

BOYCE HYDRO POWER, LLC
A W D. Boyce Trusts Legacy Enterprise
Stephen B. Hultberg & Lee W. Mueller, Co-Member Managers
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July 10, 2013

Mr. John Zygaj, PE
Regional Engineer
Federal Energy Regulatory Commission
230 S. Dearborn St., Suite 3130
Chicago, IL 60604

Re: Sanford, P-2785
2013 Spring Flows

BOYCE HYDRO POWER, LLC

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Dear Mr. Zygaj:

We are writing to provide the flow and operating information requested in your letter of July 2, 2013 concerning our turbine and spill gate discharges at various times this spring. You asked for discharges at the Sanford and Edenville Dams to document downstream flow levels. We are supplying herewith the discharges at Sanford since that is the only dam that discharges directly into the Tittabawassee River at Sanford. The discharges from the Edenville dam go directly into the Sanford reservoir and ultimately out through the spillway gates and turbines at Sanford.

<u>Date</u>	<u>River Flow @ Midland</u>	<u>Discharge from Sanford</u>	<u>Sanford % of Midland</u>
3/12/13	15,400 cfs	7,100 cfs	46.1 %
4/13/13	22,600 cfs	7,700 cfs	34.1%
4/20/13	25,900 cfs	13,400 cfs	51.7%
5/24/13	15,600 cfs	8,750 cfs	56.1%
5/30/13	16,700 cfs	9,500 cfs	<u>56.9%</u>
			Ave. = 49.0%

The Tittabawassee River drainage basin size at the Midland gage is 2,372 square miles. The basin size at the Sanford Dam is approximately 1,020 square miles. On a straight percentage basis the drainage basin at Sanford is 43% of the entire basin at the Midland gage. Three significant rivers, the Salt, Pine and Chippewa flow into the Tittabawassee between Sanford Dam and The Midland flow gage. These three contribute significantly to the increase of 1,352 square miles in the basin size downstream of Sanford.

During rain events the volume of flow coming down the Tittabawassee River to Sanford, compared to that coming out of the Salt, Pine and Chippewa Rivers below Sanford, is totally dependent on where the center of the rain storm is located. Most of the time our releases at Sanford are about half of the flow seen at Midland. However, If the storm is centered over the northern part of the Tittabawassee, the majority of the water will come from above the Sanford Dam and we will be discharging more than half the water

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seen at Midland. Conversely, if the storm is over the other three rivers downstream, the majority of the flow will come into the Tittabawassee below Sanford. Our impact on flows downstream of Midland is even less pronounced since there are more tributaries to the Tittabawassee below Midland that will contribute additional water to the River before reaching the Saginaw River.

In reference to our actions of opening spill gates at Sanford, we operate under two primary objectives. The first and most important is to protect the dams from the possibility of failure. A failure of the dam at Edenville or Sanford would result in catastrophic destruction of property and possible loss of life downstream. To guard against this we try to pass water through the spill gates at the same rate it is coming down the river into the reservoir. This keeps the reservoir level at a point where we do not have to worry about overtopping the earthen embankment, which in turn would result in the dam's failure. Our second objective, if possible, is to mitigate downstream flooding, particularly in Midland, by drawing down the reservoirs in advance of a major flood. By doing this we can collect some of the extreme peak flows in the reservoir by letting it return to normal level.

We would also like to point out that we do not operate the spill gates in a way that will increase the peak flood flows in the river. We live on a river system and when we get a large rain event we experience a flood, that to a large degree, cannot be controlled by the small size of our reservoirs. In general the water is passed on down the river at the same rate we receive it.

Sincerely,
Boyce Hydro Power, LLC


Frank O. Christie, PE
General Manager

cc: L. Mueller, S. Hultberg

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