WHELP CREEK WATER DIVERSION PROJECT

BACKGROUND

The Whelp Creek water diversion project was constructed by Lacombe County and the PFRA (Prairie Farm Rehabilitation Administration) to redirect the flow of water from Whelp Creek into Lacombe Lake. The project was completed sometime in the mid to late 1960s with the initial intent of the project unclear. Our records indicate a variety of reasons for the water diversion structure including: 1) to stabilize the water level in the lake; 2) to support an in-depth study conducted by PFRA into methods of allowing more grazing days for cattle along the banks of Whelp Creek that would normally dry-up in mid-summer; 3) to fill the dugouts and irrigate the fields for downstream farmers and the Agriculture and Agri-Food Canada Research Station; and 4) to control water flow in Whelp Creek to minimize flooding downstream which may be susceptible to flooding. According to records, downstream ratepayers believe that this project was intended for flood control however there is no evidence in our records to support this.

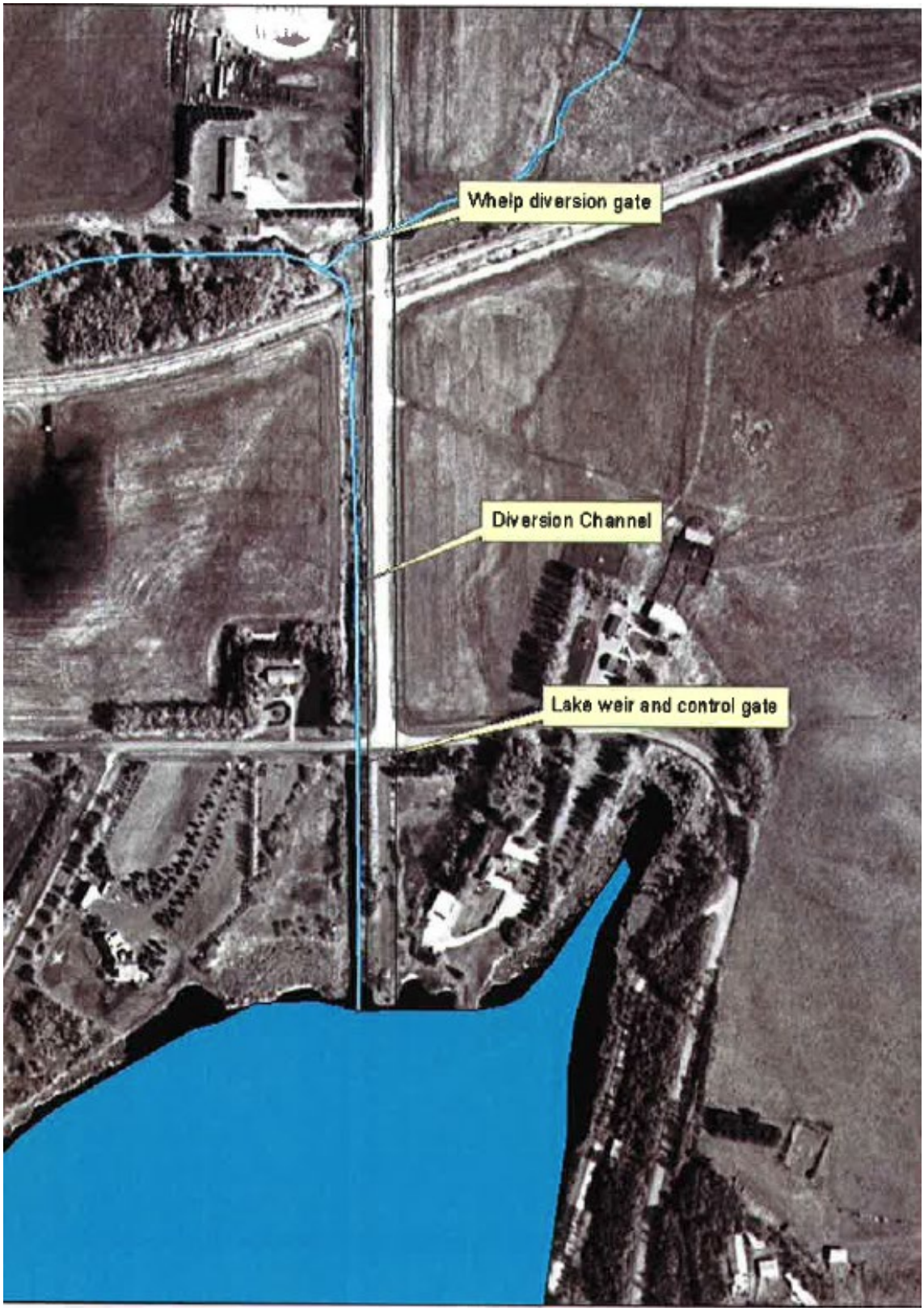
According to Lacombe County records, the Whelp Creek license was granted to control the quantity of water for domestic purposes described as a community water supply. The diversion license was granted to Lacombe County to divert 600 acres feet of water from Whelp Creek to the lake through a channel and over a weir that was installed at a geodetic elevation level of 2812 feet. The works consist of two gate valves, one installed on Whelp Creek, and another at the inlet into the lake. In the mid-1980s some modifications were completed on the diversion structure on Whelp Creek to handle a very extreme runoff situation. This included the installation of an overflow culvert to prevent the road from washing out.

ANALYSIS

All official records from the license indicate that the project was put in place to stabilize the level of Lacombe Lake. The original application from 1966 states that Lacombe County applied for a preliminary survey to be made on the feasibility of developing a community water storage reservoir for irrigation and stockwatering purposes in the Whelp Creek Drainage Basin. As a result of this survey, it was determined that water should be diverted from Whelp Creek into Lacombe Lake. This would assure the filling of the lake in most years and could provide an additional 300-350 acre feet of live storage which would be available for downstream stockwater and irrigation. As per the

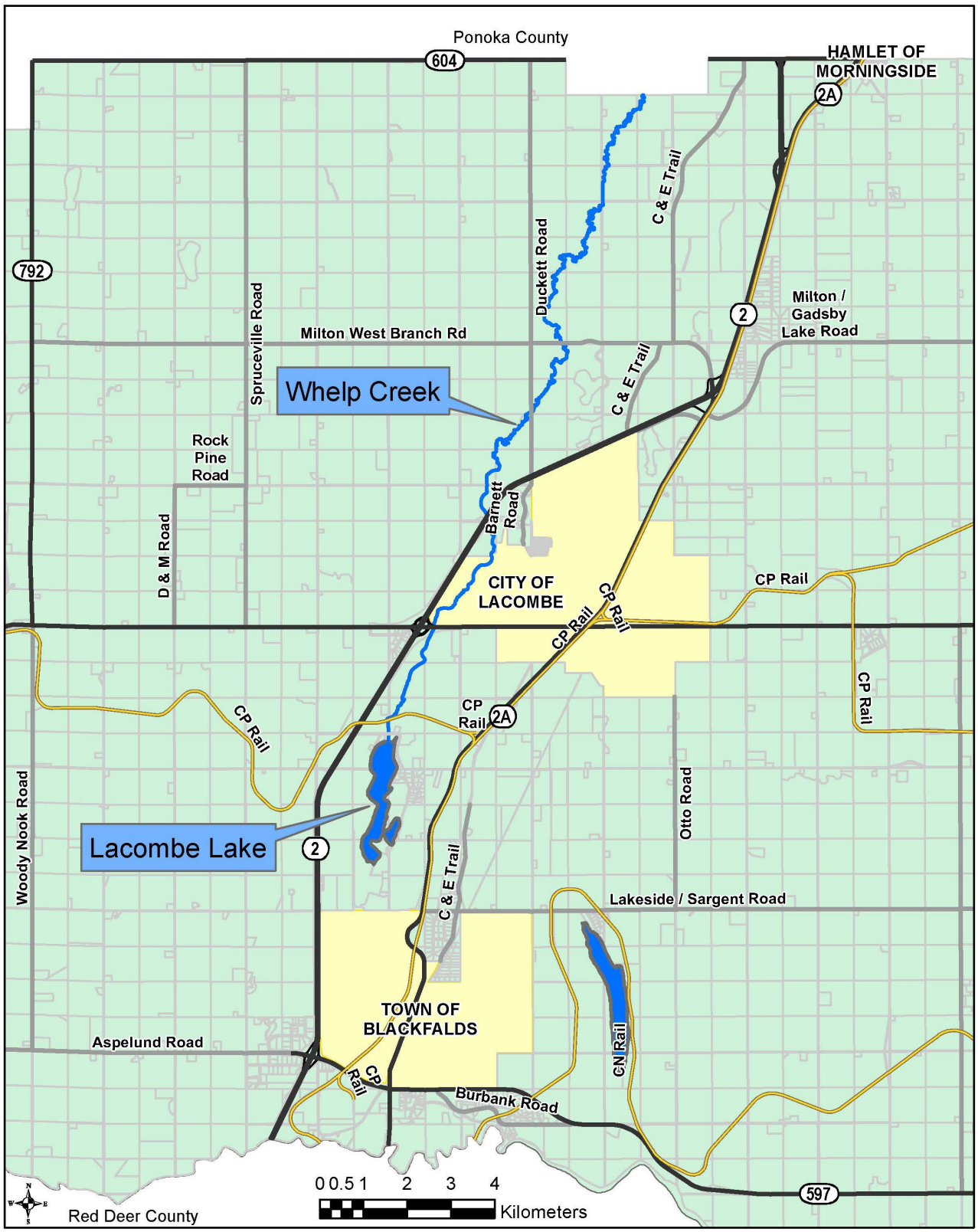
agreement Lacombe County agreed that Lacombe Lake would be maintained at a minimum water level of 2810 elevation and a maximum level of 2812 elevation. The gates have remained closed during most of the water diversion structure's existence. According to records, Lacombe County staff have opened the gates to release water on two separate occasions; once in 2001, and again in 2002 at the request of Agriculture and Agri-Food Canada to fill a reservoir.

Figure 1. Whelp diversion gate and lake weir and control structure location map



Lacombe County as well as Alberta Environment and Parks have received many complaints since the construction of the water diversion structure on Whelp Creek from landowners living adjacent to the lake. Many lakeside landowners have complained about the increased water level destroying the lakeshore and the quality of the water in the lake being degraded. The majority of the area that drains into Whelp Creek is utilized for agricultural production including multiple confined feeding operations (CFOs). Landowners are concerned that the nutrient levels are high and that there is high levels of animal affluent being deposited into Whelp Creek. To address water quality concerns Lacombe County hired WSH Labs from 2008 to 2013 to analyze samples submitted on a monthly basis to test for various bacteriological components as well as a suite of nutrients commonly associated with excessive weed and algal growth in lakes. Conclusions from sampling acknowledge that the removal of any inflow source of water would likely remove the associated nutrients, bacteria and other negative parameters from entering the lake, however more samples are necessary to confirm this due to the seasonal variability in the samples collected to date. Additionally, a report was created by Aquality Environmental Consulting Ltd. to look at the quality of water being diverted from Whelp Creek into Lacombe Lake. The study, however, is unreliable due to conclusions being based on a small sample size with no temporal or spatial variability which was used to conclude that the quality of water in the creek was substantially poorer than the water quality in the lake.

Figure 2. Lacombe Lake and Whelp Creek location map



To reiterate, there is no documents in our records that state that the water diversion project was intended to minimize flooding downstream. However a Master Drainage Plan released in 2014 by MPE Engineering Ltd. (as requested by the Wolf Creek Watershed Study Committee) to manage and coordinate efforts for watercourse improvements and guidance for future developments found (using hygrographs from selected sub watersheds and the HECRAS model) under post-development conditions, an allowable unit release rate of 2 L/s/ha would not increase peak flows in Whelp Creek, and the receiving stream, Battle River. In comparison, an allowable unit release rate of 5 L/s/ha would increase peak flows in Whelp Creek by about 10%, and about 1% in the receiving stream, Battle River, assuming coincident peaks. The Master Drainage Plan also identified sections along Whelp Creek that may be prone to flooding during heavy rain events (see Master Drainage Plan for locations prone to flooding).

SUMMARY

The license to divert water from Whelp Creek is held by Lacombe County. Lacombe County can utilize this license and divert up to 600 acres feet each year or choose not to divert water. The County has assured lake residents that no water would be diverted without first notifying lake residents in advance. Within the last few decade water has been diverted on two separate occasions at the request of Agriculture and Agri-Food Canada suggesting that this diversion structure has had little purpose in the past.