Final Report Addendum to LPL-1064-06

After the December 2007 LPL-1064-06 final report was distributed, additional events occurred that required this addendum. This addendum chronicles those events.

When the 2006 and 2007 data was submitted to Barr Engineering of Minneapolis, MN for modeling, problems with the data were discovered. In addition to much of the 2006 La Valle Road data missing due to equipment malfunction, the watershed yield for 2006 at both La Valle Road and Clark Road was greater than the precipitation. (Precipitation was obtained from NOAA for La Valle Road.) It appears that the equipment at both locations provided incorrect depths which resulted in data showing more flow than is reasonable for the precipitation. This rendered the 2006 Clark Road data and the remainder of the 2006 La Valle Road data unusable.

The 2007 La Valle Road data appears usable. But the 2007 Clark Road data had many unrealistic sudden increases and decreases in flow in very short periods of time, probably due to equipment malfunction. For example:

Date/Time	Level (ft)	Velocity (ft/s)	Flow Rate (gpm)
5/8/2007 14:45	0.252	25.06	15423
5/8/2007 15:00	0.235	25.06	14300
5/8/2007 15:15	0.207	25.06	12447
5/8/2007 15:30	0.157	0.05	18
5/8/2007 15:45	0.13	0.04	12
5/8/2007 16:00	0.12	0.04	11
==========	==========	==========	==========
5/9/2007 0:15	0.417	0.04	44
5/9/2007 0:30	0.432	0.04	45
5/9/2007 0:45	0.453	0.04	48
5/9/2007 1:00	0.457	8.85	10682
5/9/2007 1:15	0.469	8.85	10986
5/9/2007 1:30	0.495	8.85	11700

The stage height data appears reasonable but the velocity was suddenly changing. Thus it appears the flow meter was malfunctioning. But if the flow for a given stage depth was known, the data could be salvaged.

During the summer and fall months of 2008, a District volunteer directly measured the flow inside the culvert for various depths of water. This provided the needed flow values for a given depth of water. Figure A shows the actual measured data and the overall flow curve generated from that data. Thus the erroneous flow data was replaced with accurate data based on actual field measurements. This allowed the 2007 Clark Road data to be used on the modeling effort.

By salvaging the data, progress on several goals for this grant was made. Primarily, valid data was available for the model. The new model will be compared to the 1996 model to assess the effects of the District's establishment of several BMP's in the watershed. This knowledge will provide a better understanding of Lake Redstone's water quality. It also will allow the District to better allocate its future resources in reducing nutrient loading.

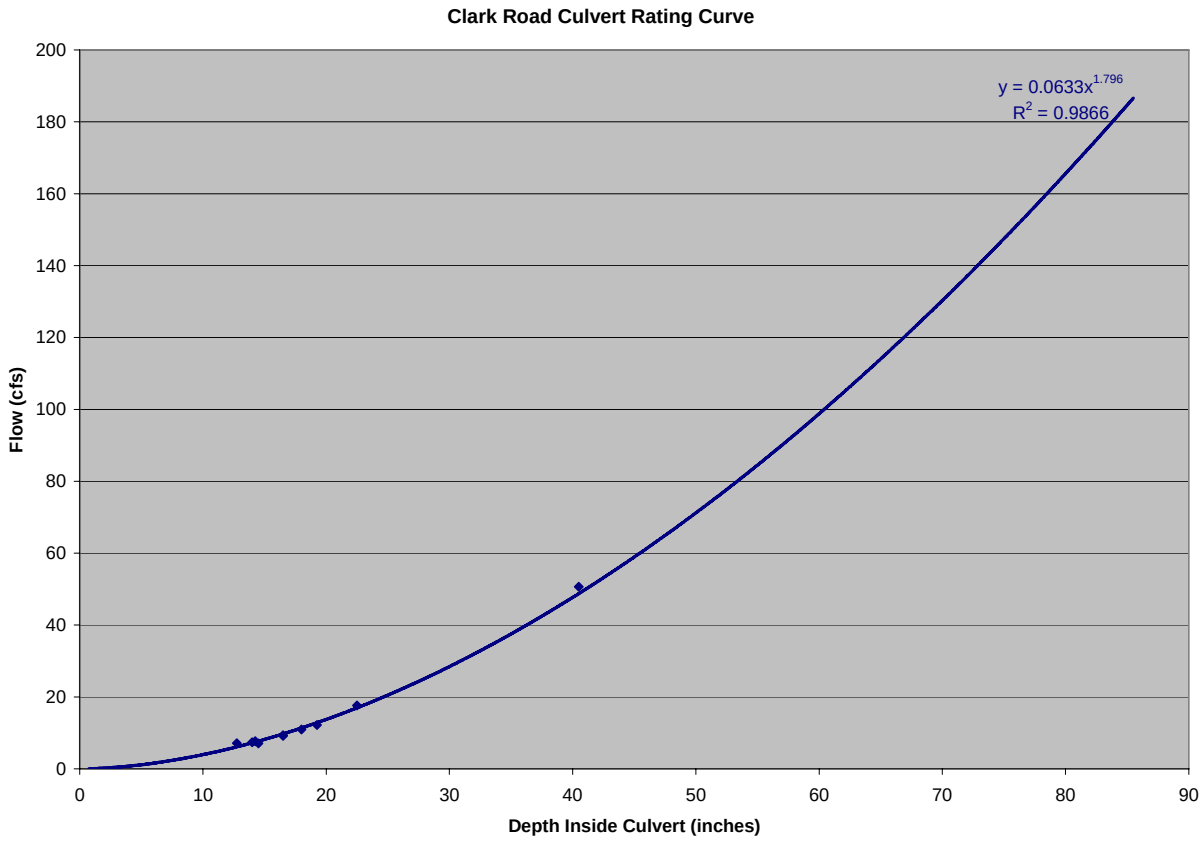

Figure A, Clark Road Discharge Curve