

Wastewater permit # WQ0004882000

White Stallion Energy Center

Comments by James F. Bergan, Ph.D. on behalf of The Nature Conservancy

My name is Jim Bergan and I'm the Director of Science and Stewardship for The Nature Conservancy in Texas. I have grave concerns regarding the wastewater permit application #WQ0004882000 being sought by the White Stallion Energy Center. My concerns relate to several factors including thermal pollution, effluent composition, and impacts on the West Matagorda Bay system. In addition, I do not believe the information in the permit application is factually accurate.

Coal-burning power plants are known producers of thermal pollution in nearby bodies of water that they use as cooling ponds as well as receiving rivers and streams. During research focused on the effects that thermal pollution caused by the Marshall Steam Station on Lake Norman, North Carolina, thermal impacts were assessed. It was found that dissolved oxygen in the steam station's discharge cove was decreased by approximately four mg/L as compared to a site ten miles upstream, and was decreased by about three mg/L as compared to a cove several hundred yards downstream. Temperatures of the surface water in the discharge reached lethal levels for many aquatic species.

Warm water typically decreases the level of dissolved oxygen in the water. The decrease in levels of dissolved oxygen can harm aquatic animals such as fish, amphibians and copepods. Thermal pollution may also increase the metabolic rate of aquatic animals, as enzyme activity, resulting in these organisms consuming more food in a shorter time than if their environment were not changed. An increased metabolic rate may result in food source shortages, causing a sharp decrease in a population.

While conducting research at the Savannah River Ecology Laboratory (SREL) in South Carolina, I assessed wetland habitat distribution of a thermally impacted reservoir called Par Pond (2800 acres). Par Pond has been studied by ecologists for over 40 years. Impacts have been quantified and results of those studies are well represented in the scientific peer reviewed literature. A snapshot of the effect of high temperature effluent on aquatic organisms includes:

- Largemouth bass restrict their range (habitat use) on an annual basis due to thermal effluent (Gibbons 1982)
- Largemouth bass tend to avoid waters that exceed 88 F. (Therefore discharge effluent from the WSEC plan may regularly exceed that temperature, especially during summer months.)
- Largemouth bass and other fish species suffer in thermally impacted waters due to high frequency of internal parasites, red sore disease and overall lowered body condition (Gibbons et al. 1984. *Effects of thermal effluent on largemouth bass*).
- Parasite loading in birds that forage in thermally effected waters is very high. I observed waterfowl and wading birds on Par Pond that were so weakened by internal and surficial parasites that they could not feed adequately.
- Numerous negative impacts to aquatic life and habitat from thermal discharges have been documented (Langford 1990: *Ecological effects of thermal discharges*) for lakes, bays, and rivers.
- Survival and viability of *Escherichia coli*, a seriously harmful bacteria, is greatly enhanced in thermally altered water bodies (Gordon and Filermans 1977). The segment of the Colorado River to be impacted by the WSEC effluent (Tidal Segment 1401) is already defined as an impaired water body due to bacteria counts. The proposed discharge permit, if granted, will make this situation much worse. No limits on discharge temperatures are included in the application.
- Thermal effluent will kill trees and other vegetation along effected river banks and swamp habitat (Gibbons and Sharitz 1980. *Thermal ecology: environmental teachings of a nuclear reactor site*). This will lead to accelerated bank erosion and loss of bottomland hardwood habitats along the Colorado River.

The impact of thermal effluent downriver and into West Matagorda Bay is difficult to assess due to the paucity of data in the permit application. In addition, the location of the discharge infrastructure has varied between the TCEQ discharge application and the U.S. Corps of Engineers Clean Water Act-Section 404 permit application. In fact, site design parameters seem to be inaccurate or not even represented at all in the permit # WQ0004882000. Presently, The Nature Conservancy, U.S. Corps of Engineers, U.S. Fish and Wildlife Service, Texas Parks and Wildlife Department, and National Marine Fisheries Service are close to initiating construction of a 20 acre oyster reef in West Matagorda Bay. Thermal effluent may negatively impact the success of this project due to parasite loading and other deleterious effects of elevated water temperatures on oyster biology. No thermal plume modeling has been conducted to ascertain impacts on proximate river habitats, let alone the Matagorda Bay system.

The permit application does not address effluent composition that would discharge into the river. Coal plant discharge water commonly contains mercury, heavy metals, sediments, and particulate fly ash, all potentially very toxic substances in aquatic systems. With 3-5 million gallons of water discharged each day, as proposed, bioaccumulation rates will be extreme. Such deposition in riverine benthic communities could cause an ecological cascade in the river, and possibly West Matagorda Bay and adjacent wetlands such as the Mad Island Marsh Preserve. More environmental assessment of the impacts of this discharge permit is warranted. Finally, no consideration has been given to ad hoc runoff of pet coke/coal stockpiles from the site, into the Colorado River.

The Nature Conservancy strongly urges TCEQ to deny permit application #WQ0004882000 due to likely serious environmental risks especially to aquatic life in the Colorado River. In addition, we have an overall lack of information presented in the application and concomitant poorly understood consequences that might result from the proposed discharge.

Sincerely,

James F. Bergan, Ph.D.

Director of
Science and Stewardship

The Nature Conservancy of Texas