

MEMORANDUM

TO: Bob Sutter

FROM: Tim Luke

DATE: 9/3/1996

RE: Field Visit with Lee Peterson Regarding Measurement of Willow/Spring Creeks

I met with Lee Peterson on the morning of August 30 about a possible gaging or measurement site on Willow Creek. As the Big Wood gage above Magic Reservoir is moved upstream, Willow Creek will not be measured by the gaging station because it is tributary to the river below the new site.

On my visit, Lee took me to a spot on Willow Creek about 1/3 of a mile upstream from its confluence with the Big Wood. A bridge crosses the creek at this location. This site is below the confluences of Willow and Spring Creeks, as well as Willow and Crystal Creeks. A steel staff gage has been placed along the bridge abutment for recording water levels. Lee said Chuck Brockway had installed the gage and taken current meter measurements here as part of his recent area ground water study. A rating table may have already been initiated by Brockway. I observed a water level of 4.90 ft. at 9:40 AM on August 30. I did not measure the flow but estimated it at about 30 to 40 cfs.

It appears that there is a consistent and significant enough flow to warrant measurement and inclusion with the natural flow of the Big Wood at the new site. I feel that the watermaster's ability to more accurately determine natural flow and priority cuts would be enhanced by measuring this creek. I would recommend two options for measurement:

1) Lee could make periodic current meter measurements at the bridge site to develop and maintain a rating table, including determination of gage shifts. Gage shifts are likely as this is a spring fed creek which has a significant amount of stream bed moss and bank vegetation. Lee can utilize any measurements or rating already made by Brockway.

2) Install a ramped broad crested weir utilizing the existing bridge structure. This would involve designing and installing a concrete sill along the bottom of the bridge structure. Lee said Brockway may have already designed something for this site. Brockway's stream measurements and field visits are probably sufficient field data to allow him to make a design and provide some cost estimates.

I discussed both these options with Lee. He seemed to be open and comfortable with either option. He has met with Mike

Campbell of the USGS about this matter. Lee said the USGS wants to install and maintain a gaging station. Lee said that the USGS does not generally support or have confidence in broad crested weirs and thus does not support option number two. Although I questioned why the USGS would take such a position, I think we concluded that USGS support was not critical in this case if the District wanted to install a weir. The weir will require stream channel permits and land owner permission along with a one time cost appropriation. I think a weir can probably work at this site but we should discuss it further with Lee and Brockway if the district leans to this option. I have a couple of concerns or questions about the location and potential weir maintenance. The weir will also mean less work for Lee. Option number one will demand more of Lee's time to make continuous periodic current meter measurements and gage shifts etc.

I have attached pictures of the creek at the bridge site.