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# **Evolution of the Morphology of the Vermilion River near Lafayette, Louisiana, USA; Consequent Flooding Problems and a Mitigation Plan; Some Features on the Surface of the Prairie Complex: All Illustrated with LIDAR Imagery**

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## **ABSTRACT**

The Vermilion River near Lafayette, Louisiana normally flows from the Mississippi River Valley into an incision in the higher Prairie Complex. A theory involving capture of the Vermilion River by drainage within the Mississippi River Valley, damming of a yazoo stream in the Mississippi River Valley by crevasse deposits, development of a Holocene lake, overtopping of the drainage divide within the incision in the Prairie Complex and downcutting to the level of the present Vermilion River is developed. LIDAR data are explained and analyzed to illustrate the theory and to show why the Vermilion River develops bidirectional flow and floods in response to high municipal runoff rates from Lafayette, Louisiana. Gates and pumps southwest of Coulee Ile des Cannes are offered as a possible flood mitigation plan.

Several other interesting features on the surface of the Prairie Complex, which were very clearly imaged in the LIDAR data imaged for this study, are pointed out.