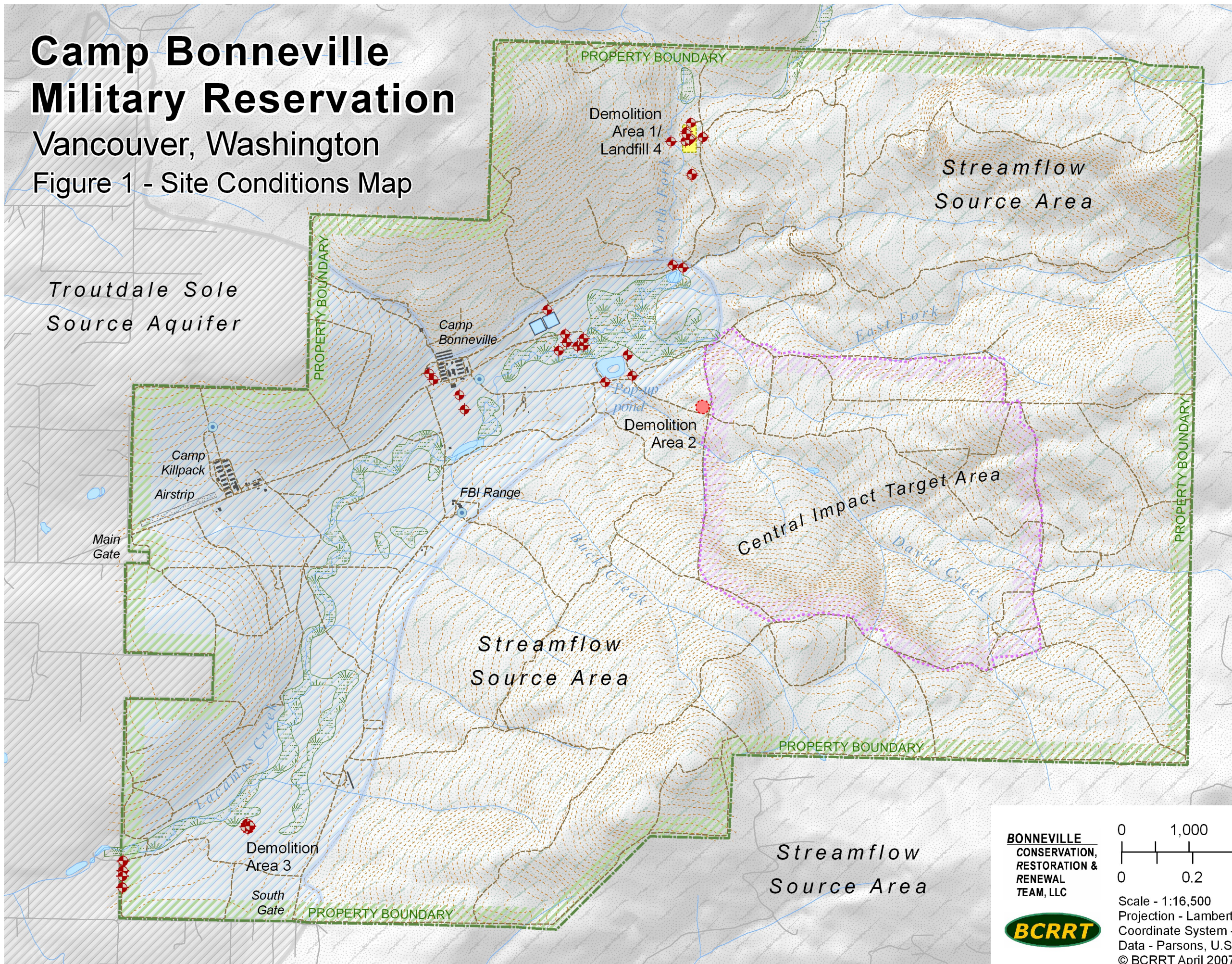


# Camp Bonneville Military Reservation

Vancouver, Washington

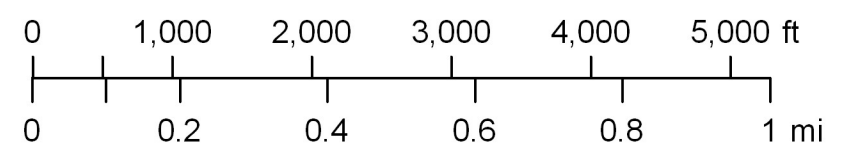
Figure 1 - Site Conditions Map



### LEGEND

- Drinking water well
- Monitoring well
- Demolition Areas 2 & 3
- Demolition Area 1/Landfill 4
- Wetlands
- Troutdale Sole Source Aquifer
- Streamflow Source Area portion of the Troutdale Sole Source Aquifer designation
- Roads and trails
- Elevation contours (20-foot intervals)

**BONNEVILLE**  
CONSERVATION,  
RESTORATION &  
RENEWAL  
TEAM, LLC



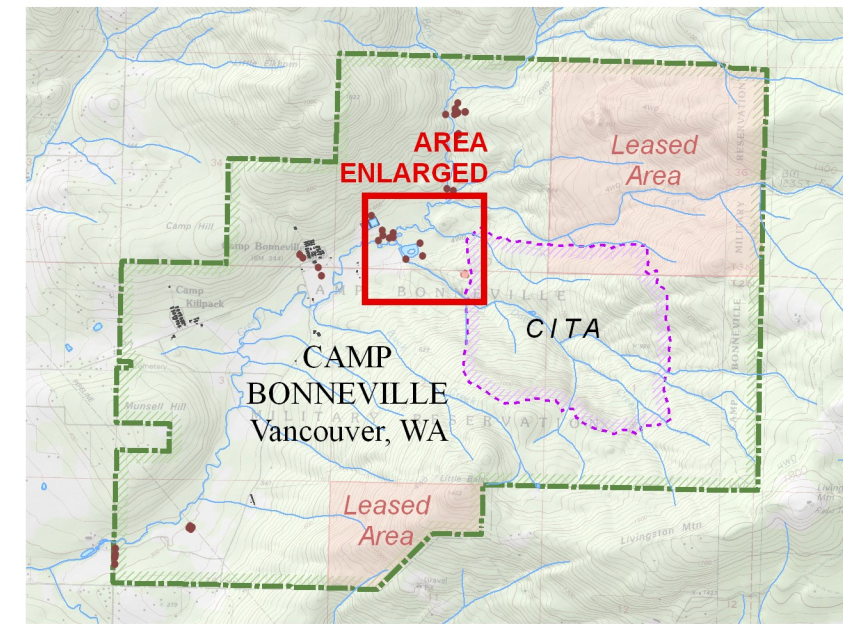
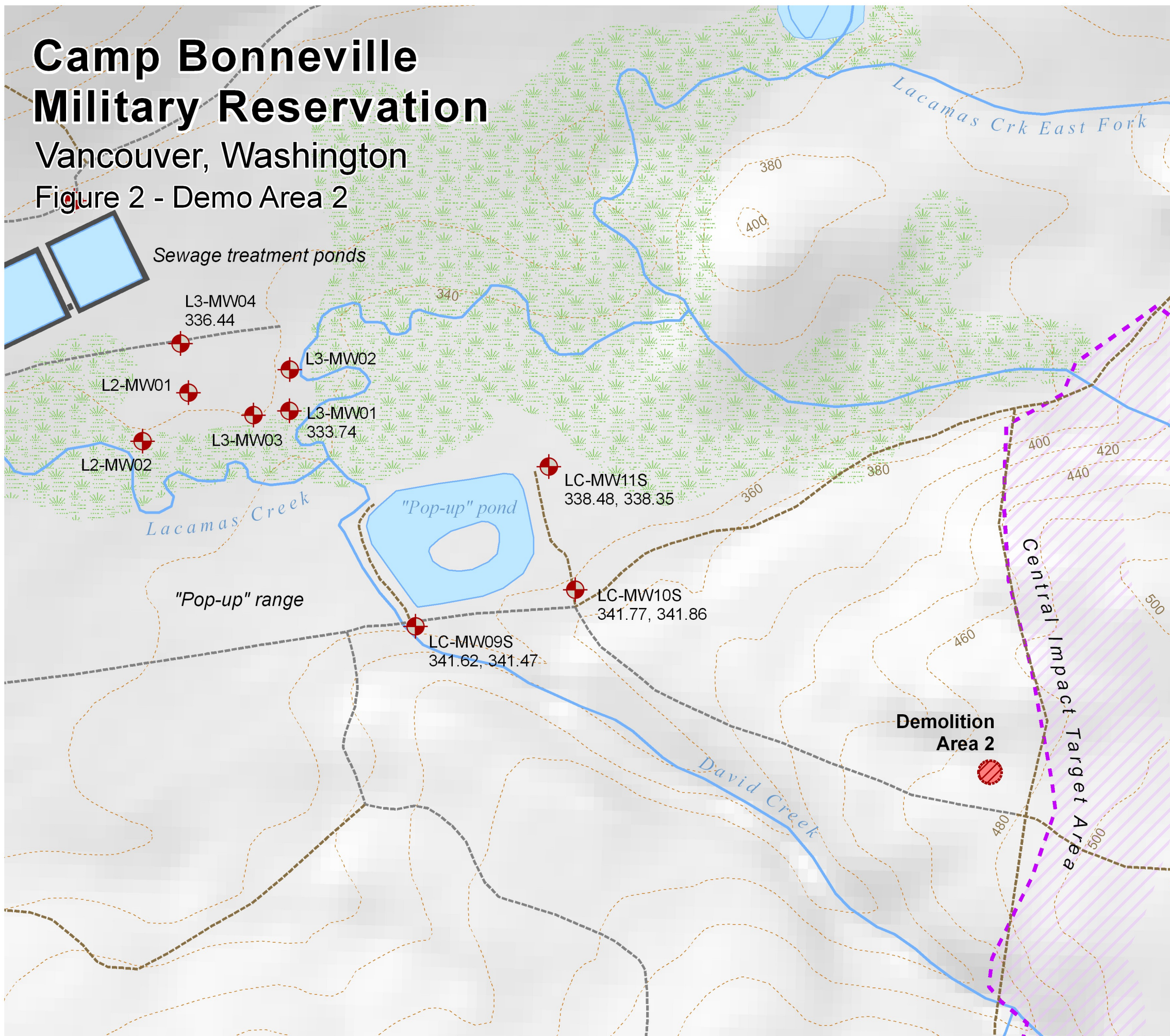
Scale - 1:16,500  
Projection - Lambert Conformal Conic  
Coordinate System - State Plane Washington South FIPS 4602  
Data - Parsons, U.S. Army Corps of Engineers and Michael Baker, Jr.  
© BCRRT April 2007



# Camp Bonneville Military Reservation

Vancouver, Washington

Figure 2 - Demo Area 2



**BONNEVILLE**  
CONSERVATION,  
RESTORATION &  
RENEWAL  
TEAM, LLC



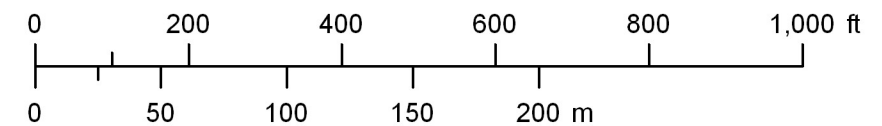
## LEGEND

- Monitoring well (ID number and groundwater elevation shown\*)
- Demolition area 2
- Wetlands
- CITA fence line
- Streams and creeks
- Elevation contours (20-foot intervals)

## Road & Trail Conditions

- Paved roads
- Gravel roads
- Dirt trails (ATV only)

\* Groundwater sample date is Jan 2003 for the first number shown; For the three wells around the "Pop-up" pond, the second number shown is from June 2006.



Scale - 1:3,000

Projection - Lambert Conformal Conic

Coordinate System - State Plane Washington South FIPS 4602

Data - Parsons, U.S. Army Corps of Engineers and Michael Baker Jr.

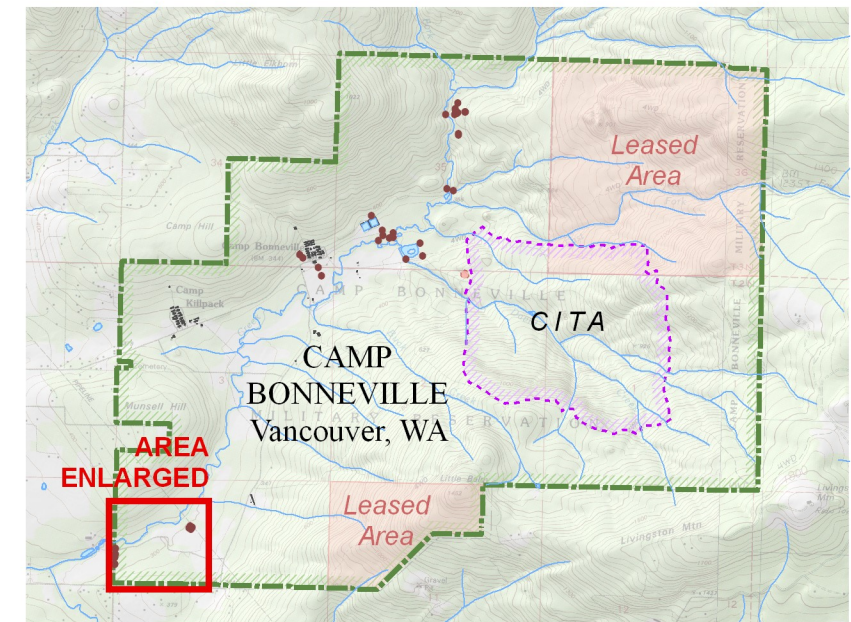
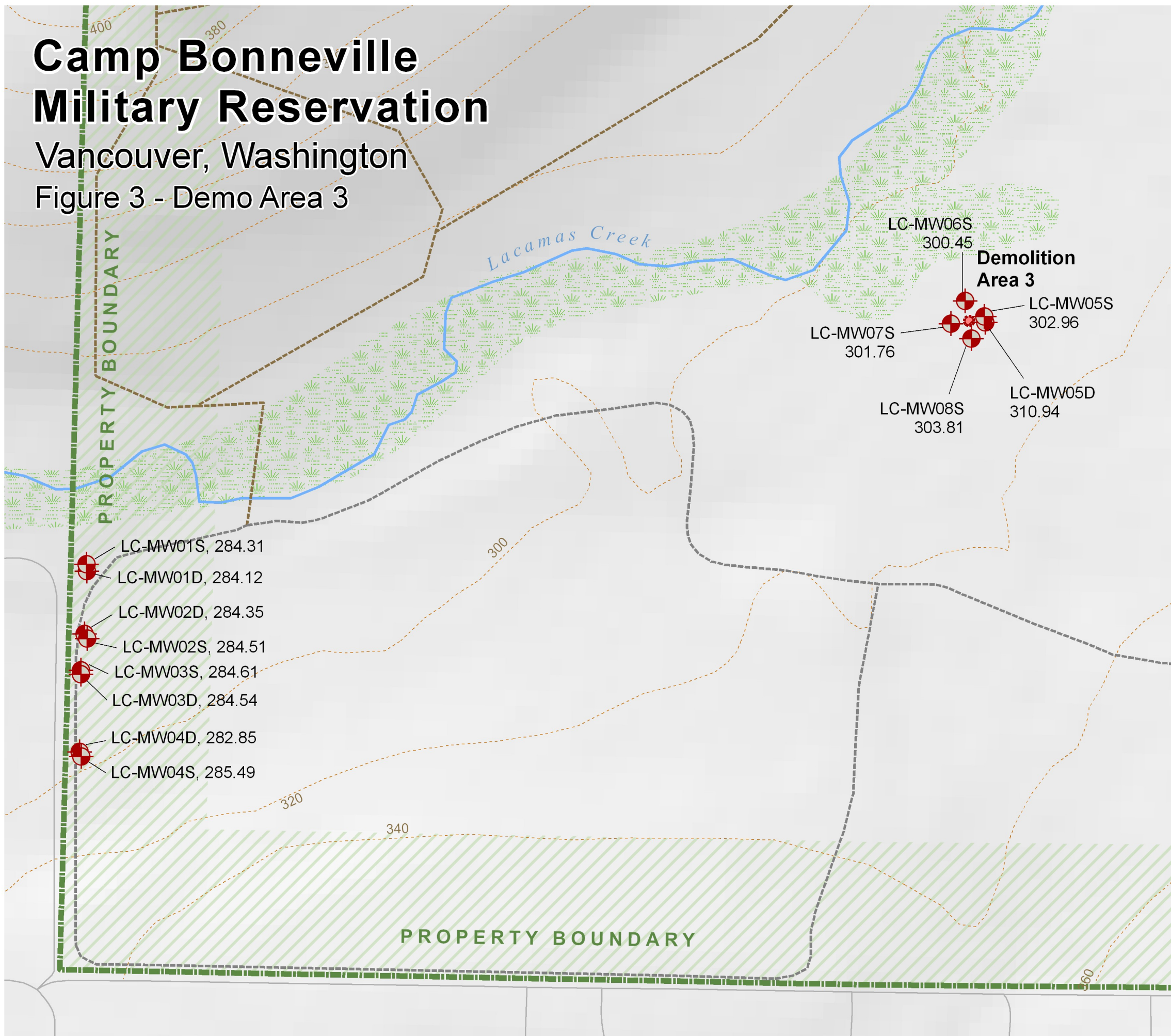
© BCRRT April 2007



# Camp Bonneville Military Reservation

Vancouver, Washington

Figure 3 - Demo Area 3



**BONNEVILLE**  
CONSERVATION,  
RESTORATION &  
RENEWAL  
TEAM, LLC



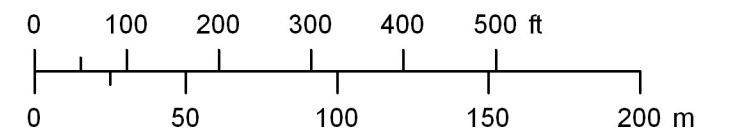
### LEGEND

- Monitoring well (ID number and groundwater elevation shown\*)
- Demolition area 3
- Wetlands
- Property fence line
- Streams and creeks
- Elevation contours (20-foot intervals)

### Road & Trail Conditions

- Paved roads
- Gravel roads
- Dirt trails (ATV only)

\* Groundwater sample date June 2006.



Scale - 1:2,500

Projection - Lambert Conformal Conic

Coordinate System - State Plane Washington South FIPS 4602

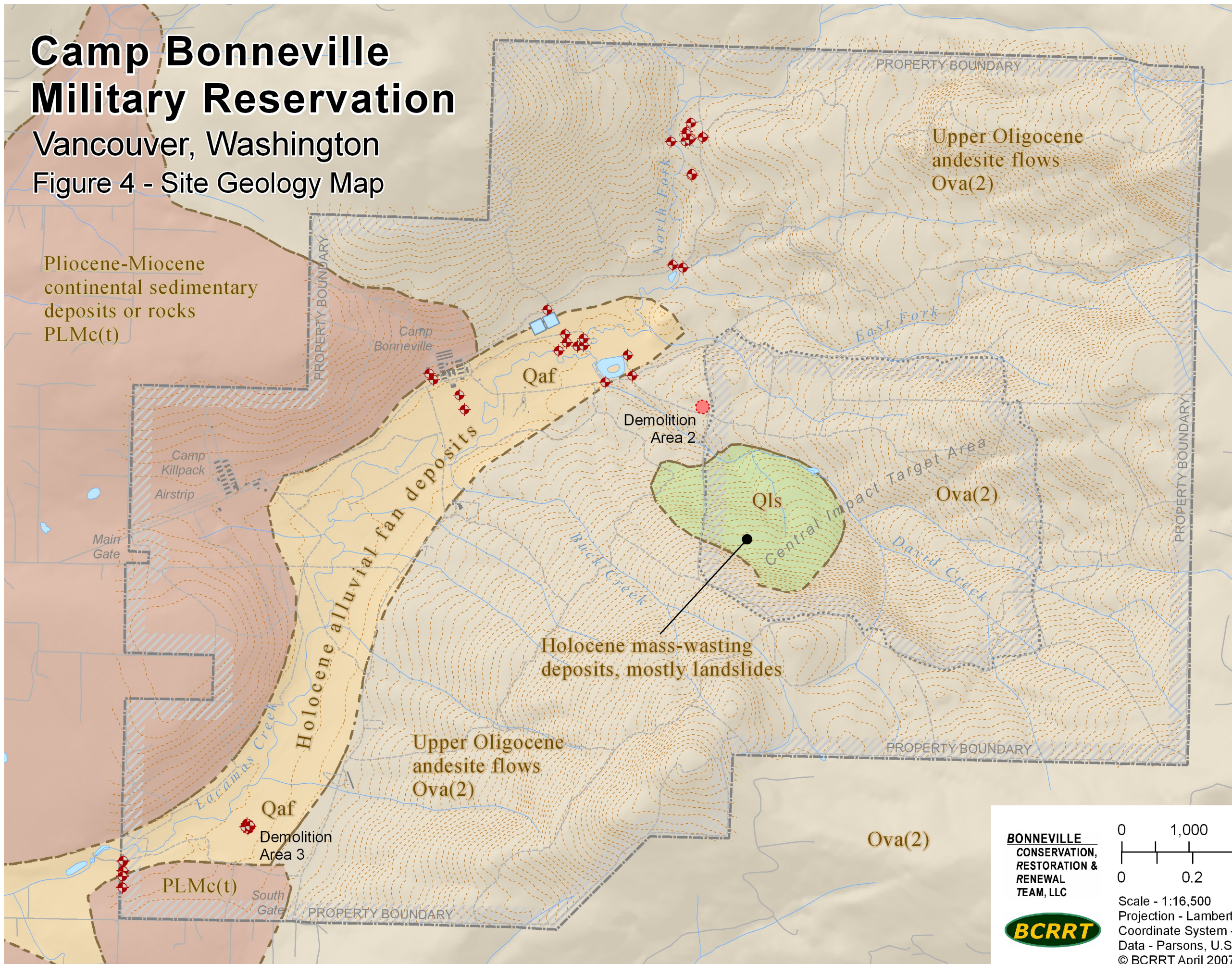
Data - Parsons, U.S. Army Corps of Engineers and Michael Baker Jr.






© BCRRT April 2007



# Camp Bonneville Military Reservation

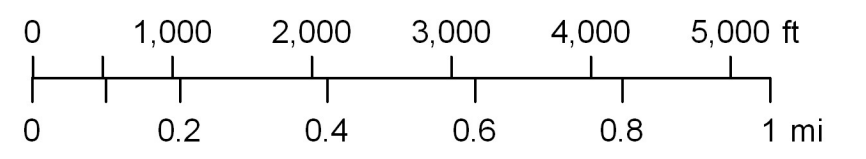
Vancouver, Washington  
Figure 4 - Site Geology Map



- Geologic Bedrock Formations**
-  Upper Oligocene andesite flows, Ova(2)
  -  Pliocene-Miocene continental sedimentary deposits or rocks, PLMc(t)
  -  Holocene alluvial fan deposits, Qaf
  -  Holocene mass-wasting deposits, mostly landslides, Qls
  -  Monitoring wells

\* Geology data from Washington State Department of Natural Resources, Division of Geology & Earth Resources. Digital 1:100,000-scale Geology of Washington State, December 2005.

**BONNEVILLE  
CONSERVATION,  
RESTORATION &  
RENEWAL  
TEAM, LLC**



Scale - 1:16,500  
Projection - Lambert Conformal Conic  
Coordinate System - State Plane Washington South FIPS 4602  
Data - Parsons, U.S. Army Corps of Engineers and Michael Baker, Jr.  
© BCRRT April 2007



# Camp Bonneville Military Reservation, Vancouver, Washington

# Figure 5 - Lacamas Creek Watershed

## China Ditch

China Ditch is in the northwest corner of Lacamas Creek watershed. The area is largely comprised of fields and pastures with some rural residential development. Much of China Ditch drainage is marshy and not well suited to suburban or urban development.

China Ditch has a very poor stream health rating based on poor water quality and very poor harmful bacteria ratings. Manmade channels designed to drain wetlands created most of the drainage system. Such systems usually have very poor health because they lack wooded areas to shade them, have a dirt channel bottom, and stagnant water conditions during summer months.

### Management objectives for China Ditch

- Identifying and removing bacteria sources
- Establishing shade along the ditches
- Ensure implementation of flood control methods

## Upper Lacamas Creek

Upper Lacamas Creek is the easternmost part of Lacamas Creek watershed and includes Camp Bonneville Military Reservation. It is predominantly forest with some suburban development on large lots and is expected to remain mostly forested because Camp Bonneville is a restricted area.

Data show Upper Lacamas Creek to be in good health. Some headwater areas may be in excellent health.

### Management objectives for Upper Lacamas Creek

- Protecting good to excellent condition by limiting forest clearing
- Minimizing the amount of runoff from new homes and roads
- Retaining open spaces

## Dwyer Creek

Dwyer Creek drains north to Lacamas Creek from the northwest part of Camas and eastern Vancouver.

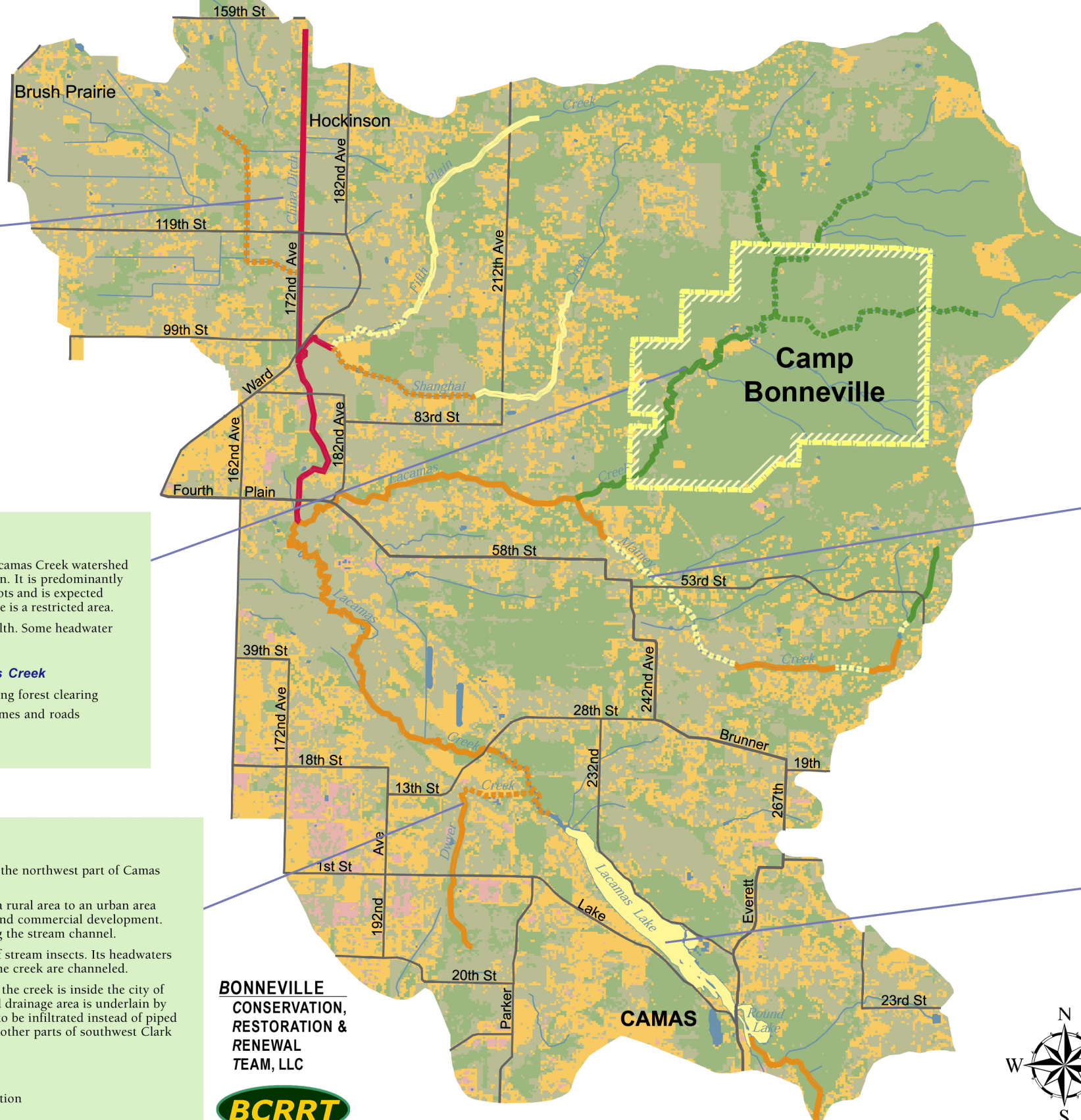
The Dwyer Creek area is rapidly converting from a rural area to an urban area of housing subdivisions and extensive industrial and commercial development. Significant areas of forested wetlands remain along the stream channel.

Dwyer Creek is in poor health based on samples of stream insects. Its headwaters are in residential subdivisions and some parts of the creek are channeled.

Most of the developing area that drains directly to the creek is inside the city of Camas. The western part of Dwyer Creek's mapped drainage area is underlain by coarse gravelly soils that allow stormwater runoff to be infiltrated instead of piped to the stream. These types of soils are common in other parts of southwest Clark County but are rare in Lacamas Creek watershed.

### Management objectives for Dwyer Creek

- Preventing further degradation due to urbanization



## Lacamas Creek Watershed Stream Health 2003

Stream Health Ratings	Description	Land Cover Key
Excellent	Pristine, superior, or unsurpassed condition; minimal human disturbance	Forest
Good	Healthy enough to support aquatic life and recreation	Grass/Shrubs
Fair	Degraded but may support aquatic life and recreation	Residential/ Recently cleared land
Poor	Inferior health, poorly suited for aquatic life and recreation	Commercial/ Industrial
Very Poor	Severely degraded health; unsuitable for aquatic life or recreation	
Unassessed	No data collected	
Probable	Predicted stream health	

This figure is from the report "Monitoring Report: Lacamas Lake Annual Data Summary for 2005".

## Matney Creek

The headwaters of Matney Creek begin in the Cascade Foothills and join Lacamas Creek just below Camp Bonneville. The area draining to Matney Creek is rural and includes forest and large lot residential at the headwaters and small farms and rural suburban areas in the lower areas.

Matney Creek ranges from good health in its forested headwaters to poor in the lower areas. Where we have test results, harmful bacteria cause a poor rating for water quality. Matney Creek is at risk of further degradation due to forest loss and increasing development.

### Management objectives for Matney Creek

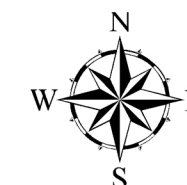
- Preventing further degradation for Matney Creek
- Preserving forests and using development methods that limit the amount of stormwater runoff created
- Establishing plants/trees along stream banks to shade the creek (better temperature control)

## Lacamas Lake

Most of the Lacamas Creek watershed drains to Lacamas Lake. Any sediment and pollutants carried by the creek enter and may become trapped in the lake.

The health of Lacamas Lake suffers due to warm water and low dissolved oxygen during the summer. This is largely caused by eroded soil and nutrients carried to the lake by Lacamas Creek. Boat wakes disturb sediment causing it to resuspend. Dissolved oxygen is very low during the summer, stressing aquatic life.

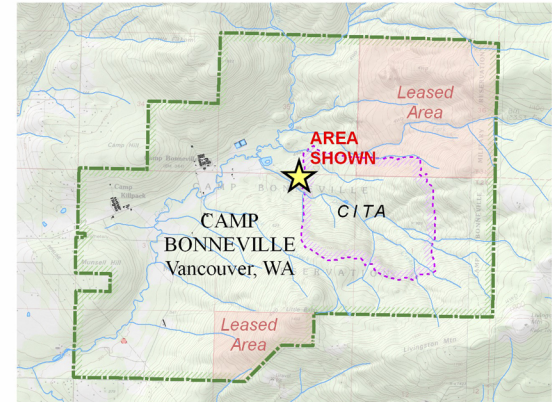
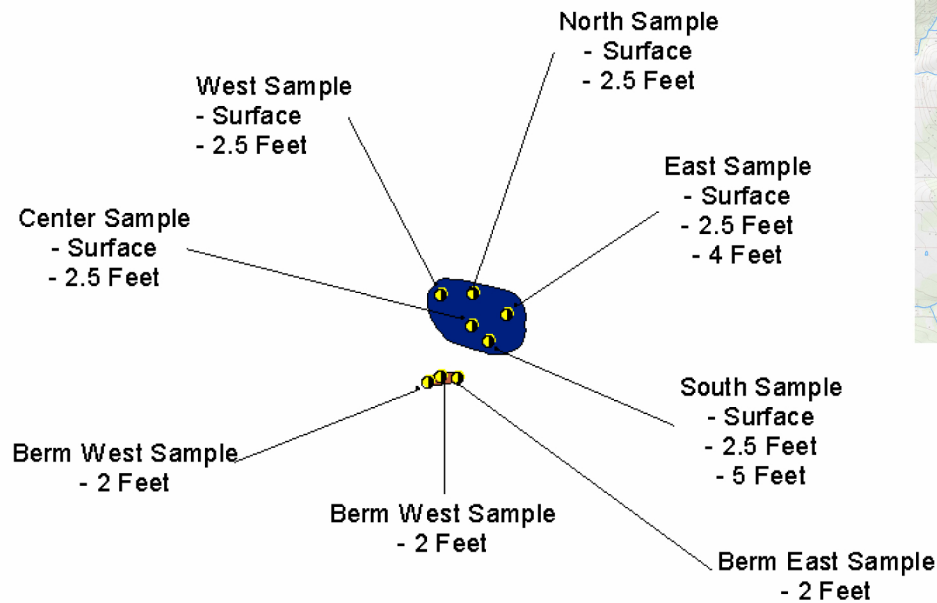
Lacamas Lake supports fishing, boating and swimming, as well as hiking and birding along its shores. While the current programs have stabilized lake health, it is unlikely that there will be major improvements. One proposed option is to build a system to aerate the lake, similar to a giant fish aquarium.



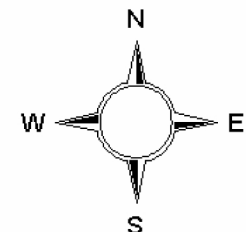


# Figure 6

## Soil Sample Locations at Demolition Area 2



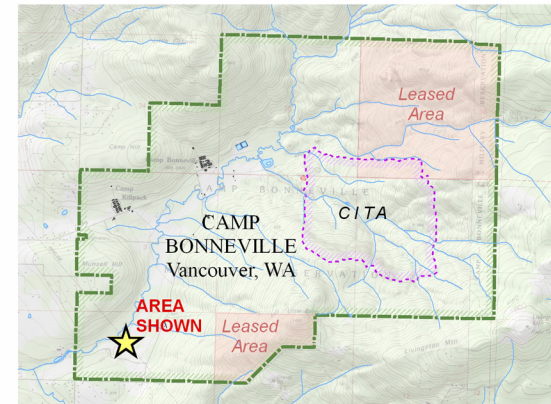
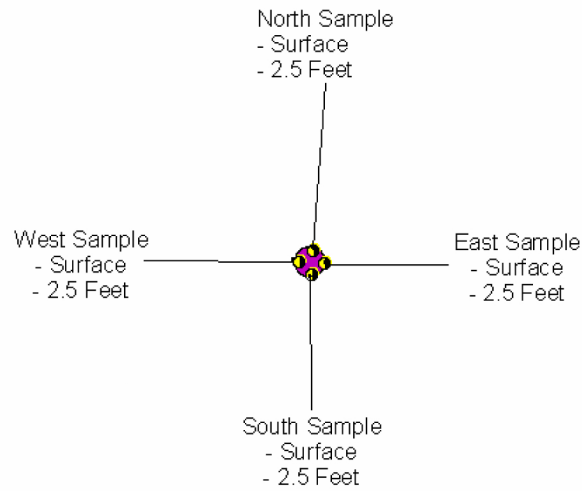
- Sample Points
- Demolition Areas
- Berm
- Demolition Area 2





# Figure 7

## Soil Sample Locations at Demolition Area 3



**BONNEVILLE**  
CONSERVATION,  
RESTORATION &  
RENEWAL  
TEAM, LLC



● Sample Points  
Demolition Areas  
■ Demolition Area 3

