

# Lewis & Clark County Water Quality Protection District

## Tenmile Creek Groundwater Monitoring Plan



Prepared by:

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## **1.0 Introduction**

Several creeks flow through the Helena Valley before emptying into Lake Helena: Prickly Pear Creek, Tenmile Creek, Sevenmile Creek, and Silver Creek. In the spring and early summer of 2018, high spring runoff flows, fed by heavy late-winter snowpack and spring rains caused Tenmile Creek to jump its banks, resulting in surface flooding, and subsequent high groundwater levels along the Tenmile Creek flood corridor. Residents in this area contended with both overland flooding of homes and property as well as basement flooding caused by rapidly rising, and lingering shallow groundwater.

This monitoring plan documents the Water Quality Protection District's (WQPD) plan to collect groundwater information to better understand the mechanisms influencing groundwater movement through the Tenmile Creek flood zone during flooding events. Data may be used to better inform residents regarding the timing, areal extent, and residence time of springtime groundwater levels within the Tenmile Creek floodzone.

### **1.1 Project Area Overview**

The Lake Helena watershed is located in west-central Montana in Lewis & Clark and Jefferson Counties. Helena, Montana's capitol city lies near the center of the watershed. The Lake Helena watershed is part of the Upper Missouri Watershed (USGS 8-digit hydrologic cataloging unit number 10030101). Tenmile Creek flows northeast through the Lake Helena watershed, originating in the mountains above Rimini and emptying into Lake Helena. Between Rimini and Lake Helena, Tenmile Creek flows through residential and agricultural lands in the Helena Valley. The Project Area includes lands to the north and west of Tenmile Creek downstream from where Tenmile Creek crosses Green Meadow Drive (Figure 1).

### **1.2 Project Goals and Objectives**

The primary goal of this monitoring plan is to measure and track groundwater levels in the Helena Valley, particularly along the Tenmile Creek and Silver Creek floodzone. This is done by monitoring static water levels in residential wells within the project area. Tracking well water levels is an important component to understanding how the groundwater system responds to flooding, and the timing and extent of groundwater table rise and fall in and adjacent to the flood zone. Understanding groundwater movement can also inform residents, institutions and local governments regarding resource management and community planning efforts.

## **2.0 Study Design**

Flood monitoring consists of data collection of groundwater levels in and adjacent to the Tenmile Creek and Silver Creek flood zones. Water level measurements are taken at seventeen (17) residential wells along the Tenmile Creek and Silver Creek flood zones. At each residential well, monthly manual water level measurements are collected. As spring conditions warrant, frequency of water level measurements is increased to weekly or more frequent in order to adequately capture rising spring groundwater levels. Where applicable, and as budgets and workloads allow, data loggers may be used to collect continuous water level data. Table 1 and Figure 1 show groundwater monitoring locations.

In addition to GW level measurements, photographs will be taken during times of surface flooding to identify surface flow paths, surface pooling of flood waters, and effects of mitigation efforts by the county and local residents.

### 3.0 Project Team and Data Management

#### 3.1 Project Team and Responsibilities

Person	Role	Affiliation	Responsibilities
Peter Schade	Project Coordinator	WQPD	<ul style="list-style-type: none"><li>• Project Planning &amp; Coordination</li><li>• Data Collection</li><li>• Data Reporting</li><li>• Outreach</li></ul>
James Sweirc	Technical Support	WQPD	<ul style="list-style-type: none"><li>• Technical Assistance</li><li>• Data Collection</li></ul>
Jennifer McBroom	Technical Support	WQPD	<ul style="list-style-type: none"><li>• Data Collection</li><li>• Outreach</li></ul>
Valerie Stacey	Technical Support	WQPD	<ul style="list-style-type: none"><li>• Data Collection</li><li>• Data Reporting</li><li>• Outreach</li></ul>

#### 3.2 Data Management and Reporting

Data collected will be managed by the Lewis & Clark County Water Quality Protection District, and maintained in spreadsheets, hardcopy field sheets and .pdf files. Additionally, water level data is uploaded to the Groundwater Information Center (GWIC) database managed by the Montana Bureaus of Mines and Geology, and available for public consumption. All data is available to the public, government agencies and non-government organizations by written request. Data will also be delivered to the public through the WQPD's on-line groundwater data mapping application. There are no statutory reporting requirements for this data.

<b>GWIC ID</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Well Address</b>
61260	46.649587	-112.028470	5260 Kerr Drive
65043	46.663597	-112.025927	940 Vallejo Dr
892195	46.645859	-112.015984	Mill Rd
61368	46.644188	-112.028648	775 Motsiff Rd
278687	46.677900	-112.021900	6804 N Montana Ave
61215	46.645904	-112.037226	546 Mill Rd
147133	46.637070	-112.045379	4375 Green Meadow Dr
278709	46.653312	-112.028317	5502 Kerr Dr
61189	46.654177	-112.022008	5560 N Montana
255363	46.658243	-112.015939	Rossiter School
256510	46.640981	-112.026216	964 Cheryl Road
239110	46.640978	-112.027552	910 Cheryl Road
61196	46.655662	-112.038284	Forestvale Cemetery
65088	46.666124	-112.019456	1208 Hilmen Rd
258300	46.688540	-112.054076	7085 Green Meadow Dr
197571	46.690000	-112.051484	7125 Sagebrush Rd
NA	46.662269	-112.015803	6170 Goodwin Dr

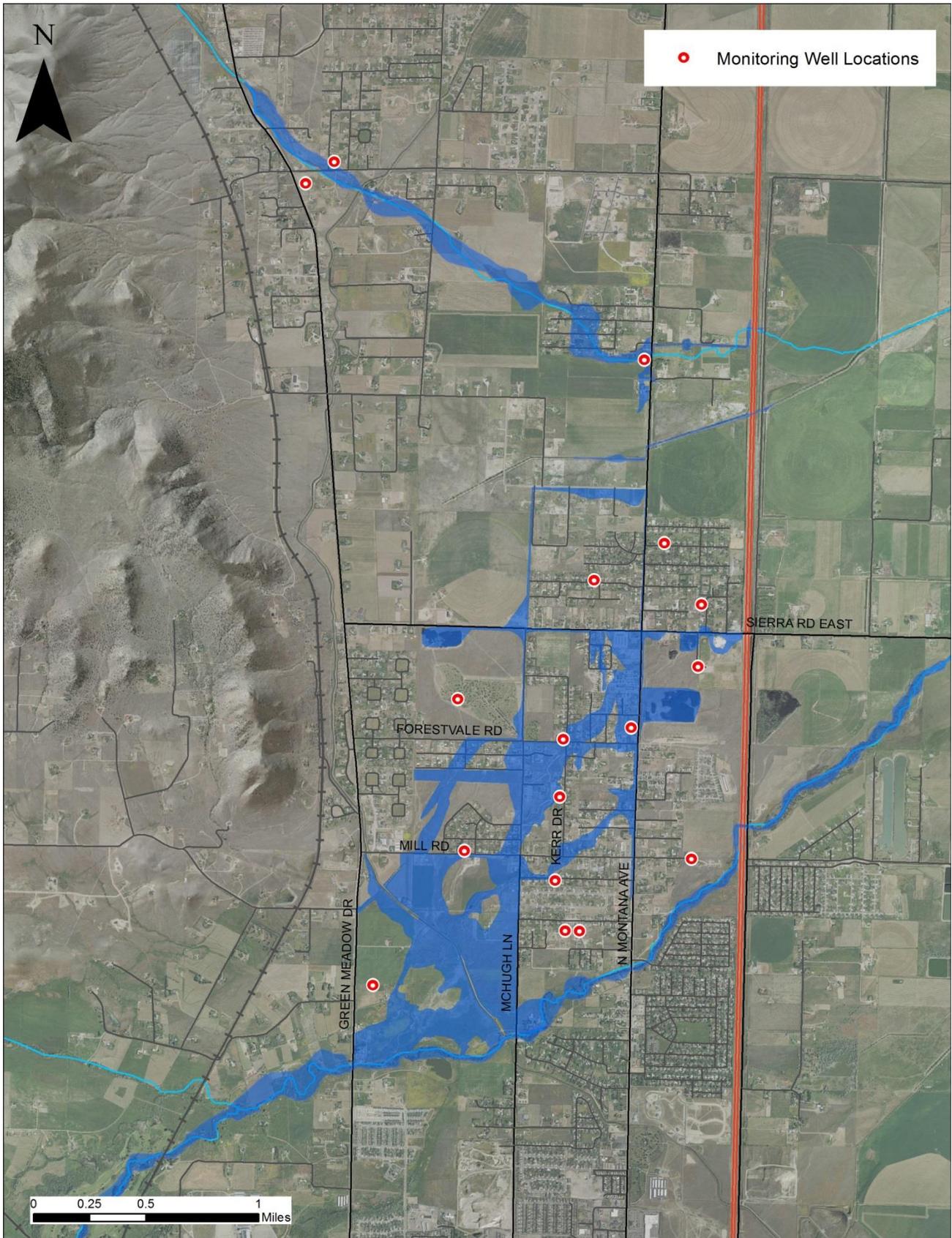


Figure 1: Groundwater Level Monitoring Locations within the Project Area