Oregon's Drinking Water Protection Program
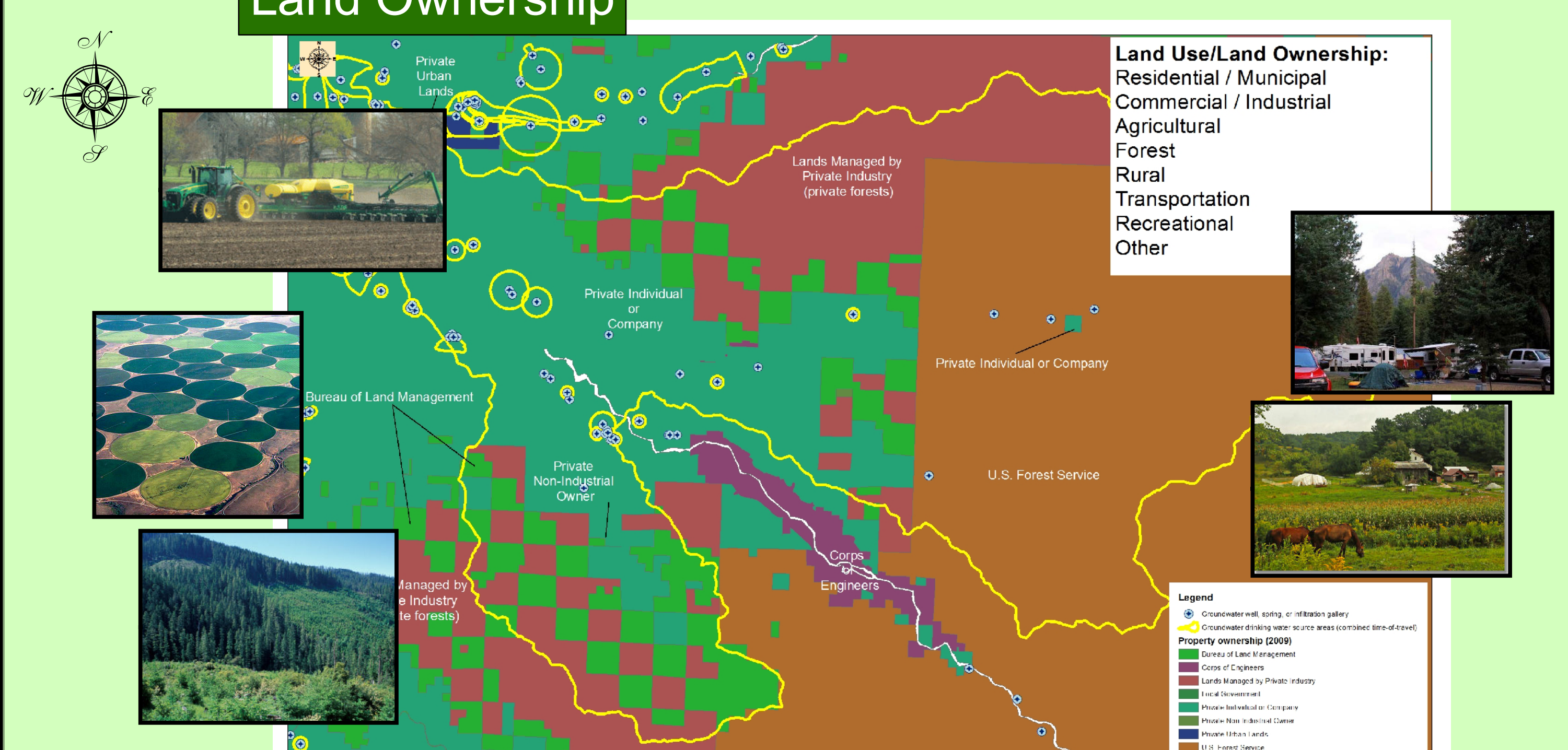## Identifying Potential Contaminant Sources with Geospatial Information Systems

DEQ State of Oregon Department of Environmental Quality

Oregon Health Authority

Identification of potential contaminant sources has evolved at DEQ since 1999. Original windshield surveys, database queries, and site visits have mostly been augmented or replaced with a geospatial approach using ArcGIS.
DEQ uses over 40 different GIS datasets to identify new or previously unknown potential contaminant sources.
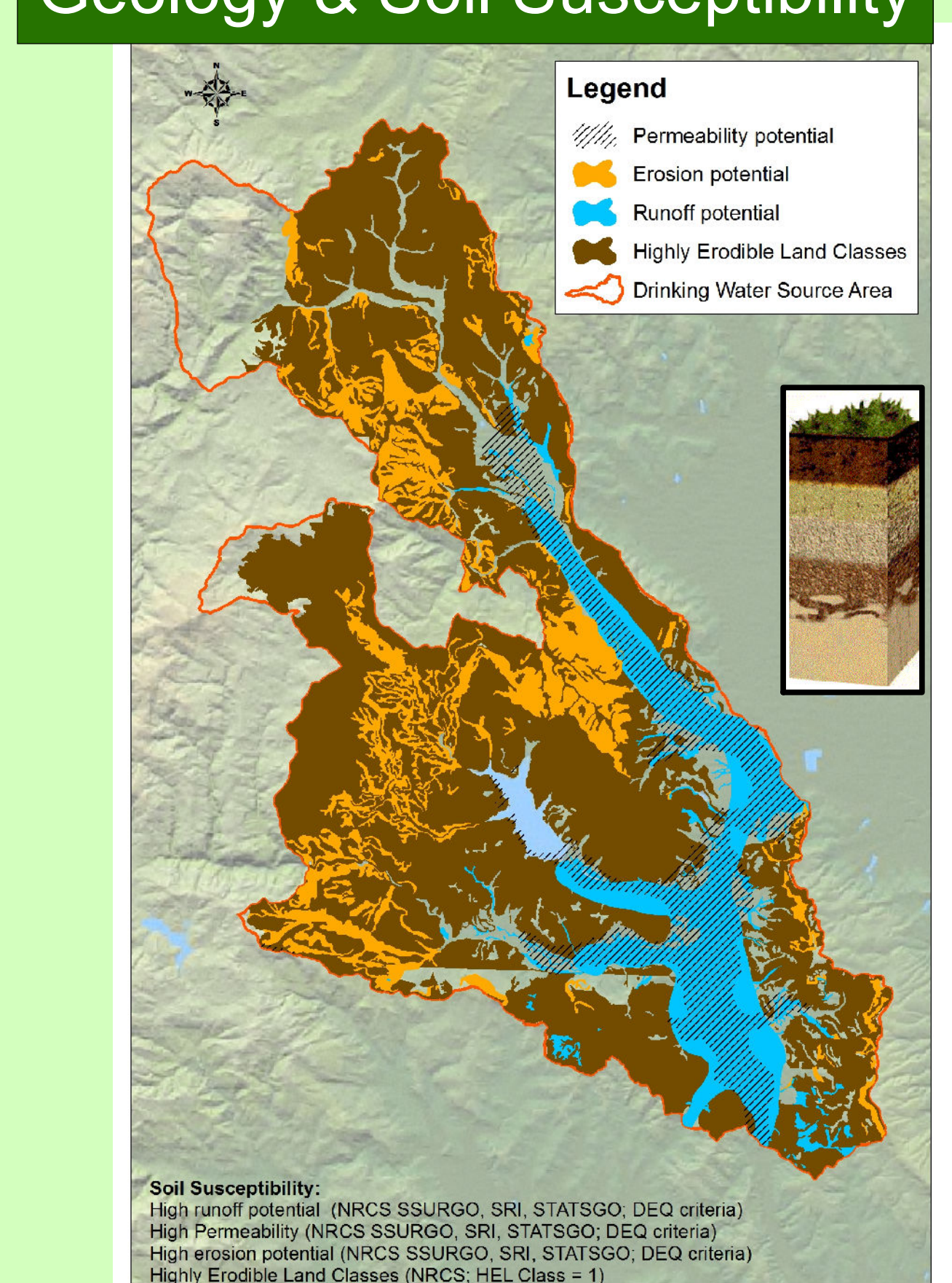
Drinking water protection is about risk reduction!

Land Ownership

Land ownership type gives clues about the type of contaminants potentially associated with private, commercial, and public ownership. It also provides insight into the applicable environmental rules.
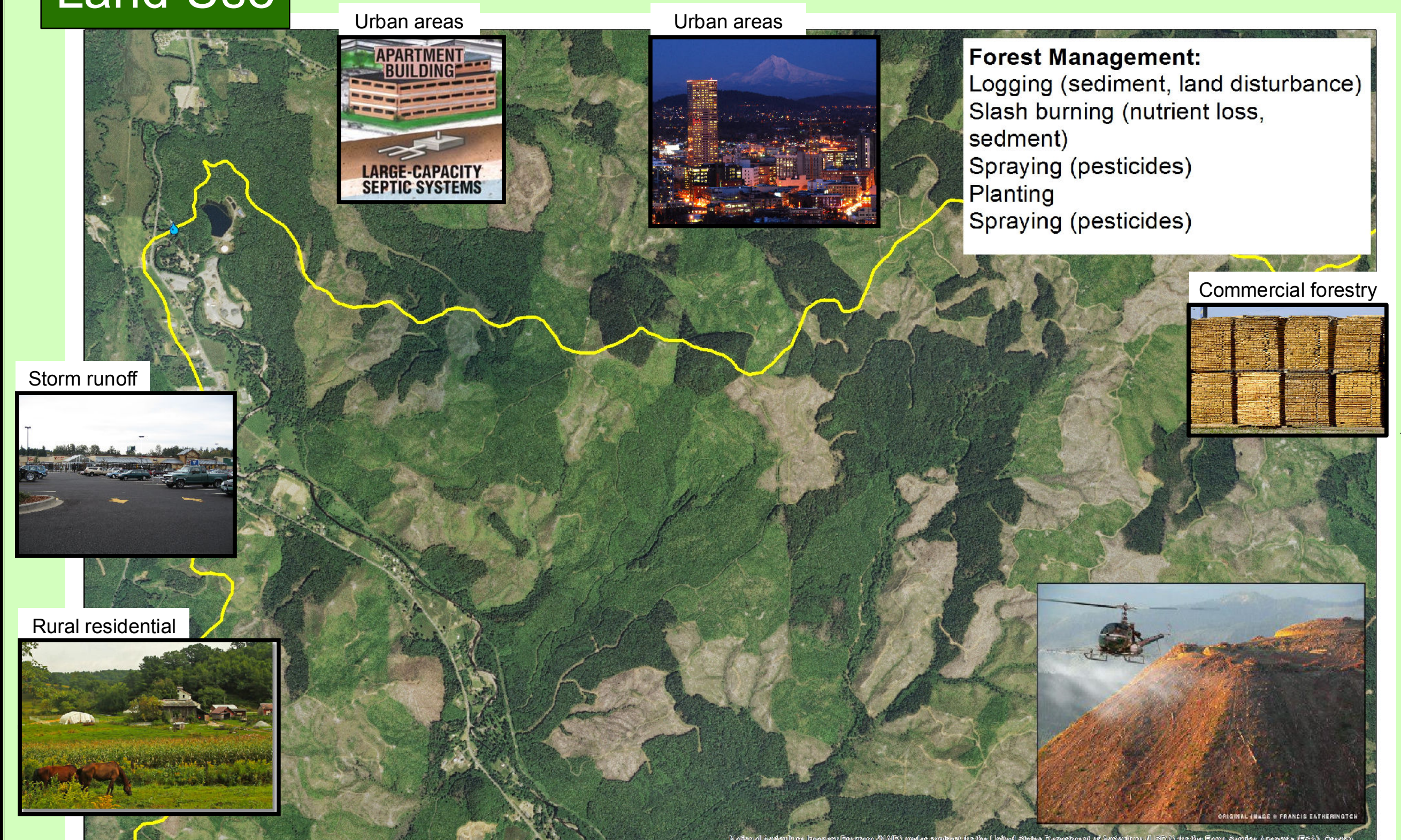
Geology & Soil Susceptibility

Geology and soil type contribute to soil sensitivity. During rain events, different soil types react uniquely to runoff, erosion, and permeability thereby affecting turbidity and transport of pollution.

Transportation Sources

Transportation Sources: Roads, Rails, Pipelines, & Bridges

Transportation sources present a wide variety of potential contaminant sources. Potential spills can have an acute effect on downstream water systems. Pesticides, sediment, and fuel in runoff from roadways (paved and unpaved) can impact drinking water supplies.
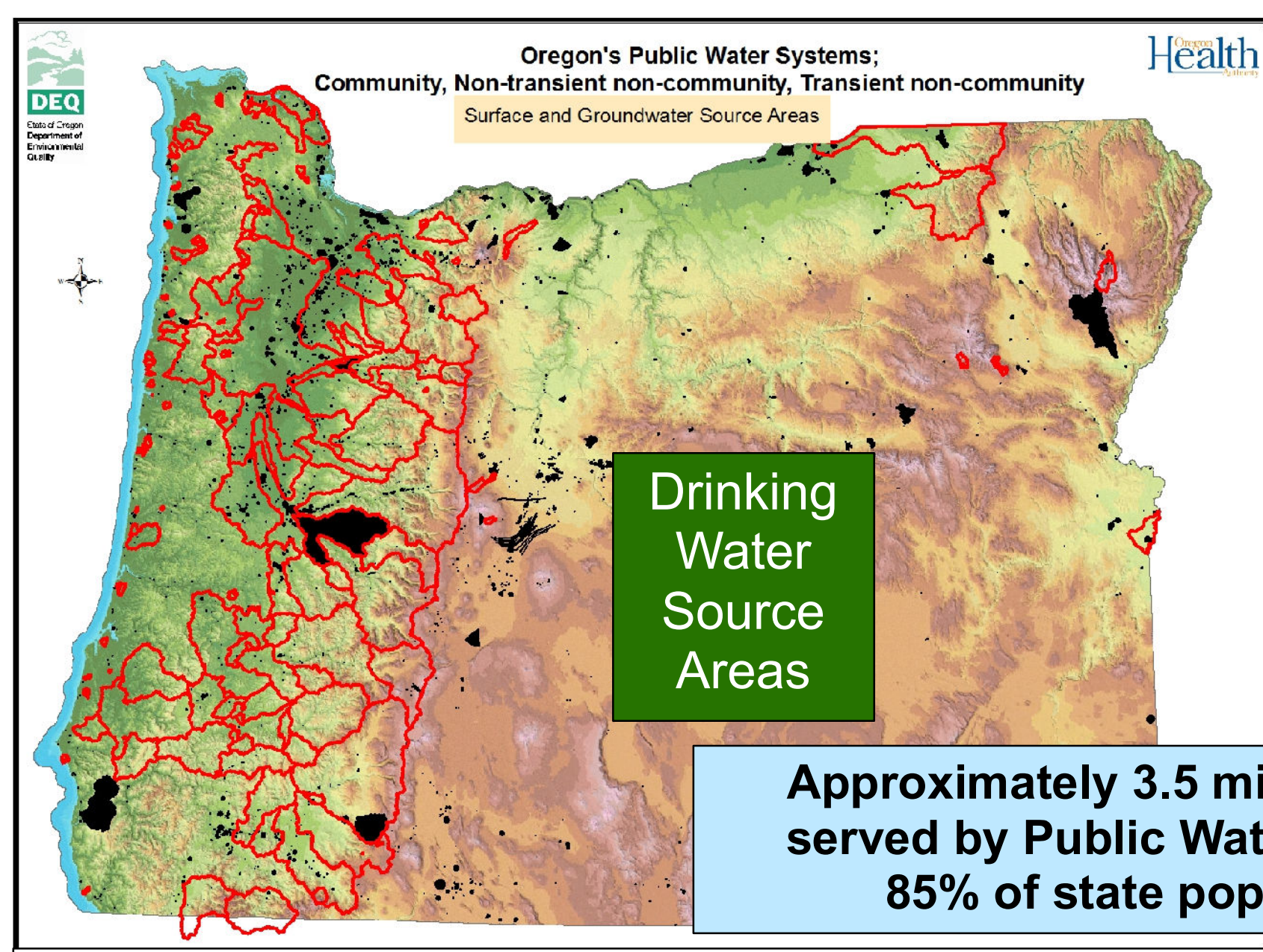
Land Use

Forest Management:
Logging (sediment, land disturbance)
Slash burning (nutrient loss, sediment)
Spraying (pesticides)
Planting
Spraying (pesticides)

Land use gives clues to help understand the potential contaminant sources types to be evaluated. Industrial, residential, commercial, rural residential, exclusive farm use, and rural zoning categories can help identify septic system issues, pesticides application, and runoff concerns that help focus technical assistance, and education activities. Tax lot information can help determine aging infrastructure, septic systems, and the effects of housing density.

230 public surface water systems

Drinking Water Source Areas

Oregon's Public Water Systems; Community, Non-transient non-community, Transient non-community. Surface and Groundwater Source Areas

Approximately 3.5 million people served by Public Water Systems. 85% of state population.
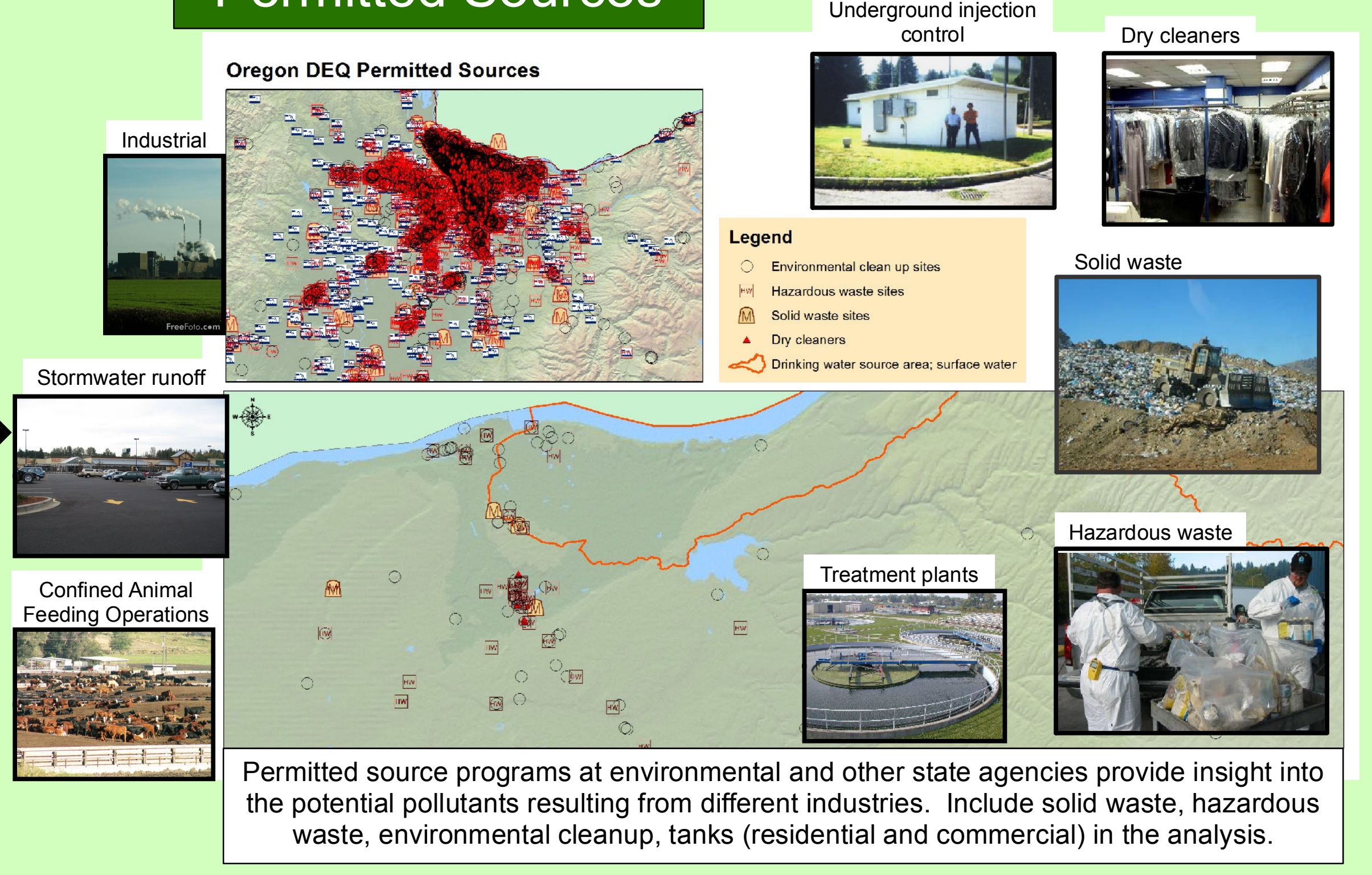
Drinking water source areas over the entire state can present very different approaches to prevention, restoration, technical assistance, and source reduction activities.
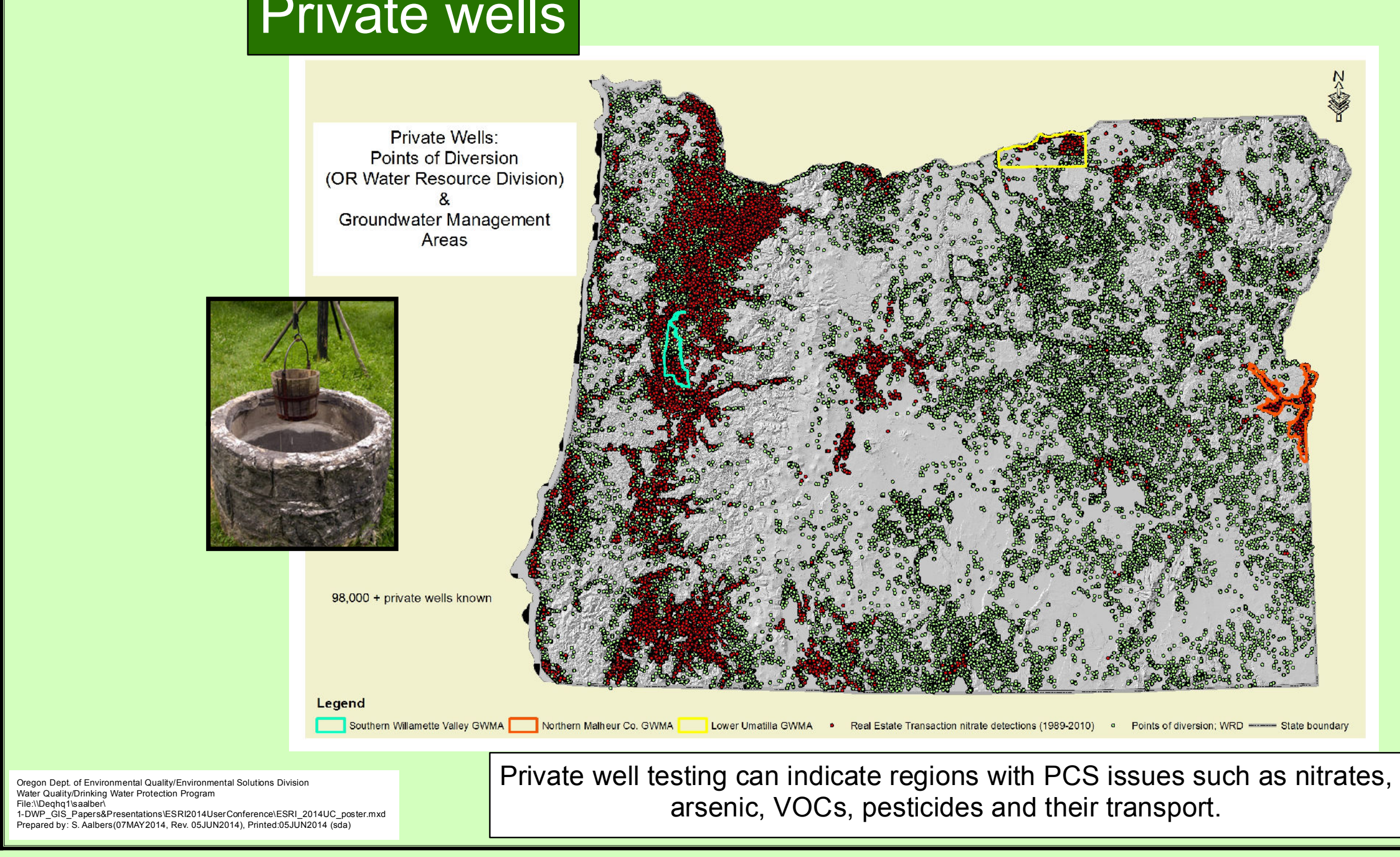
1800+ public groundwater systems
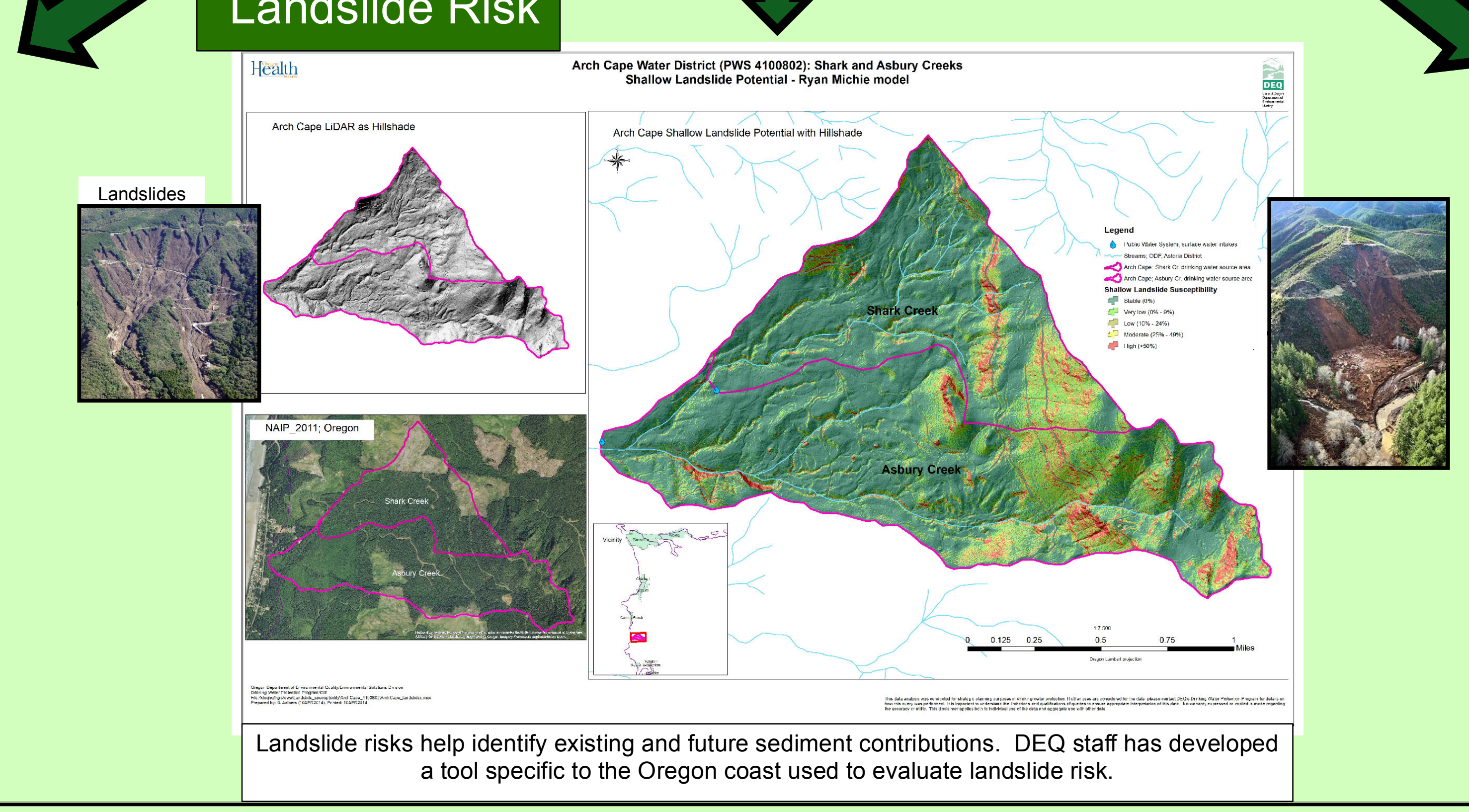
Permitted Sources

Oregon DEQ Permitted Sources

Permitted source programs at environmental and other state agencies provide insight into the potential pollutants resulting from different industries. Include solid waste, hazardous waste, environmental cleanup, tanks (residential and commercial) in the analysis.
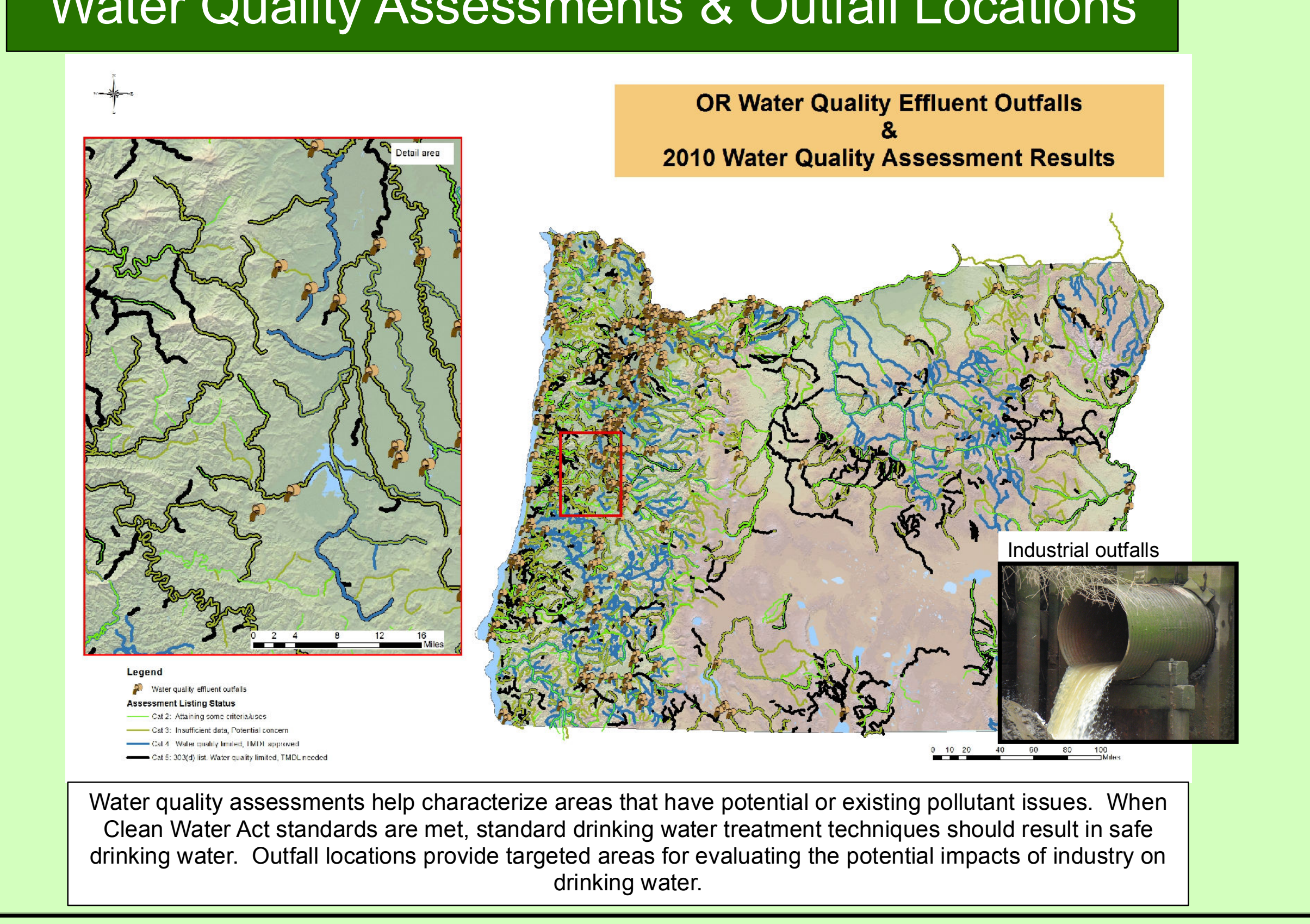
Private wells

Private Wells: Points of Diversion (OR Water Resource Division) & Groundwater Management Areas

Private well testing can indicate regions with PCS issues such as nitrates, arsenic, VOCs, pesticides and their transport.

Landslide Risk

Arch Cape Water District (PWS 4100802): Shark and Asbury Creeks. Shallow Landslide Potential - Ryan Michie model

Landslide risks help identify existing and future sediment contributions. DEQ staff has developed a tool specific to the Oregon coast used to evaluate landslide risk.

Water Quality Assessments & Outfall Locations

OR Water Quality Effluent Outfalls & 2010 Water Quality Assessment Results

Water quality assessments help characterize areas that have potential or existing pollutant issues. When Clean Water Act standards are met, standard drinking water treatment techniques should result in safe drinking water. Outfall locations provide targeted areas for evaluating the potential impacts of industry on drinking water.