

*case study*cedar river
education
center
watershed

The Cedar River Watershed is the primary source of water for 70 percent of the 1.3 million people living in the greater Seattle area. In 2000, the watershed was designated as an ecological reserve through the City of Seattle's Habitat Conservation Plan. This ecosystem-based plan addresses the declining populations of salmon, steelhead and other species of fish and wildlife in the Cedar River basin, and provides certainty for the City of Seattle's drinking water supply. Each year Seattle Public Utilities expects over 30,000 visitors at the Cedar River Watershed Education Center, who come to learn about the human and natural infrastructure for water.

Celebrating Water

The methods used at the Cedar River Watershed Education Center to protect the watershed and conserve water provide good examples of sustainable building strategies. Homeowners, builders, and developers are encouraged to implement these strategies in Seattle to protect local watersheds and participate in ensuring a long-term supply of water.

Seattle Public Utilities and project architects, Jones & Jones Architects and Landscape Architects, Ltd., took advantage of every opportunity to educate visitors about the ecology of the watershed. For example, the team demonstrated the natural flow of rainwater—over 60 inches of precipitation a year—by designing "living" (or **eco-roof**) and metal roof systems to demonstrate the difference between pervious and impervious surfaces. Soil and plants on the eco-roof retain water to delay runoff and naturally filter the rainwater, while water runs directly off the metal roof and pours from the building eaves to the ground.

In addition, a **constructed stream** collects the surface drainage and roof water. The stream originates from a "spring" and flows through rivulets and marshes, under one of the structures, and into a pond. Drainage from the parking areas is channeled into bioswales planted with wetland shrubs that slow and purify the water before it reaches Rattlesnake Lake.

The site was selectively cleared to make room for the buildings with minimal impact, and the woody debris was chipped into mulch for the landscape. **Organic mulches** provide a number of benefits including reducing evaporation, limiting weed growth, minimizing soil temperature fluctuations, limiting soil runoff that can choke streams and fish, and providing food for earthworms and other soil life that gradually break them down, mixing them into the soil to nourish plants.

The site was restored with **native plant** communities to support aquatic and terrestrial wildlife. The native landscape displays the role that soils, fungi, mosses, and microbes play to naturally purify water. **Rain barrels** catch water for reuse as irrigation water on a small repeatable scale, and water-conserving fixtures, including **waterless urinals**, will save over 45,000 gallons of water each year.

*earth-based materials*

Inside the Education Center, visitors will enjoy salvaged tree root ball sculptures with gas-filled glass neon that mimics the flow of water. Artist: Dan Corson, Seattle Arts Commission 1% for Art Fund.

The buildings are connected by covered walkways and integrated into the landscape. They were designed as highly-crafted, high performance buildings. An energy consultant, Ecotope, collaborated with Jones & Jones to reduce overall energy use. Generous overhangs control solar heat gain and operable windows provide natural cross-ventilation during the summer. An advanced insulation strategy allowed for a simple, efficient, and inexpensive forced-air heating system.

Incorporating Green Building Materials

The Center displays durable, long-lasting, natural and local materials. The buildings feature earth- and plant-based materials of wood, stone and concrete.

To improve the indoor air quality the exposed wood structure of the interior, including the salvaged Douglas fir flooring, was sealed with penetrating water-based finishes. Formaldehyde-free medium-density fiberboard was used for select flat finish ceilings and countertops were made from paper and plastic resins. Recycled plastic composite lumber was used for decking and ACQ-treated lumber was used as the preferable alternative to CCA-treated lumber. Concrete contained 25% fly-ash replacement for cement.

Nearly 100% of the wood products used were certified by the Forest Stewardship Council (FSC), including formwork, framing,



A constructed stream collects the surface drainage and roof water. Drainage from the parking areas is channeled into bioswales planted with wetland shrubs that slow and purify the water.

sheathing, trusses, finishes, cabinets, windows, doors and cedar siding. For example, the cedar siding came from a local Whatcom County Forest Trust. FSC-certified lumber is guaranteed to come from sustainably, well-managed forests. By selecting FSC-certified forest products, architects and builders can

protect watersheds and forest ecology on a global scale by driving change in forest management practices.

Jones & Jones also connected the center to the site's past, the old Chicago, Milwaukee, St. Paul, and Pacific railroad camp, the surrounding landscape, and the regional context. "We endeavored to design the whole project so that it would not only be of this time, but also be respectful of the patterns of both buildings and nature that envelop it—both past and future," says Paul Olson, AIA for Jones & Jones.



living roof

The buildings are connected by covered walkways and integrated into the landscape. Soil and plants on the "living" roof (eco-roof) retain water to delay runoff and naturally filter rainwater.

Learn More

Funding for the Education Center was provided through a partnership between the City of Seattle and the non-profit group Friends of the Cedar River Watershed, which strives to ensure the long-term stewardship of the watershed.

For more information visit Friends of the Cedar River Watershed at www.cedarriver.org or Seattle Public Utilities at www.cityofseattle.net/util/cedarwatershed. To learn about the City's Sustainable Building Program visit www.seattle.gov/dpd/sustainablebuilding. And to explore DPD's involvement in sustainability goals, visit www.seattle.gov/dpd/sustainability, or contact:

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DIRECTIONS: *The Cedar River Watershed Education Center is located just east of North Bend (about 32 miles from downtown Seattle). From I-90 going East, take Exit 32 (436th Ave.); turn right at the end of the off-ramp; follow the road (436th Ave. SE, Cedar Falls Rd. SE) for about 2.5 miles to Rattlesnake Lake; continue with the lake on your right side until you reach the Center. Questions? Call (206) 297-8141.*