



Stream Channel Characteristics Monitoring in City of Rocks National Reserve

Importance:

Stream Channels – an indicator of stream health

There is an intimate connection between stream channels and the surrounding landscape. Stream channels are a product of regional geomorphology, hydrology, riparian vegetation, upland vegetation, land use and water use. Within a stream, channel characteristics profoundly influence habitat for macroinvertebrates and fish. This connection between the surrounding landscape, stream channels, and aquatic habitat makes monitoring channel characteristics an important aspect of natural resource monitoring in the Upper Columbia Basin Network (UCBN). In addition, stream channel monitoring assists in the interpretation of results obtained from UCBN integrated water quality monitoring.

2012 Status

In 2012 the UCBN estimated the status of bank stability, percent undercut, bank angle, percent fines, and other key stream channel characteristics for 2 selected stream reaches on Almo Creek, North Fork, South Fork, and Circle Creeks in Castle Rocks State Park (CRSP) and City of Rocks National Reserve (CIRO). Basic metrics are summarized for sample reaches on Almo Creek and Circle Creek in the table below. These measures provide important baseline indications on the conditions of aquatic habitat in both of the sampled streams, to which future samples will be compared. 2012 was the first year of monitoring in CRSP and CIRO, the stream reaches will be re-sampled in 2015.

Management Applications

- Provide information on the condition of aquatic habitats
- Detect habitat degradation and potential concerns to park management
- Provide feedback on the success of park management and restoration activities
- Inform integrated assessments of climate change impacts on park resources.

Objectives

- Determine the status and trend of bank stability, percent undercut, bank angle, percent fines, and other key stream channel characteristics for selected wadeable stream reaches.



2012 monitoring on Almo Creek (CRSP) included the assessment of channel substrate.



2012 monitoring on both Almo and Circle Creeks has contributed to the establishment of baseline conditions, which include determining bank stability and reach sinuosity.

Castle Rock State Park and City of Rocks National Reserve - Stream Channel Characteristics Summary 2012

Measure	Almo Creek site 3219	Circle Creek site 3226
	Current Condition (July 2012)	Current Condition (July 2012)
Average bank angle (degrees) (mean)	140.00	145.00
Residual pool depth (m) (mean)	0.09	0.11
Bankfull width-to-depth ratio at transects (ratio) (mean)	21.30	28.76
Gradient (%) (mean)	4.47	1.70
Large wood frequency (pieces/km) (mean)	5.77	11.70
Vegetated Stability (%) (mean)	76.19	76.19
Sinuosity (ratio) (mean)	1.18	precludes reporting due to beaver pond