Geology 402/502
Geomorphology

Field Exercise: Caddy Canyon Debris Flow(s)

In July, 2002, a wildfire burned more than 2000 acres (800 ha) of Blackrock and Caddy canyons in the Portneuf Gap area. A month later, a thunderstorm cell dropped more than 1 inch (2.5 cm) of rain in less than one hour. The burned slopes generated abundant runoff, which bulked up on sediment from hillslopes and stream channels and generated a debris flow. The debris flow crossed I-15, closing the freeway for as much as 5 hours. Because the closure of an interstate is undesirable, the area has been studied in detail and mitigative measures have been undertaken.

On this field trip, we will observe evidence of debris flow processes, evaluate the effectiveness of the mitigative measures, and determine subsequent sediment production from the drainage basin.

In each area:

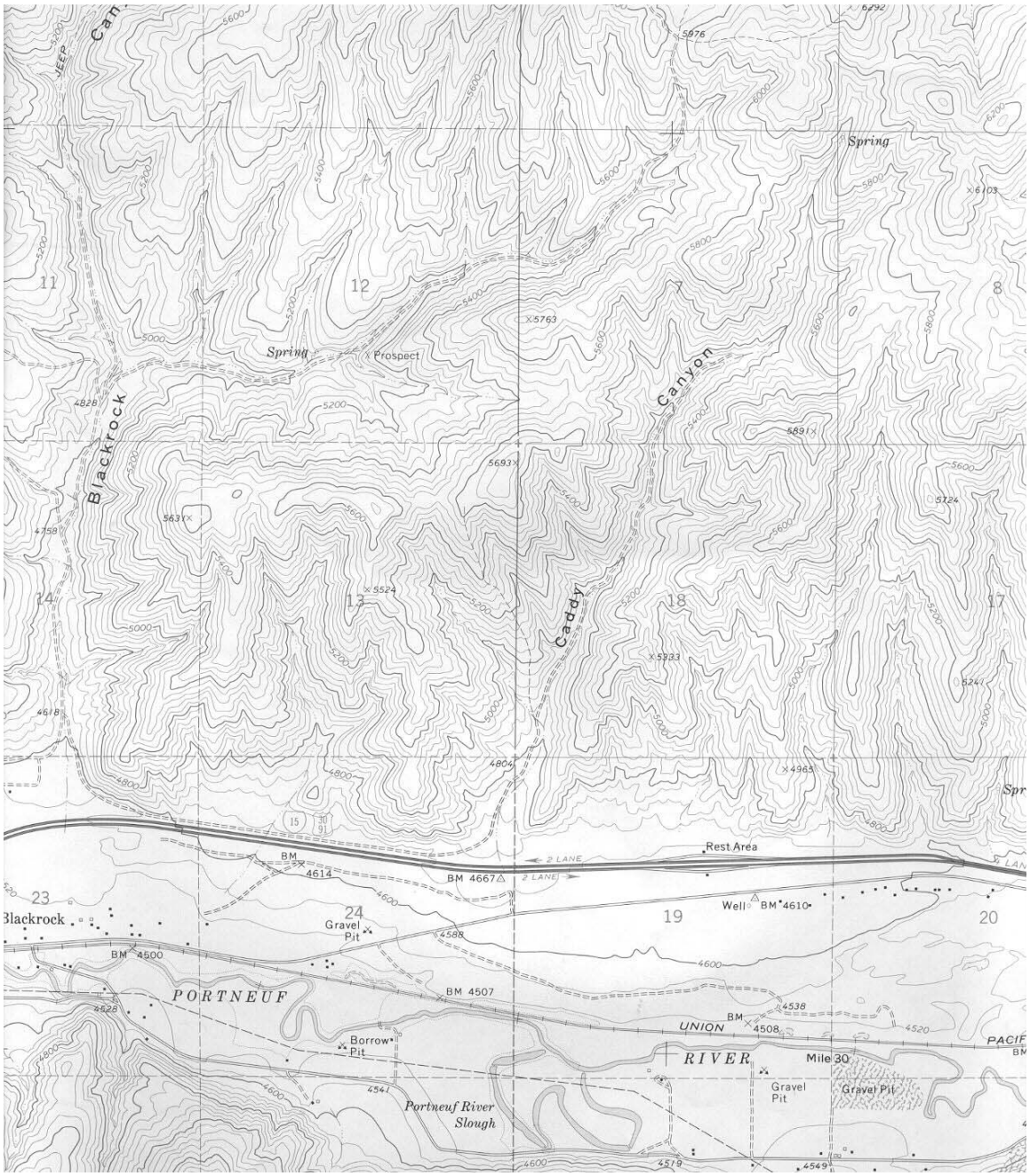
1. Describe evidence of debris flow and/or flash flood processes.
2. Identify water and sediment source areas.
3. Identify sediment deposition processes.
4. Describe the mitigative measures taken, and their apparent past, present and future effectiveness.

At the sediment retention dams:

1. Measure sediment depth in transects across the accumulated sediment.
2. Survey the perimeter of the accumulated sediment.

<u>To turn in</u>:

1. A short report (ca. 1 page) describing the processes of runoff, erosion, sediment transport, and debris flow generation in this area. Consider the sources of water, human influences, debris flow generation processes, the apparent and potential impacts of debris flows and flash floods, and the effectiveness of mitigative measures.
2. Calculations of sediment production in subsequent precipitation events, as determined from our measurements at the check dams.


Blackrock Canyon
Caddy Canyon
Spring
Prospect
Rest Area
Well
BM 4614
BM 4667
BM 4610
BM 4500
BM 4507
BM 4508
Gravel Pit
Borrow Pit
Blackrock
PORTNEUF
UNION PACIF
RIVER
Mile 30
Portneuf River Slough
2 LANE
11
12
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