

in the calculations. In addition, the EPA has confirmed that studies show most unburned gasoline and gasoline additives emitted from two-stroke marine engines evaporate rapidly from water (The Effects of Marine Engine Exhaust Emissions on Water Quality, Summary of Findings of Various Research Studies, EPA 1994).

*NPS Response:* In 1994, the EPA released a public memorandum entitled "The Effects of Marine Engine Exhaust on Water Quality: Summary of Findings of Various Research Studies." This document summarized 11 research papers and presents volatilization rates and dilution ratios for observable effects such as taste, odor, and generation of oil film. At temperatures commonly found in Lake Powell during the summer boating season, the majority of gasoline and oil components would be volatilized within 1.2 hours. Although a portion of the gas/oil mixture may accumulate in the water column, water quality testing at Lake Powell did not reveal detectable levels of most PAH components. Given that the contaminants were largely undetectable, specific cumulative analysis of the PWC contribution is not possible at this time. The text has been changed in the Final Environmental Impact Statement to include information on volatility consistent with the above-referenced EPA memorandum.

28. One commenter requested that the Final Environmental Impact Statement list all designated uses for the water in Lake Powell.

*NPS Response:* Designated uses for the water of Lake Powell, as defined by Arizona and Utah, include drinking, recreation, agricultural, and aquatic life. The complete list of designated uses of the water as defined by Arizona and Utah are listed in the "Water Quality" section of the "Affected Environment" chapter of the Draft and Final Environmental Impact Statements.

29. One commenter wanted the presence and location of drinking water intakes addressed in the analysis.

*NPS Response:* There are two drinking water intakes within the lake, one near Hite, Utah and one at Glen Canyon Dam that serves the town of Page, Arizona. The intake near Hite is approximately 1/2 mile north (upstream) of the marina when the lake level is above 3,630 feet above sea level. The Glen Canyon Dam intake is under the jurisdiction of the Bureau of Reclamation. The National Park Service has no access to the site, and it is not responsible for monitoring at this location. The locations of the drinking water intakes near Hite Marina and at Glen Canyon Dam has been added to the

"Affected Environment" chapter in the "Water Quality" section in the Final Environmental Impact Statement.

30. One commenter stated that presenting average values for water quality testing samples infers complete mixing of lake waters.

*NPS Response:* Inclusion of average values was not intended to infer that lake waters are mixed, but rather to show the reader a mean value for relative comparison to measured maximum and minimum values. The "average values" have been removed from Table 8 in the Final Environmental Impact Statement.

31. One commenter stated that the need to sample Wahweap Marina is called to attention based on the results of the Bullfrog Marina sample where benzene concentrations were elevated.

*NPS Response:* Under the modified preferred alternative B, the National Park Service would implement a water quality monitoring program at Lake Powell. This program will be guided by the Technical Advisory Committee, and is detailed in the Final Environmental Impact Statement description of the modified preferred alternative B in the "Alternatives" chapter. Locations selected for ongoing testing will be chosen to maximize use of data in making appropriate management decisions.

32. The EPA requested that monitoring should also be done in drinking water intakes to assure that drinking water standards are met for Arizona and Utah.

*NPS Response:* Water quality monitoring at the Hite drinking water intake would take place under all alternatives addressed in the Final Environmental Impact Statement. The water quality monitoring program would be directed by the Technical Advisory Committee, formed in 1996 to protect Lake Powell's water quality. The plan would ensure that water quality complies with State regulations and criteria and is consistent with requirements of the Clean Water Act.

The drinking water intake at Glen Canyon Dam, which serves the town of Page, Arizona, is under the jurisdiction of the Bureau of Reclamation. The National Park Service has no authority to access this site to obtain water quality samples. Potable water obtained from Lake Powell is tested after treatment at both the Hite and Page water treatment plants. The localities are responsible for the final quality of the drinking water, in addition to the State requirements for the quality of the drinking water source. The "Water Quality" section in the "Affected Environment" chapter of the Final Environmental Impact Statement

has been revised to include additional information regarding the drinking water intakes at Hite and Page.

33. The EPA questioned the presence of a "rainbow sheen" in the marinas and whether this was a violation of Utah Water Quality Standards (R317-2, Utah Administrative Code).

*NPS Response:* The Utah Department of Environmental Protection, Water Quality Division, was contacted for interpretation of Water Quality Standard R317-2. The term "oil scum" is not intended to equate to the "rainbow sheen" commonly seen on water surfaces at fueling stations and marinas. Although these sheens could be considered minor violations, they are generally localized and transient and therefore not considered a significant enough concern to warrant pursuit of a violation by either state. The sheen itself was not tested during water quality sampling for this assessment. Suggestions regarding sampling locations and techniques would be incorporated into the water quality monitoring program proposed under the modified preferred alternative B in the Final Environmental Impact Statement. Recognizing that the presence of the sheen does indicate degraded water quality, the text in the Final Environmental Impact Statement has been changed to acknowledge temporary, localized degradation of water quality. Because the sheen results from combined marina and fueling activities, it was not possible to determine the specific PWC related contribution to this transient water quality issue.

The modified preferred alternative B in the Final Environmental Impact Statement includes mitigation measures to further protect park waters. Under the modified preferred alternative, PWC used in the recreation area after 2012 will be 100% compliant with the EPA 2006 emission standards for the manufacturing of gasoline marine engines, further reducing petroleum-related pollution. Based on the analysis presented, the National Park Service finds that the modified preferred alternative B will not result in an impairment of park water quality.

34. The EPA suggests that the analysis should address whether PWC use and fueling of vessels in marinas that result in a visible sheen or numeric concentrations would be in violation of Arizona water quality standards. If so, the water quality effects should be designated "major" rather than "negligible to minor".

*NPS Response:* Lake Powell is an Arizona Tier II water body, and existing water quality "shall be maintained and