Water COALITION

Solutions for Clean Water Management

City of Las Vegas
6005 E. Vegas Valley Drive
Las Vegas, Nevada 89142
Telephone: (702) 229-6200
Fax: (702) 641-9738

Clark County Sanitation District
5857 East Flamingo Road
Las Vegas, Nevada 89111
Telephone: (702) 434-6600
Fax: (702) 434-6626

City of Henderson
240 Water Street
Henderson, Nevada 89015
Telephone: (702) 565-2103
Fax: (702) 564-2530

October 23, 2001

Mr. Allen Biaggi, Administrator
Nevada Division of Environmental Protection
Department of Conservation and Natural Resources
333 W. Nye Lane
Carson City, Nevada 89706

Dear Mr. Biaggi:

Since the inception of the Lake Mead Water Quality Forum, the Clean Water Coalition (CWC) has worked closely with the Forum to study water quality issues and pursue initiatives that would improve the water quality of Lake Mead.

This year, Lake Mead experienced an algae bloom (*Pyramichlamys dissecta*) that has been reported as the largest in the history of the Lake. Due to the magnitude of this bloom, there has been great interest in the mechanisms by which it occurred. The scientific and technical communities have discussed many mechanisms in order to understand the bloom's formation and to possibly abate its occurrence in future years.

The one variable that the Clean Water Coalition can control (within certain technical limitations) is the amount of phosphorus that we discharge. Our permits do not require the removal of phosphorus during the months of November, December, January, and February. However, as an experiment or pilot program, the Clean Water Coalition is proposing, to the extent practicable, to reduce the amount of phosphorus that we would normally discharge during these months.

Our Proposal is attached for your review and concurrence. We appreciate the time and effort that you and your staff, as well as all members of the community, have put toward this issue and look forward to further understanding this issue in the months and years to come.

Sincerely,

Doug Karafa
Manager of Plant Operations
Clark County Sanitation District

David L. Mendenhall
Environmental Manager
City of Las Vegas

Mike Neher
Environmental Services Manager
City of Henderson

attachment: Proposal for Winter Phosphorus Reduction, CWC, October 23, 2001

cc: Tom Porta, Leo Drozdoff

PROPOSAL FOR WINTER PHOSPHORUS REDUCTION
Clean Water Coalition, October 23, 2001

The Nevada Water Pollution Control Regulations (1982 and amendments) provide standards for chlorophyll-a, an indicator of algae, for Lake Mead excluding a part of inner Las Vegas Bay (as defined by NAC 445.197). The Nevada Division of Environmental Protection (NDEP) subsequently established the total maximum daily load (TMDL) for phosphorus in Las Vegas Wash at 434 lb, based on what NDEP identified as the most appropriate scientific determination of the assimilative capacity of Lake Mead. The TMDL was calculated to limit the growth of algae to the level needed to meet the chlorophyll-a standards during the growing season of March through October. The TMDL is divided into point source and non-point source waste load allocations (WLA) of 334 lb/day and 100 lb/day respectively.

In a unique event, a species of highly visible and buoyant algae (*Pyramichlamys dissecta*) bloomed in Lake Mead for the first time this year, and became an aesthetic concern to visitors and operators of the Lake. In response to this concern, NDEP created the Algae Task Force to investigate the potential causes of the bloom and to make recommendations to address the issue. Before this year, Lake Mead had consistently complied with its chlorophyll criteria.

As participants in NDEP's newly formed Algae Task Force, the Clean Water Coalition (CWC), comprised of the City of Henderson, City of Las Vegas, and Clark County Sanitation District, shares the view with the rest of the Task Force that the causes of the algae bloom are not well defined, but that the nutrients phosphorus and nitrogen must be present for an algae bloom to occur. Although the TMDL for phosphorus in Las Vegas Wash has remained unchanged since its inception and the CWC has complied with its WLAs, non-point source contributions of phosphorus are poorly understood. It is possible that the lowering of Lake Mead by more than 30 feet in the last year, or unusual weather or lake conditions, gave a competitive advantage to the newly dominant species of algae. In 1986, an intense bloom of the blue-green alga *Microcystis* produced surface films that were readily identifiable, and led to predictions of continuing blooms on the same scale. However, in the next year chlorophyll levels dropped back to what was normal for the time, and *Microcystis* blooms of the same intensity have not recurred. It is too soon to tell whether the 2001 bloom will be a one-year phenomenon, like the 1986 bloom.

Because of the lack of responses that can reasonably be made to the 2001 bloom, the question has arisen about whether CWC members should remove phosphorus during the wintertime. There are problems with wintertime removal. First, it is contrary to the original reason for establishing seasonal limits. The original concept was that phosphorus discharged during the wintertime (November through February) would be carried into the outer bay and Boulder Basin, where the additional phosphorus would help improve productivity and fish production. Although productivity in the outer bay and Boulder Basin remains low, there is the possibility that wintertime phosphorus removal could make the condition worse, and hurt fish production during the entire year. Second, wintertime chlorophyll levels have always been very low in the past, and even in 2001 they did not begin to increase until February. Because wintertime chlorophyll levels are so low, they are unlikely to decrease if wintertime phosphorus removal is instituted.

Third, there is no reason to believe that wintertime phosphorus removal will affect chlorophyll concentrations in the inner bay during the rest of the year. Phosphorus carried into the Lake by Las Vegas Wash moves through the inner bay quickly, probably in a few days. Algal activity tends to pick up in April, and so the beginning of March was thought to provide plenty of time for the permit limits to take effect. Until 2001, the March schedule worked well. Despite all these problems, the CWC is willing to remove phosphorus in the wintertime to see whether it produces a beneficial effect.

As a result of discussions of the Algae Task Force and NDEP, the CWC proposes to operate its plants with the goal of obtaining more than 90% phosphorus removal during November 2001 through January 2002, and 94 to 95% removal during February 2002. The CWC commits to use their best efforts to achieve these goals, while acknowledging that circumstances beyond their direct control could affect the success of this effort, including equipment malfunction, construction issues, nature and other causes. The CWC also commits to increased water quality monitoring for this period. Due to complexities of the ecological dynamics of Lake Mead and uncontrolled variables, the CWC believes that this winter's increased phosphorus removal will neither prove nor disprove factors or combinations of factors that result in algal blooms, past or future.

This initiative will provide an opportunity for the Lake Mead Water Quality Forum (LMWQF) to monitor and evaluate the effect of improved winter phosphorus removal on conditions in Lake Mead. The CWC will provide regular progress reports to NDEP, including pounds of phosphorus removed, and other relevant information. The CWC is also expediting limnological modeling of Las Vegas Bay, Lake Mead and the Colorado River below Hoover Dam through the on-going Alternate Discharge Study.