

# Engineering at Ecology



Figures 1 and 2: Ecology engineers surveying a job site.

Figure 3: Ecology engineers may be involved in environmental excavation.

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## Types of engineers

- Environmental
- Civil
- Chemical
- Industrial

## Experience level

**Entry level:** Engineer-In-Training Certificate or bachelor's degree in an engineering field.

**Senior level:** More than 5 years of experience, often in consulting, industry, or technical positions.

## What do Ecology engineers do?

Ecology engineering work falls into three categories: reviewing and authoring technical documents, confirming or performing engineering calculations, and providing engineering oversight or technical assistance.

## Ecology engineers are mission driven

We're dedicated to protecting human health and the environment of our state. We work hard to:

- Manage and reduce the use of solid and hazardous waste.
- Prepare for, prevent, and respond to oil and hazardous materials spills.
- Protect and restore Washington's waters.
- Measure, assess, model, and communicate environmental conditions.
- Clean up soil, sediment, and water contamination.
- Protect and improve air quality.
- Ensure dam safety.

## Ecology engineers do the work

We perform an incredible range of work within the agency, such as:

- Environmental modeling of [total maximum daily load \(TMDL\)](https://ecology.wa.gov/TMDLs)<sup>1</sup> data to determine pollution loads to waterbodies.

<sup>1</sup><https://ecology.wa.gov/TMDLs>

- Providing engineer review for design reports, plans, and specifications for projects receiving [Ecology grants and loans](#).<sup>2</sup>
- Providing compliance and non-enforcement technical assistance, including [toxic reduction assistance](#).<sup>3</sup>
- Writing, reviewing, and approving permits for businesses and other organizations, including [water quality permits](#),<sup>4</sup> [industrial emissions permits](#),<sup>5</sup> and [Hanford nuclear cleanup permits](#).<sup>6</sup>
- Ensuring [dam safety](#)<sup>7</sup> through design review and construction inspections.
- Providing engineer review for remedial investigations, feasibility studies, and cleanup action plans that include engineering specifications, design, and technical documents provided by private consultants and other entities following the [Model Toxics Control Act \(MTCA\) cleanup process](#).<sup>8</sup>

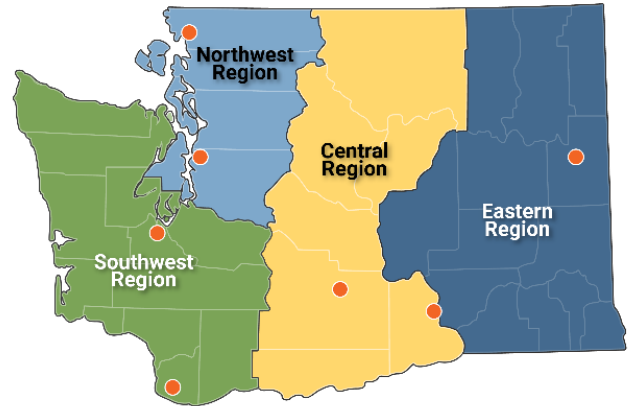


Figure 4: Ecology has offices throughout Washington in Lacey, Vancouver, Shoreline, Bellingham, Union Gap, Richland, Spokane, and Walla Walla.

## What kind of projects do Ecology engineers work on?

### Industrial process technical assistance

Founder's Choice Cabinets, a family-owned custom cabinet manufacturer in Tacoma, wanted to help the environment and improve their business practices. We helped them [improve operational performance and reduce costs](#).<sup>11</sup>



Figure 5: Ecology Engineers collaborated with Founder's Choice Cabinets.

We're often the last stop regarding technical and complex solutions that protect and restore Washington state's environments. Our engineers manage complex environmental and regulatory issues and are trusted to get the job done.

## Which programs use engineers, and where are they based?

We are spread throughout all [Ecology office locations](#).<sup>9</sup> We work in and across every region and almost every [agency program](#)<sup>10</sup> on many types of large and complex projects.

<sup>2</sup> <https://ecology.wa.gov/About-us/Payments-contracts-grants/Grants-loans/Find-a-grant-or-loan>

<sup>3</sup> <https://ecology.wa.gov/programs/hwtr/lean>

<sup>4</sup> <https://ecology.wa.gov/WQPermits>

<sup>5</sup> <https://ecology.wa.gov/programs/air/permit>

<sup>6</sup> <https://ecology.wa.gov/Waste-Toxics/Nuclear-waste/permits-that-direct-our-nuclear-waste-program>

<sup>7</sup> <https://ecology.wa.gov/damsafety>

<sup>8</sup> <https://ecology.wa.gov/MTCA>

<sup>9</sup> <https://ecology.wa.gov/directory>

<sup>10</sup> <https://ecology.wa.gov/programs>

<sup>11</sup> <https://ecology.wa.gov/Blog/Posts/March-2021/Tackling-Toxics-How-partnerships-produced-success>



Figure 6: An example of a Salish Sea model created by Ecology engineers.

### Salish Sea modeling

The [Salish Sea Model](#) (SSM)<sup>12</sup> is a powerful computerized tool that can simulate hydrodynamic and water quality processes. It allows us to run virtual experiments and assess the impacts certain actions have on Puget Sound. We use the SSM to help guide local nutrient management strategies for the [Puget Sound Nutrient Reduction Project](#).<sup>13</sup> It's one of many [models and tools](#)<sup>14</sup> that we use to evaluate how a water body will respond to changes in pollutant loading, and determine what kinds of actions need to be implemented to improve water quality and watershed health.

### Contaminated site cleanup and brownfield redevelopment

The [Kendall Yards](#)<sup>15</sup> site in Spokane, a contaminated former rail yard, was cleaned up through a partnership between Ecology, the Department of Commerce, and the City of Spokane. The formerly unused site is now off the state's Hazardous Sites List and is a walkable community that hosts shops, restaurants, public art, and housing.



Recruiting, Human Resources  
[ECYCareers@ecy.wa.gov](mailto:ECYCareers@ecy.wa.gov)  
 360-407-6186



To request an ADA accommodation, contact Ecology by phone at 360-407-6831 or email at [ecyadacoordinator@ecy.wa.gov](mailto:ecyadacoordinator@ecy.wa.gov), or visit [ecology.wa.gov/accessibility](https://ecology.wa.gov/accessibility). For Relay Service or TTY call 711 or 877-833-6341.

<sup>12</sup> <https://ecology.wa.gov/SalishSeaModel>

<sup>13</sup> <https://ecology.wa.gov/PSNRP>

<sup>14</sup> <https://ecology.wa.gov/TMDLmodels>

<sup>15</sup> <https://apps.ecology.wa.gov/publications/SummaryPages/2109030B.html>