Des Moines River Water Quality Network

Monthly Report

for

September 2013

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Introduction

There were two regular sampling events on September 9 and 23 as directed by the Scope of Work. Both Saylorville and Red Rock Reservoir’s lake levels were within 0.5 feet of their conservation pool levels.

The sampling day inflow into Saylorville Reservoir and Red Rock Reservoirs in September averaged only 224 ft³/s and 385 ft³/s, about 17% and 10% of respective long-term flows. The project’s long-term average September inflow is 1,272 ft³/s (1967–2012) and 3,842 ft³/s (1979–2012), at these respective sites.

Observations

September was much warmer and drier than normal as drought conditions continue. At Des Moines, the air temperature was 5.8°F above normal, with an average temperature of 71.4°F. The total precipitation at Des Moines was 2.36 inches, which was 0.69 inch below the long-term normal of 3.05 inches.

Significant but not excessive algal populations were noticeable at uncontrolled riverine sites, especially at Station 1 (Des Moines River near Boone), Station 7 (Des Moines River near Runnells) and Station 10 (Raccoon River at Van Meter). Reservoir water was stratified during the September 9 sampling event, becoming well mixed by the next monitoring event on September 23.

Overall, values of pH ranged between 7.39 and 8.34, with the highest pH being measured at Station 8S (Red Rock Reservoir surface) on September 9. From the riverine stations total hardness concentrations averaged 264 mg/l as CaCO₃, which was higher than last September (253 mg/l as CaCO₃) but equal to last month.

In September dissolved oxygen saturation levels were greater than 100% in response to algal production at Station 10 and Station 7. At the riverine stations on September 9 the corrected chlorophyll a concentrations ranged from 6 mg/m³ (Station 9, Des Moines River below Red Rock) to 73 mg/m³ (Station 7); on September 23 the corrected chlorophyll a concentrations ranged from 3 mg/m³ (Station 8S) to 59 mg/m³ (Station 7). BOD concentrations were higher where algal growth was greater, but all concentrations were below 5 mg/l.

This month the total gas pressure below Saylorville and Red Rock Dams was 101% of saturation and 113% of saturation, respectively. Constituent gas pressures are listed on data table. There was no fish mortality.

Below the city of Des Moines (St. 7, Des Moines River at Runnells) ammonia concentrations were low but phosphate concentrations were higher under low flow. The monitoring station closer to the city (St 6) was discontinued last year. Overall, ammonia concentrations ranged from 0.02 mg/l to 0.36 mg/l. Nitrite plus nitrate concentrations were also low, ranging from 0.06 mg/l (Station 1) to 3.77 mg/l (Station 8B). At the riverine locations orthophosphate ranged from 0.04 mg/l (Station 1) to 0.44 mg/l (Station 7), and total phosphate concentrations ranged from 0.28 mg/l (Station 1) to 1.14 mg/l (Station 7). Phosphate concentrations were much higher last September under even lower flow conditions.

Water samples were also collected at the swimming beaches at both reservoirs on September 3 and 9. North Overlook Beach at Red Rock Reservoir remained posted as swimming not recommended because the 5-sample geometric mean was above 126 organisms/100 ml.
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**DES MOINES RIVER WATER QUALITY NETWORK**

September 2013
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