks to trains. That claim defies all logic and empirical evidence. The whole premise behind them is that a lot more products will be imported and exported. Whether via trains, trucks, or airplanes, that means a lot more sources of pollution.

Indeed, a study published in Aug. 2024 found an average “near-warehouse” increase in nitrogen oxides of 20% compared to the rest of the community.⁵⁶ Not surprisingly, “Near-warehouse truck traffic and NO₂ significantly increase as warehouse density and the number of warehouse loading docks and parking spaces increase.”

⁵⁵ Peeyush Khare et al., *Asphalt-related emissions are a major missing nontraditional source of secondary organic aerosol precursors*. *Sci. Adv.*6, eabb9785(2020). <https://doi.org/10.1126/sciadv.abb9785>

⁵⁶ Kerr, G.H., Meyer, M., Goldberg, D.L. et al. *Air pollution impacts from warehousing in the United States uncovered with satellite data*. *Nat Commun* 15, 6006 (2024). <https://doi.org/10.1038/s41467-024-50000-0>

One example illustrates the point with the proposed project areas in Tooele. The Lakeview Business Park (LBP) commissioned a traffic study (TIS) intended to estimate vehicular traffic from a fully developed LBP. **That study concluded that just one of the two project areas in Tooele, would generate 50,726 daily vehicle trips at full build out.** Based on the amount of truck traffic per square foot of warehouse space in the Inland Empire in Southern California, between these two Tooele project areas an additional 30,000 daily truck trips could be generated. Either figure represents a staggering new source of air pollution.

Regarding UIPA's claim that trains in their project areas will improve air quality, consider again the situation in Tooele. The rail line proposed by Savage Rail would, according to their own estimates, run only 22 rail cars per day. The carrying capacity of one rail car is the equivalent of no more than 4 trucks. So a fully operational rail line would only reduce the on road truck inventory by a paltry 88 trucks at the most, not even a proverbial drop in the bucket of the over 30,000 daily truck trips or well over 50,000 vehicle trips modeled in the TIS from just the one industrial zone. So how could anyone claim that the rail line would be responsible for any measurable decrease in air pollution, traffic congestion, or energy consumption compared to no rail line?

But the claim is even more preposterous given the amount of pollution generated by the two diesel locomotive engines. Heavy equipment diesel engines produce enormous amounts of pollution. According to Emissions Based Maintenance (EBM) in Lehi, Utah, diesel mechanics and emissions experts, two tier 0+ diesel locomotive engines will produce the equivalent in direct PM2.5 of what would be expected from 500,000 average cars, equal to half of all the cars registered in the state.

Making the diesel pollution from this proposal even worse are two facts. Unlike automobiles and personal pick-up trucks, engines larger than 750 hp are never inspected once they are on the road or tracks, and there is no state or federal law requiring it. Steve Forbush, owner of EBM, states that in their experience these

diesel engines in the real world perform even worse. Furthermore, diesel engines produce a disproportionate amount of ultrafine particulate matter (UFP), by far the most toxic subset of the inventory of atmospheric particulate matter. Importantly, UFP contributes only a negligible amount to PM mass measured at PM2.5 monitors within Utah's and the nationwide EPA network, but dominates the particle number, which is the most relevant metric of PM human health toxicity.⁵⁷

Recent news reports of mass die offs of salmon in the Puget Sound, called "urban runoff mortality syndrome," have led to the revelation of another group of environmental toxins that will impact human health and the biological world connected to the wetlands of GSL if UIPA's plans for paving over tens of thousands of acres of GSL wetlands come to fruition.

The US Geological Survey says that tire and road wear particles (TRWPs), are spreading numerous toxic chemicals in land and water environments, including 6-PPD-quinone, benzothiazoles, phthalate esters, and polycyclic aromatic hydrocarbons.⁵⁸

Much of the detail on just one of these chemicals can be extrapolated to the others. Vehicles tires are 1-2% 6-PPD (N-(1,3-dimethylbutyl)-N'-phenyl-phenylenediamine), an antioxidant chemical intended to slow tire disintegration. It was discovered in 2020 that when exposed to solar irradiation and/or ozone, 6-PPD turns into a highly toxic chemical, 6-PPD-quinone (6-PPD-Q). When exposed to minute quantities of 6-PPD-Q (less than 0.1 part per billion) coho salmon die within a few hours because it destroys their blood brain barrier.⁵⁹

⁵⁷ Seny Damayanti, Roy M. Harrison, Francis Pope, David C.S. Beddows, *Limited impact of diesel particle filters on road traffic emissions of ultrafine particles*, *Environment International*, Volume 174, 2023
<https://www.sciencedirect.com/science/article/pii/S0160412023001617>

⁵⁸

<https://www.usgs.gov/labs/organic-geochemistry-research-laboratory/science/tread-watershed-how-tire-wear-particle>

⁵⁹ <https://cdnsiencepub.com/doi/full/10.1139/cjfas-2020-0240>

Asphalt itself may be another source of 6-PPD-Q.⁶⁰ The toxic chemical is found in air, surface water, soil, dust, and sediments. Concentrations are particularly high in urban storm water runoff. Although there is wide variation in species sensitivity to these chemicals, numerous studies have shown multi-system toxicity to organisms in aquatic and semi-aquatic environments throughout the food chain. In invertebrates, toxicity to the GI tract even persists to unexposed progeny meaning that it causes epigenetic damage that can persist through subsequent generations.⁶¹ Humans are exposed through inhalation, ingestion, and skin absorption and it is detectable in their liver, lungs, kidneys and cerebrospinal fluid. Infants have the highest exposure levels. Like with salmon, it disrupts the human blood brain barrier and can cross the placenta. 6-PPD-Q adsorbed onto polyethylene nanoparticles from tire wear further enhances its neurotoxicity.⁶² These chemicals are adsorbed onto ultrafine particulate matter, the most inhalable subset of particulate matter, and are toxic to the lungs.⁶³ Although the research is still in the early stages, 6-PPD-Q is likely toxic to multiple organ systems in humans, especially the brain and nervous system.⁶⁴

⁶⁰ S. Lokesh, S. Arunthavabalan, E. Hajj, et al. Investigation of 6PPD-quinone in rubberized asphalt concrete mixtures *ACS Environ. Au*, 3 (6) (2023), pp. 336-341

⁶¹ Wang Y, Wang D, Transgenerational intestinal toxicity of 6-PPD quinone in causing ROS production, enhancement in intestinal permeability and suppression in innate immunity in *C. elegans*, *Environmental Pollution*, Volume 363, Part 2, 2024, 125208, ISSN 0269-7491

⁶² Hu X, Wang D. Polyethylene nanoparticles at environmentally relevant concentrations enhances neurotoxicity and accumulation of 6-PPD quinone in *Caenorhabditis elegans*, *Science of The Total Environment*, Volume 918, 2024, 170760, ISSN 0048-9697

⁶³ Chen H, et al. Detection of 6-PPD and 6-PPDQ in airborne particulates and assessment of their toxicity in lung cells, *Chemosphere*, Volume 364, 2024, 143205, ISSN 0045-6535,

⁶⁴ Xin Wan, Geyu Liang, Dayong Wang, Potential human health risk of the emerging environmental contaminant 6-PPD quinone, *Science of The Total Environment*, Volume 949, 2024, 175057, ISSN 0048-9697

At environmentally relevant concentrations for humans, 6-PPD-Q levels in the brain are a likely risk factor for Parkinson's Disease and other neurodegenerative diseases.^{65 66}

While 6-PPD-Q is an emerging critical issue for all traffic related pollution, it is of particular importance regarding wetlands preservation surrounding the GSL. Inland ports will introduce a new network of roads, parking lots, and thousands of daily truck and vehicle trips that currently don't exist in and around these wetland areas. These toxic chemicals from tire and road wear add another dimension to the harm that industrializing these wetlands will cause to the GSL ecosystem, wildlife, and human health on the Wasatch Front.

UIPA is aggressively selling a narrative to rural communities that its project areas will "fast track growth in your communities." Obviously that growth will also fast track traffic congestion, air, noise, water, and light pollution, and more water demand, directly contradicting their own claim about improving Wasatch Front air quality and ignoring all the other environmental consequences.

In short, almost regardless of what kind of businesses populate these new "project areas," the increase in industrial activity via sacrificing tens of thousands of acres of wetlands, will stimulate increased population growth, increased vehicular traffic throughout Wasatch Front road ways, increased train and airplane traffic, and increased water consumption. All this will increase the overall air pollution burden on the Wasatch Front.

⁶⁵ Fang J, Wang X, Cao G, Wang F, Ru Y, Wang B, Zhang Y, Zhang D, Yan J, Xu J, Ji J, Ji F, Zhou Y, Guo L, Li M, Liu W, Cai X, Cai Z. 6PPD-quinone exposure induces neuronal mitochondrial dysfunction to exacerbate Lewy neurites formation induced by α -synuclein preformed fibrils seeding. *J Hazard Mater.* 2024 Mar 5;465:133312. <http://doi.org/10.1016/j.jhazmat.2023.133312>. Epub 2023 Dec 19. PMID: 38147746.

⁶⁶ Chang-Sheng Ma, Dong-Lun Li, Fang Wang, Jin-Peng Wang, Mao-Tao He, *Neurotoxicity from long-term exposure to 6-PPDQ: Recent advances, Ecotoxicology and Environmental Safety, Volume 282, 2024, 116689, ISSN 0147-6513*

UIPA Sacrifices our Environment for a Non-Viable Business Plan

This report details how UIPA's inland port projects will substantially degrade Utah's environment. Collectively, they threaten the survivability of the Great Salt Lake. The overriding question that the legislature and the public should ask, therefore, is whether these projects would bring economic benefits that outweigh their environmental damage.

Basically these projects are a scheme for diverting the "community chest" of local property taxes out of which school teachers, police, and firemen are paid and giving those funds to private real estate developers to build warehouse farms. Question number one, then, is why is diverting tax money that is vital to sustaining local government services to the building of warehouse farms thought to benefit the public?

First and foremost, the legislature promotes these taxpayer subsidized projects as jobs and economic growth programs. Utah's unemployment rate is perennially very low. As of Oct. 2024, it stands at 3.5% compared to the national rate (also very low) at 4.1%.⁶⁷

Utah's problem is not a shortage of jobs, it is instead a shortage of workers—especially the pool of blue-collar workers who will be taking the warehouse and trucking jobs that these government subsidies stimulate. Utah's jobs are growing at two and a half times the national average. It is first in the nation in the rate of new business formation. Utah's notorious shortage of housing and its sky-rocketing cost is proof that Utah's economy is running on all cylinders and its job market is already tight. What does the public gain when its taxes are used to tighten that job market even further?

Question number two—Do these artificially-expanded logistics jobs provide a lasting benefit to society? Evidence of the limited social value of these jobs is that, by the end of 2020, 4,000 Amazon employees in nine states needed food stamps to make ends meet.⁶⁴ Worse yet, even these underpaying jobs will soon be gone. They are by far the easiest sector of the job market to automate, and most of them will be gone within five years. A researcher at the U. of Wisconsin offers "unequivocal evidence for Amazon's negative impact on local economies . . . [because] it disrupts the distribution of private and public goods, suppresses wages, and displaces work in other sectors."⁶⁵

⁶⁷ <https://jobs.utah.gov/blog/post/2024/11/15/utah-s-employment-summary-oct-2024>

Question number three--Even if the Inland Port's warehouse farms are not lasting jobs engines, will they be lasting economic engines? The short answer is "not likely." The "Inland Port" label is actually a misnomer. The idea that a true inland port could be located in Salt Lake Valley originated with an eight-year old Kem Gardner Institute report. That report noted that two interstate highways and a major rail line intersect here, which the authors naively concluded is enough to make the Valley a viable logistics hub and a transshipment point for freight throughout the Western Hemisphere. It assumed that shippers and receivers of freight could be persuaded to locate their facilities in the geographic center of the western United States even though it is far from the West's population and industrial centers. Ocean freight shippers, however, know all too well that if they were to build a distribution hub in Salt Lake, their semis could reach only about 3 million consumers within a day's drive. They compare that to the 30 million consumers they could reach in one day's drive if they built their distribution center in southern California near the San Pedro ports. There is no logical reason for major ocean-going freight shippers to locate their facilities in the Salt Lake Valley if a southern California location is available.

The reality is that neither the Salt Lake Valley, nor any more peripheral Utah site, can function as a true port that transships ocean going freight from the West Coast. All they can be is a site that handles goods that originate or destinate locally. The vision that Utah could become a hub for international freight and become a logistics boomtown was never viable, as detailed in a report by Dr. Robert C. Leachman Professor, Industrial Engineering and Operations Research, University of California at Berkeley. UIPA's business plan is highly unlikely to provide a durable, economic stimulus to Utah's economy.

The environmental consequences of UIPA's inland port network--the air and water pollution, public health consequences, traffic congestion, water depletion, road maintenance, wildlife and recreational harm--will have their own adverse economic fallout, the extent of which is beyond the scope of this report. But we have seen virtually no acknowledgement from UIPA of any of that harm.

Conclusion

The public harm caused by taxpayer subsidized state sponsored UIPA industrial development will be substantial. A conservative estimate is that approximately 77,282 acres of wetlands will be lost through UIPA's activities in the Great Salt Lake Basin. Specifically, on the shores of GSL, over 73,000 acres are in harm's way from UIPA incentivized development.

As we've described in this report, the wetlands impacts on their own are enormous and these developments will likely accelerate the depletion of precious basin water resources which will further jeopardize the future of GSL. Unquestionably these industrial projects will add pollution to our air and water, add noise and light pollution, and increase pesticide use at a time when pesticides are increasingly recognized as significantly more dangerous than ever before. There is a real possibility that this UIPA financed industrial development in wetlands will inflict environmental health harms that violate federal environmental laws such as the Endangered Species Act, the Clean Water Act, the Clean Air Act and other federal environmental protection laws.

These outcomes are all the more difficult to justify given that there is strong evidence that the underlying business model adopted by UIPA is essentially non-viable, and that the exuberant expectation of a port-stimulated economic bonanza for the state is irrational and unrealistic.

The public should demand that the UIPA project areas being proposed be shelved and the project areas already established be rolled back before even more irreversible harm is done.