

# Thompson Divide Baseline Water Quality Study

August 2009

## Overview

The Thompson Divide area stretches West and Southwest from Carbondale, Colorado. The area includes portions of Garfield, Gunnison, and Pitkin counties, and incorporates portions of the Thompson Creek, Fourmile Creek, Coal Creek, Garfield Creek, East Divide Creek, West Divide Creek, and Muddy Creek watersheds.

Portions of the Thompson Divide area have been leased for oil and natural gas development but, to date, limited development has taken place on these leases. The primary goal of this Water Quality Study is to collect data which will provide a scientifically valid, legally defensible water-quality baseline<sup>1</sup>. In the event that more intensive drilling and associated activities occur in this area, this data can be used to ascertain, and hold operators accountable for, any degradations that result.

This plan is commissioned by Thompson Divide Coalition, a broad multi-stakeholder coalition including numerous organizations, individuals, and government agencies. This plan is being conducted by Chad Rudow of Roaring Fork Conservancy with contributions and under the direction of the following consultants (listed alphabetically):

Thomas J. Glibota, PG; Glibota Environmental, Inc.

John Huntington, Ph.D.; Gateway Enterprises

William J. Miller, Ph.D.; Miller Ecological Consultants, Inc.

Robert E. Moran, Ph.D.; Michael-Moran Assoc., LLC

Specifically, consultants have and will provide assistance in the areas of plan development, site selection, sampling protocol, sampling constituents, field sampling, quality control, data analysis, and legal viability.

## Sample Locations

Sample sites are located within the general Thompson Divide area. Sampling will include both surface water and ground water. The major factor for site selection was proximity to oil and gas leases. Sites are located downstream of areas with a high density of leases and have been located as close to these areas as possible in order to minimize the effect of unrelated factors on water quality.

## Sampling Constituents

Congruent with baseline water-quality sampling, constituents for this plan are extensive. They include field measurements, general water-quality parameters, and constituents targeted to oil and gas drilling and production. Included in this sampling plan are:

- 8 common field measurements

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<sup>1</sup> Baseline as used in this report refers to water quality conditions occurring at the time of sampling and prior to oil and gas development.

- 16 general water-quality parameters
- 26 metals
- 2 radiological parameters
- 3 dissolved gases
- 102 organic compounds

Biological constituents are a component of this plan as well, including benthic macroinvertebrate sampling and metals analysis of sediment and macroinvertebrate tissue.

## **Sampling Schedule**

To achieve the goal of baseline data, sampling will follow a schedule including multiple samples, collected over the course of one year. This schedule incorporates different seasons and flows, as well as enough data sets to build an accurate snapshot of baseline characteristics. Additionally, biological sampling will be conducted at surface water sample sites during the start of the sampling schedule corresponding with base flows. This study will lay the foundation for future sampling to be instituted as a continuation of the baseline or in response to oil and gas drilling and development.

## **Sampling Plan**

A Sampling Plan and Quality Assurance Plan have been designed to guide implementation of the baseline water monitoring efforts. The Sampling Plan contains sampling protocols and procedures as well as information regarding sample constituents and laboratories chosen to analyze samples. The Quality Assurance Plan will ensure consistent collection techniques and precise, accurate, and defensible data. These plans were developed under the guidance of the water-quality consultants and will be strictly adhered to during sampling events to ensure data is scientifically valid and legally defensible.

## **Sample Reporting**

Sampling results will be logged according to the Sampling and Quality Assurance Plans as well as laboratory protocols. The laboratories will provide a standard report summarizing the data, raw data for specified constituents, and their internal quality control measures. Water-quality consultants, listed above, will provide data validation, interpret the results, and develop a final report with baseline results and key findings specific to the overall goals.