

Petenwell

Petenwell dam was constructed just upstream of the Highway 21 bridge. The power house sets on the Juneau County side and the east dike is in Adams County. The original channel was just east of the gate section. The power house and gate section foundations were excavated on the west bank of the river. After the dam was built, the original channel was plugged and water allowed to pass through the new gate section. Upstream of the present dam a little ways from the river was a small sandstone rock called *Little Petenwell Rock*. This rock is now a small island in the flowage. Petenwell has 9 miles of dike and backs up a lake, the second largest in Wisconsin, of about 23,000 acres at summer operating levels. Both Petenwell and Castle Rock are important flowages for mitigating floods on the river. When Petenwell is drawn down prior to spring breakup it is capable of storing about six billion cubic feet of water.

The turbines were built by S. Morgan Smith in York, PA. They are rated at 7,200 horse power under a 42 foot head. They are of the Kaplan adjustable pitch propeller design.⁵⁶ The pitch of the blades change as the turbine gates open or close. Each turbine is controlled by a Woodward 60,000 lb gate shaft governors. These were the largest gate shaft governors produced by Woodward. The turbines drive General Electric self excited, alternating current generators, rated at 5,000 kwh per hour. With a good net head, these units can produce 5,500 kwh per hour continuously.

Petenwell has been operated remotely from the PDC at Wisconsin Rapids since 1983. The Power Dispatcher can start, stop and change load on any unit via the SCADA system. Sophisticated monitoring alarms the Dispatcher of any unusual conditions at the plant, including fire and security.

⁵⁶ Victor Kaplan modified existing adjustable propeller turbines to allow continuous changes in blade pitch so the turbine would remain efficient at all ranges of load.