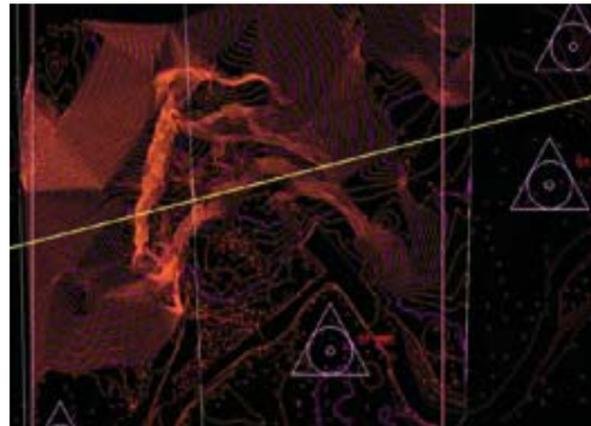


WSDOT Emergency Mapping

Unstable Slopes, Slides, Earthquakes, Sink Holes, & Floods

Stillaguamish River Flood & Slide

This imagery was taken by WSDOT Geographic Services immediately following the Stillaguamish River flood on 02/07/2006. The image was ortho rectified by WSDOT Photogrammetry Branch and delivered to the Stillaguamish Tribe. They used the orthophotos to assess the severity and depth of damage and plan repairs. They also used 3D computer maps produced by WSDOT Photogrammetry. The orthophotos also helped work crews choose safe methods of digging and trenching to avoid unstable areas. There were no worker injuries during the project, and the repairs were made without damage to the environment.



This imagery was taken by WSDOT Geographic Services on 10/12/2006 after repairs to the river had been made. The new orthophoto shows the difference the repairs made in redirecting the river and preventing repeat flood damage.

This oblique angle aerial photograph of the repairs from 2007, was provided by the Stillaguamish Tribe GIS Administrator who worked in close conjunction with WSDOT throughout the project. This image is used with permission from the tribal authorities.

WSDOT Emergency Mapping

Unstable Slopes, Slides, Earthquakes, & Floods

State Route 410 Nile Valley Slide

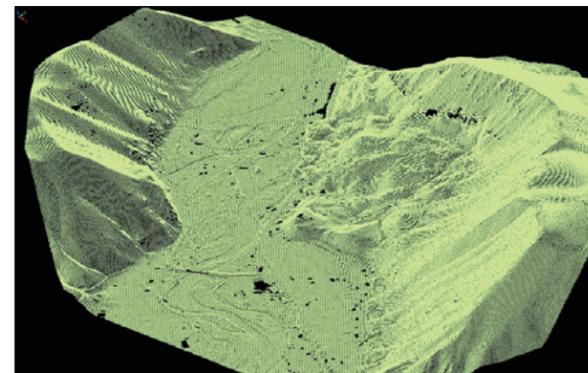
WSDOT Photogrammetry & Remote Sensing technical section of the Design Office can meet project deadlines even in emergencies. Below depicts the SR 410 Nile Valley Slide which the branch delivered within 3 weeks of the emergency. Products were orthophotos (one new & one created of the pre-slide for comparative analysis), CAD files, Contour files, In-Roads Surface files. We customize each deliverable for the project needs.



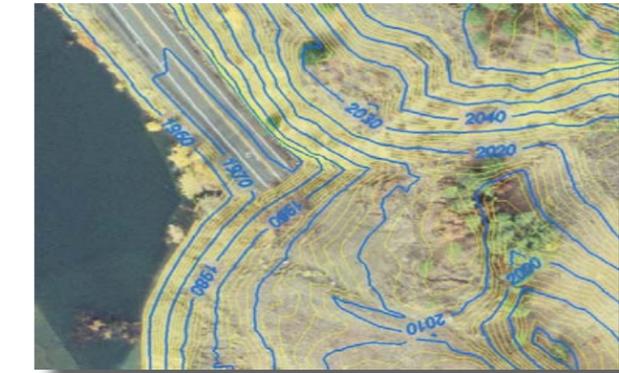
Photo control shown for SR 410 Nile Valley Slide



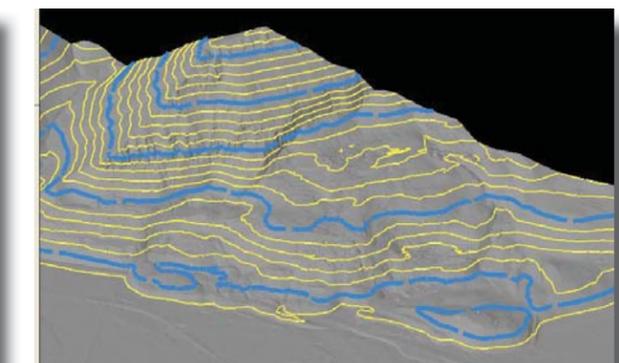
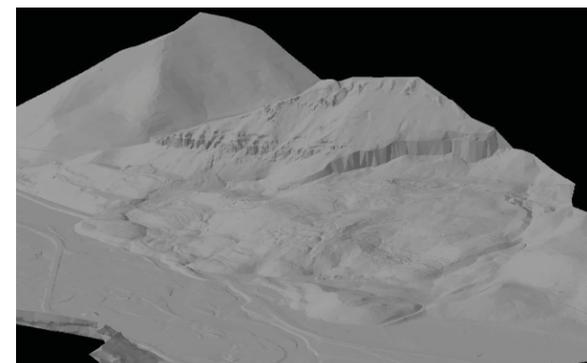
A close up of the slide area from the orthophoto



This 10 foot contour was derived from airborne lidar



This CAD contour file was created from traditional photogrammetry methods using airborne photography



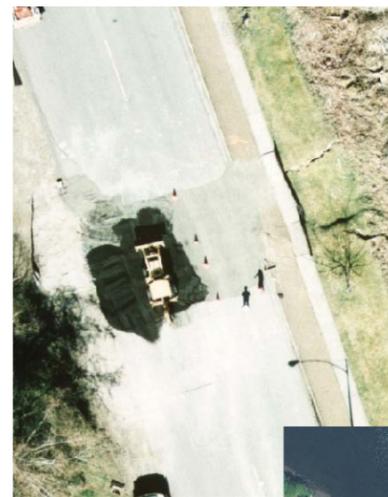
Surface or Data Terrain Model (DTM) with contour overlay

WSDOT Emergency Mapping *Unstable Slopes, Slides, Earthquakes, Sink Holes, & Floods*

2001 Nisqually Earthquake

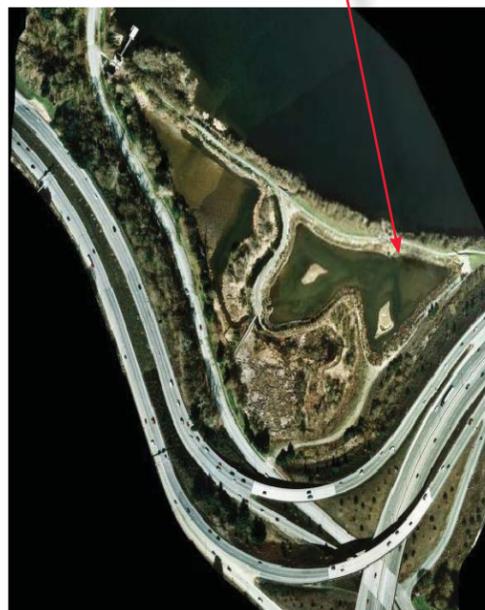
This Mapping project was requested by the Olympic region immediately following the 2001 Nisqually Earthquake. New, accurate maps were needed to assist in planning and designing the reconstruction of the heavily damaged roadway and adjacent trails.

Geographic Services placed control points accurate to +/- 0.02m and took the aerial photographs at a scale of 1:2400 (1"=200'). Photogrammetrists used the photos and control points to make a 3D CAD map accurate to +/- 0.2'. The map was also used to produce an orthophoto at 0.25' resolution. Engineers used the high resolution orthophoto and 3D map to assess the shape and depth of damage.

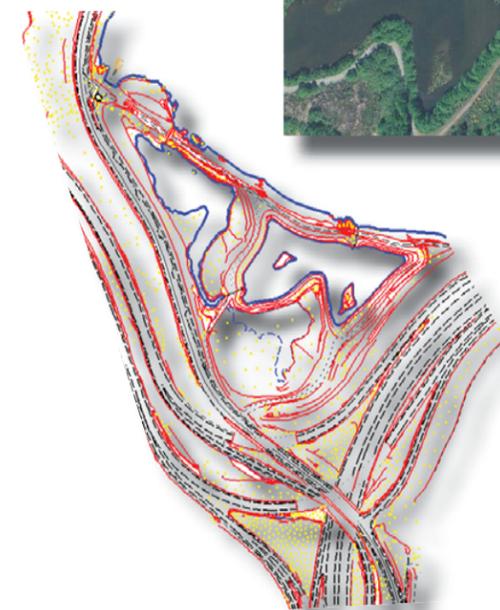


Repairs underway

After Repairs



A portion of the damaged area on the Orthophoto



A portion of the projects CAD file

WSDOT Emergency Mapping *Unstable Slopes, Slides, Earthquakes, Sink Holes, & Floods*

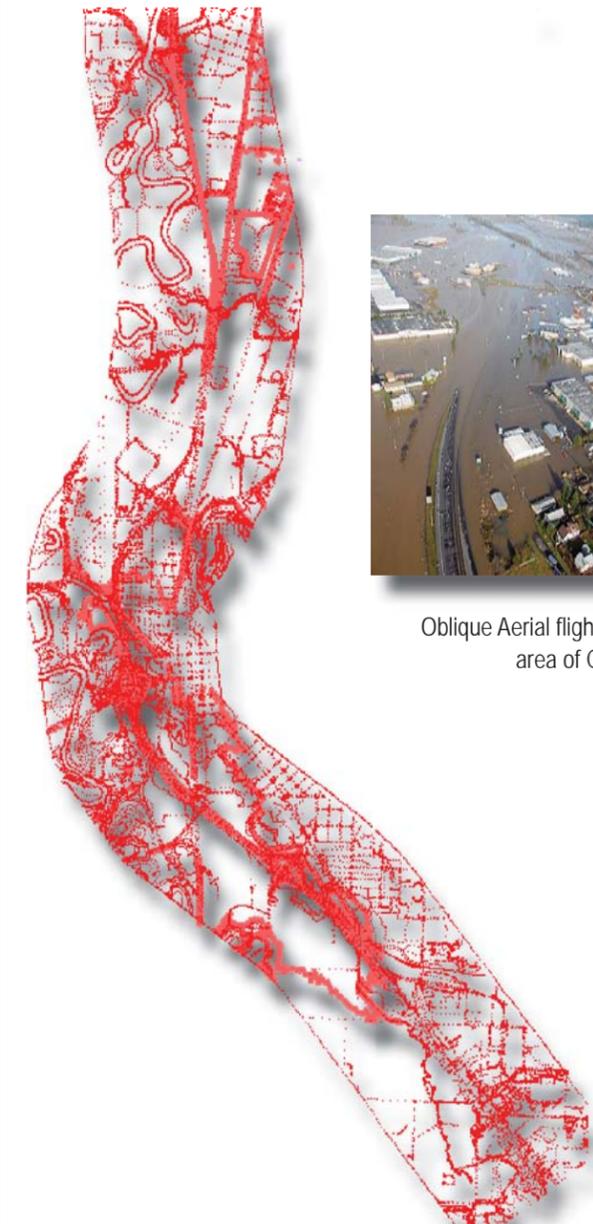
I-5 Chehalis River Flood 2007

Geographic Services provided assistance with documentation and recovery efforts by using photography, scanning and mapping of damaged areas. One of the services offered was ground based laser scanning (3DTL), to safely collect data of the slides and flood damaged areas.

The Chehalis River Flood occurred on December 3rd, 2007. Helicopter photography, flight planning, bad weather grounding flights, 3D terrestrial scanning, CAD mapping, and orthophoto were all accomplished and delivered in less than 25 days.



Portion of the orthophoto created on the I-5 corridor.



A portion of the CAD file created for project.



Oblique Aerial flight over the I-5 flood area of Chehalis