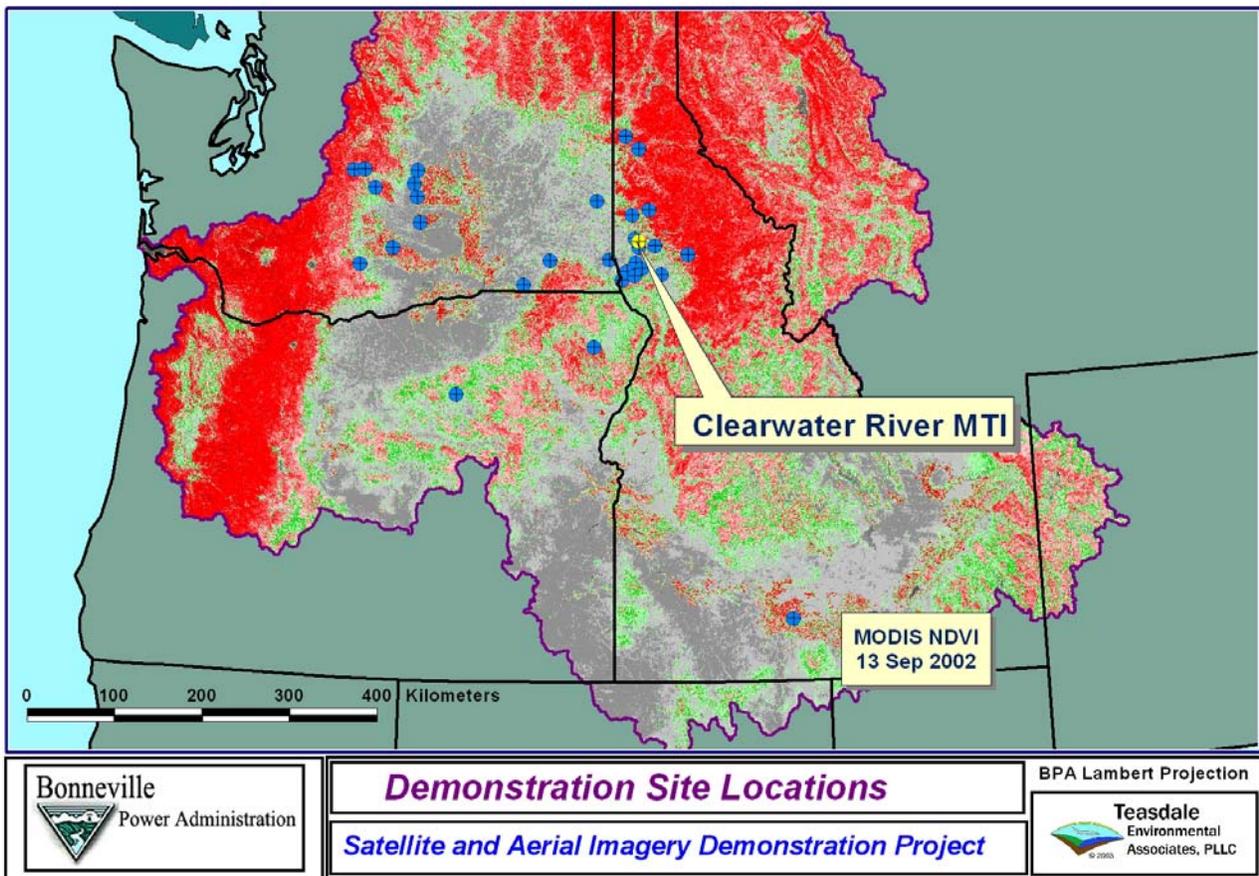


<b>Clearwater River Demonstration Site</b>	
<b>Location</b>	Nez Perce, Lewis and Clearwater Counties, ID Nez Perce Reservation
<b>Water body</b>	Clearwater River
<b>Ecological Provenance</b>	Mountain Snake
<b>Subbasin Name</b>	Clearwater
<b>BPA Hydrologic Unit Code ID</b>	3600
<b>Hydrologic Unit Code, 6<sup>th</sup> Level</b>	170603060801
<b>Watershed Name</b>	Clearwater, ID



**Unique Characteristics**

The lower Clearwater River is one of the largest free flowing rivers in the Columbia River Basin. Watershed area at the Spalding gage is 24,800 km<sup>2</sup> (9,570 mi<sup>2</sup>) with a mean annual discharge of 430 cms (15,000 cfs). Flows in the Clearwater are

partially regulated by releases from Dworshak Dam. Water quality is very good, but sediment loads from tributary agricultural watersheds can be high during periods of rapid snowmelt. The channel is confined by steep canyon lands and has remnant structures from ice age flooding.

Satellite imagery for this site includes Landsat 5, Landsat 7, ASTER, MTI. Digital color aerial imagery was acquired on August 24, 2001 and September 8, 2002. Digital color infrared aerial imagery was acquired on June 13, 2002. Ancillary data includes topographic DRG's, DOQ's, watershed boundaries, and national land cover data.

### Objective

The primary objective was to study the ability of the seasonal progression of MTI images to reveal hydrologic details of a large free flowing river with high quality water quality and compare the MTI images to other satellite and aerial images. A secondary objective was to study tributary streams and watershed characteristics with the MTI imagery.

### Results

The MTI imagery shows varying stream morphological structure and an indication of relative depth. It also shows the seasonal progression of riparian and canyon vegetation. The MTI imagery could provide ground truth information of some characteristics for verifying interpretation of lower resolution satellites. The IKONOS and very high-resolution aerial imagery in turn provided ground truth information for interpreting MTI images. The full suite of satellite and aerial images reveal a continuum of important hydrologic detail of the rivers, streams and watershed land cover. The aerial imagery reveals mid channel depositional structures and relative water depth. Late season satellite imagery shows the effect of sun angle on interpretability and land cover analysis. The set of MTI images show that it is difficult to obtain frequent cloud-free images of the Clearwater basin, but that there is a good probability that enough images can be obtained to study seasonal characteristics.