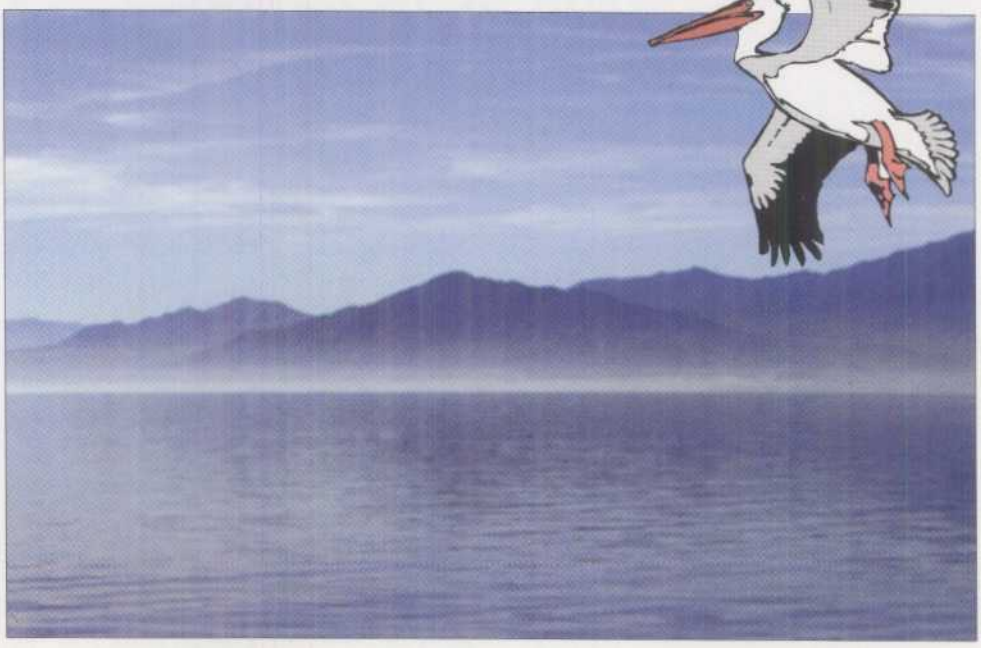
WATER QUALITY SEA FACTS

SALTON SEA Restoration Project

California's largest lake is a unique environment, with very complex water quality issues.



It is both very saline, with water approximately 25 percent saltier than the ocean, and eutrophic -- rich with nutrients, algae and fish. The salinity is a result of the high evaporation rates in the hot desert climate. Water flowing into the Sea adds the equivalent of a train of salt each day: several million tons a year. The nutrients enter the Sea's waters in the inflows that come from agricultural fields and urban settings.

The presence of nutrients has led to a Sea that is the equivalent of a tropical rainforest, teeming with life.

Restoration efforts currently underway aim to control the levels of both salinity and nutrients.

Scientists are examining the dynamics of both and there are lots of questions to be answered.

THE SALINITY LEVEL at the Salton Sea is 44 parts per thousand (ppt), an estimated 500 million tons of salt, presently.

How can salt and nutrients entering the Sea be reduced?
How can amounts in the Sea be lowered?
What will the effects be if they are lowered?
How can lower levels be maintained over time?

The Concerns

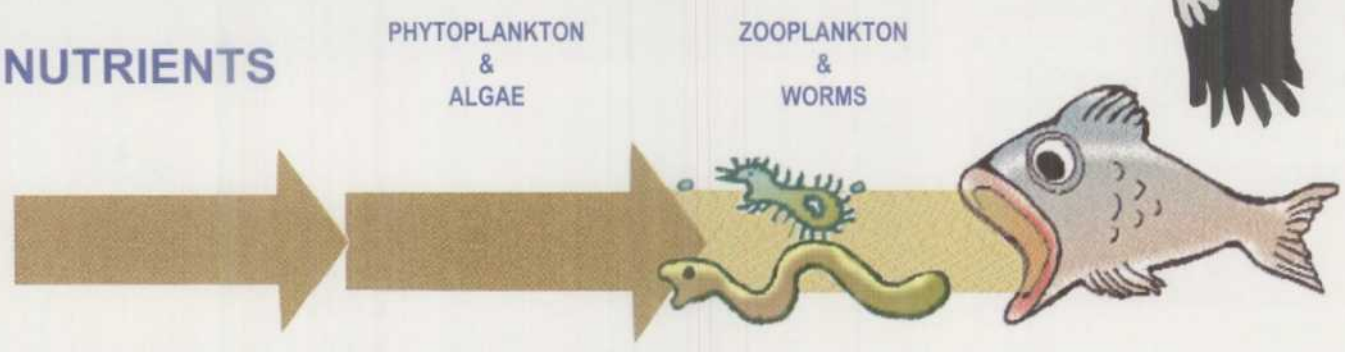
Salinity

The lake is continuing to grow more saline as salts are delivered every year. While some salts may precipitate out as they reach the Sea, salinity continues to rise. Scientists are concerned that even a small increase could be enough to affect fish reproduction and ultimately survival, which in turn could affect bird populations that rely on the fish as a food source. The loss of the Sea as a productive fishery will profoundly impact the economy that relies on fishing and recreation as a tourist industry.

Nutrients

The nutrients entering the Salton Sea result from runoff of agricultural fertilizers and municipal discharges, particularly from Mexicali, that contain nitrates and phosphates. Scientists believe phosphates are the limiting, or critical, nutrients that cause increasing eutrophication of the lake. Eutrophic lakes everywhere periodically have odors associated with them.

Water quality regulatory agencies such as the Regional Water Quality Control Board and EPA, along with scientists, environmental organizations, and others are concerned about nutrient buildup. The nature and extent of the Sea's eutrophic character is under study by the restoration team's researchers. As the causes and effects are better clarified, remedial actions can be designed and implemented.



Nutrients stimulate growth of phytoplankton and algae, which in turn support zooplankton and worms. This ongoing process provides an abundant food source for fish at the Sea, and, consequently, for the birds that feed on them.

Temperature

Water temperature is not usually listed as a water quality concern, but in the case of the Salton Sea it contributes. The high temperatures reached in the summer reduce the amount of oxygen which can dissolve in water. When those high temperatures combine with dying algae blooms, oxygen levels in the water become too low, and fish die-offs occur.

Apparent Nonissues

Toxics

Despite some popular misperceptions, no significant levels of traditional "toxics" have been detected. Some metals occur, but they are found in the sediments, not the water. Elevated levels of pesticides have been found in the inflows to the Sea, but are not at significant levels in the Sea. In fact, while pesticides have been known to kill a couple of birds every year on agricultural fields, not a single bird is known to have died from pesticides at the Sea itself.

As part of the restoration of the Sea, however, scientists will continue to monitor the level of toxics, both in the Sea and in animals using the Sea. Experience in other areas has shown that even small amounts of toxics can become concentrated in the food chain.

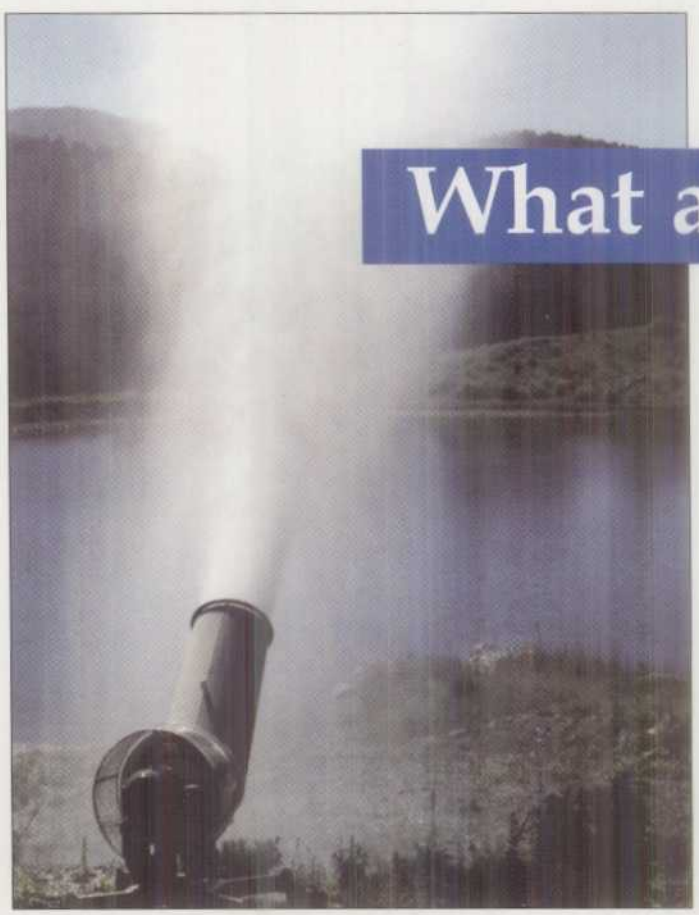
Selenium

Selenium is not found in the waters of the Sea at levels above safety standards, despite elevated counts in the rivers entering the Sea. In fact, there is less selenium in the water of the Salton Sea than in San Francisco's drinking water. Selenium has been identified at slightly elevated levels in the sediments in the deepest parts of the Sea. At these deep levels, it is not available to the food chain.

Selenium can become concentrated in the food chain, and some studies have found elevated levels in fish. While selenium at low levels is essential for health, too much can have adverse effects. As a result, an advisory has been issued warning against eating fish from the Sea more often than once every two weeks.

"One of the most significant findings of this study was the number of organic chemicals commonly used in agriculture earlier this century that were not detected at elevated concentrations, such as DDT."

Taken from a summary of a study conducted by LFR Levine Fricke



What are the Options?

Salt removal

Tests are being conducted on ways to reduce salinity levels using either evaporation ponds or enhanced evaporation systems. The goal is to remove several million tons of salt annually.

Enhanced evaporation systems, such as the one shown here, have been explored to reduce salinity. Its concept is to evaporate the water to concentrate the salt. The evaporation is enhanced, or sped up, by spraying the water in a fine mist and capturing the salt.

Nutrients

Fish harvesting may be one technique for reducing nutrients, especially phosphates. Tilapia, a very prolific breeder, may have commercial value for cat food, animal feed or fertilizer. Cleanup of dead fish, while being done primarily for aesthetic reasons, will also help. Present regulations prohibiting fish harvesting would need to be modified in the case of the Salton Sea. Controlling nutrients in the inflows to the Sea is a second technique for reducing nutrients.

Manmade wetlands, like this one which was constructed along the New River, are one option for improving water quality.

Wetland Creation

Wetland creation as a means to clean water and provide habitat is being tested on the New River and being considered for the Whitewater River. Questions need to be answered whether wetlands will consume too much water and whether they will concentrate pollutants. Because they extend and improve habitat, it is important that they not become threats to wildlife. Unfortunately, efforts to improve wastewater systems in Mexicali have not been planned to reduce nutrients (phosphates).

A Word or Two of Caution

The Salton Sea has no water rights of its own, so it benefits only from whatever runoff occurs. Without it, the Sea would quickly dry up, concentrating salts and nutrients further. The water is now allowed to run off because it is not of high enough quality to be worth recapturing and reusing. Concerns have been raised that if present users are forced to clean up their runoff, it may have value to other users and no longer be available to the Sea. Or the "cleanup" burdens may make it too expensive to farm, thus drying up the major source of inflows.

Restoration of the Sea requires a careful balancing act. Despite popular perception, the Sea has relatively good water quality. Making the most of this "waste" water is central to managing and sustaining this ecosystem.

SALTON SEA RESTORATION PROJECT
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