

MEMORANDUM

Date: August 11, 2014
To: Water Right File 95-16554
From: medl
Re: power use

This water right was split off of WR 95-9006. The other uses were licensed in 2013, through WR 95-16553.

Water Use

I spoke with the permit holder, this morning. He responded to my phone message requesting the size of nozzles that he used in his micro-hydro turbine.

The turbine-generator unit is fitted with 2 nozzles. The permit holder stated that he had 1/2 inch and 7/16 inch nozzles and that the system typically operated at 65 PSI. However, the examiner's photo of the pressure gauge shows the system operating at 61 PSI. A single 1/2 inch nozzle operating in 61 PSI pressure can utilize 58.4 gpm or 0.13 cfs. 2 x 1/2 inch nozzles at 61 PSI can utilize twice 0.13 or 0.26 cfs.

The examiner recommended the power use rate at 0.2 cfs, which is the permitted rate for the use. The actual rate for the power use exceeds 0.2 cfs and the licensed rate does not need to be constrained to 0.2 cfs. Because some of the authorized uses were either not developed or were underdeveloped, some of the permitted rates and the implied volume associated with those rates, can be converted to power use for this license and still not exceed the total authorization of the parent permit.

Change in Nature of Use

The permit authorized 0.2 cfs for power use. An isolated micro-hydro project such as this one is expected to be continuous duty. Therefore, the implied volume for 0.2 cfs is 144.8 AF (365 days x 1.9835 x 0.2 cfs = 144.79 AF).

The parent permit authorized 0.2 cfs each for aesthetic and recreation use. Both of those uses have implied volumes of 144.8 AF. But the examiner did not find either aesthetic or recreation uses had been developed. Therefore, at least 0.2 cfs and 144.8 AF are still available through the permit and can be converted to power use.

I am recommending the license for power use be issued with rate of 0.26 cfs. This is 0.06 cfs more than the permit rate but less than the 0.2 cfs available.

I am recommending a volume of 188.0 AF which is based on continuous operation at the licensed rate. ($0.26 \times 365 \times 1.9835 = 188.2$ AF, which rounded to 3 significant figures is 188.0). This is 43.4 AF more than the implied permit volume but less than the 188.2 AF available. Both recommendations can be covered by the undeveloped, but permitted recreation or aesthetic uses.

Conditions

The project is an off-grid, personal use project which is entirely contained within the permit holder's property. Neither IPUC nor FERC have jurisdiction. I am setting the term based on 25-year equipment life.

Because water rights 95-16554 and 95-16553 seem to share a common pipeline, I am also recommending the two rights be limited to 0.65 cfs total.