

Development of GUI tools for optimizing fluid management in shale oil and gas operations

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Abstract. Water management is important to enhance safety and environmental protection in the development of natural gas and other petroleum resources. Optimized management of water can minimize community impacts such as road damage, truck traffic, noise, air pollution and landscape disturbance. A tool that optimizes the management of fluids results in higher efficiency of water reuse and minimizes the environmental risks of natural gas development. This research entails developing graphical user tools to optimize water management in shale oil and gas operations. The tools that were developed include water production, water use and water quality modeling tools based on extracted data from Noble Energy Inc. and produced in Matlab. The output of these tools will provide information for users to predict the wastewater production and water demand needed for treatment and analyze water quality components such as contaminant concentrations.