Economic Analysis of Irrigation and Montana's Economy

For the Montana Department of Natural Resources and Conservation, ECO analyzed the relationship between irrigated agriculture and Montana's economy. ECO described the net economic benefits and impacts on jobs and incomes produced by irrigated agriculture, and identified emerging opportunities for sustaining or expanding irrigated agriculture in Montana, including proposals to develop new infrastructure or rehabilitate existing infrastructure, and opportunities for water conservation through increased water use efficiency, water markets, and payments for ecosystem services.

Economics of Competing Water Demands

For two regional foundations, and a collaborative group with divergent interests, ECO described the competing demands for water and related resources on the Upper Klamath River Basin and outlined win-win alternatives for coping with changes in the competing demands. ECO redefined the traditional framework that views local economies and ecosystem management as adversaries and constructed a new model in which the two contribute together to the well-being of local populations.

Economic Benefits and Costs of Water Restoration

For West Coast Watershed, ECO performed an economic evaluation of watershed-restoration projects in northern California. ECO assembled a regional estimate of economic benefits and costs of the restoration activities to facilitate West Coast Watershed's grant application.

Evaluation of a Proposed Water-Quality Trading Project

For a public water utility, ECO calculated the benefits realized by relying on the protection and planting of trees rather than the expansion of its waste-water treatment facility to meet water-quality objectives. ECO also described the value of forest and open space owned by the utility.

Economic Consequences of Alternatives for Natural-Resource Allocation

For the State of Nebraska, ECO described the mechanisms through which the state's natural-resource amenities, especially those derived from water resources, can drive local economic growth. ECO also examined how resource-related amenities impact the quality of life of people in Nebraska. ECO showed that by redefining the existing natural-resources—agriculture paradigm and stimulating the growth of other industries such as recreation, Nebraskans stand to benefit economically.

Socioeconomic Impacts of a Water-Management Program

For a private client, ECO described the current conditions in the Columbia Basin and analyzed the socioeconomic impacts associated with different components of the Columbia River Water Management Program. The Program seeks to balance competing demands, such as agriculture and endangered aquatic species. ECO's analysis was included in a Draft Programmatic Environmental Impact Statement.

Economic Value of Water in the Green River Basin

For the Wyoming Water Development Commission, ECO described the value of water in the Green River Basin. ECO took an inventory of the various categories of uses and functions of water, determined the economic value of each use and function, and identified the competing and complementary uses and functions of water. As part of the project, ECO also considered the relative impact on the economic value derived from water. ECO produced a report that presents these findings and acts as a guide for making future water-resource management decisions in the Basin while providing a model for decision making in other basins.

Economic Benefits of Water-Delivery Reliability

For Seattle Public Utilities, ECO reviewed different methodologies employed to assess the economic benefits from increased water-delivery reliability during a major system disruption, such as an earthquake. ECO prepared a report of the findings, in which it analyzed consumers' willingness to pay, risk factors, and uncertainty related to municipal water supplies.

Economic Impacts of Different Policies on Urban Watershed Management

For the City of Portland, ECO studied the economic costs and benefits of projects and policy options that affect water quantity and quality of one of its watersheds that drains to the Willamette River. The study compared two alternatives to mitigate flooding in the watershed: an engineered project that included constructed detention areas and the restoration of riparian areas. The analysis considered the changes in the values of affected ecosystem services for each alternative including: water purification, precipitation interception and storage, flood mitigation, biodiversity maintenance, recreation services, and amenity benefits.

Economic Effects of Managing Water Quantity and Quality

For Clean Water Services, a water utility in the Portland area, ECO analyzed the economic benefits from improving a region's water quality and quantity, by managing riparian buffers and purchasing additional land. ECO also studied the economic implications associated with the federal Endangered Species Act and Clean Water Act.

Streamflow Estimation on National Forest Lands

For the National Center for Environmental Economics of the U.S. Environmental Protection Agency, ECO authored a technical paper in which it determined the share of natural and actual streamflow that originates on national-forest lands in the Willamette River Basin, Oregon.

Watermaster Modeling System

As part of the five-year Pacific Northwest Consortium project (University of Oregon, Oregon State University, University of Washington) funded by the U.S. Environmental Protection Agency to develop a strategy for Ecosystem Management Research in the Pacific Northwest, ECO developed Watermaster, a computer program that matches the supply of surface water in a river basin with the queue of water rights to portray, over space and time, which water uses are satisfied. Watermaster is especially useful for simulating an entire basin's water uses under alternative scenarios incorporating changes in natural streamflow, reservoir operations, irrigation efficiencies, municipal conservation, and instream flows.

Economic Values and Impacts of Water-Resources Projects in the Mississippi River Basin

For the U.S. Environmental Protection Agency, ECO conducted a workshop for federal, state, and tribal water-resources managers involved in water-project planning and evaluation in the Mississippi River Basin. The workshop focused on economic methods useful for evaluating the costs and benefits of water-resources projects.

Economic Assessment of the Proposed Animas-La Plata Project

For a private client, ECO assessed the potential economic benefits and costs of the reservoir, related infrastructure, and activities included in the proposed Animas-La Plata project in southwestern Colorado. ECO compared the project with an alternative that entails increased water conservation and the voluntary transfer of water rights to affected tribes.

Gila River Water-Management Plan

For a private client, ECO analyzed the potential economic costs of a proposed diversion on New Mexico's Gila River—the last major free-flowing river in the Southwest. The diversion is expected to have significant negative ecological impacts on the cottonwood-willow riparian habitat, considered a biodiversity "hotspot" by the Nature Conservancy. ECO also evaluated the costs of alternate supply options to meet growing municipal and industrial demand in the surrounding areas including conservation, buying and reallocating fallow water rights, and utilizing an existing diversion system downstream to deliver the water.

Economic Benefits of Restoring Streamflows in the Eel River

For the Center for Environmental Economic Development, ECO assisted with an analysis comparing the positive and negative economic consequences of restoring natural streamflows in the Eel River, California, rather than diverting the water to the Russian River. ECO analyzed these economic values in the context of salmon-population restoration and its impact on the well-being of humans.

Critique of an Environmental Impact Statement

For a private client, ECO reviewed the economic impacts of the U.S. Army Corps of Engineers' Final Environmental Impact Statement, which proposed the deepening of the shipping channel in the Columbia and Willamette Rivers.

Subsidies, Externatilities, and Price Distortions of Land Uses Affecting Water Use in Watersheds

For the U.S. Environmental Protection Agency, ECO evaluated the economic consequences of ecosystem-management decisions in the Upper Willamette River Basin and how those consequences influence water and land use in the Eugene-Springfield area. ECO described the relative abundance and scarcity of water for different uses in the McKenzie and Upper Willamette watersheds, and recommended alternatives for preventing water scarcity.

Economic Framework for Watershed and Riparian Restoration

For the U.S. Environmental Protection Agency, ECO was part of a multi-disciplinary team that developed a basin-wide framework for identifying and ranking the ecological, demographic, and economic opportunities for watershed and riparian restoration. The team applied the framework to the Willamette River Basin in Oregon and it was incorporated into the *Willamette River Basin Planning Atlas*.

Economic Impacts of Increased River Sedimentation

For the U.S. Environmental Protection Agency and the National Science Foundation, ECO was part of a multi-disciplinary team that developed a method for calculating the sediment-related costs of upstream land-use activities. Using the North Santiam watershed as a case study, the team calculated the sediment-related costs imposed on the City of Salem and its industrial/commercial water users during and following a major flood event in February 1996, and traced these costs to general land-use activities in the watershed.

Socioeconomic Impacts of Ecological Riparian Restoration

For the U.S. Environmental Protection Agency, ECO co-authored a conceptual manual for assessing the socioeconomic consequences of ecological restoration projects for rivers and wetlands. The manual compared the impacts realized from wetland management to the impacts from dam construction. The authors then employed the manual in a case study of the Vermillion River in South Dakota.

Economic Assessment of Upper Rio Grande Basin Resource Management

For the Western Water Policy Review Advisory Commission, ECO described the competition for scarce water and related resources in the Upper Rio Grande Basin and identified critical problems relating to economic development, environmental protection, public health, tribal self-determination, and public land management. ECO also evaluated efforts to resolve the problems and recommended policies and actions to help resolve them.

Economics of Watershed Restoration in the Sierra Nevada

For a private client, ECO described the economic dimensions of watershed restoration to provide baseline information for designing and evaluating proposals to restore watersheds in the Sierra Nevada. ECO analyzed the principal causes of environmental degradation and their consequences in the Sierra Nevada and showed how ecosystem services can influence the quality of life of residents and visitors.

Mitigation of Economic Impacts from Dam Bypasses

For private clients, ECO evaluated the economic impacts of bypassing four federal dams on the Lower Snake River. ECO also developed a plan to mitigate the negative consequences of the bypass. ECO testified on these topics before the U.S. House of Representatives Subcommittee on Fisheries Conservation, Wildlife and Oceans, and the Subcommittee on Water and Power.

Economic Analysis of Water-Resource Allocation

For the State of Idaho, Office of the Governor, ECO analyzed proposed economic-evaluation procedures for allocating unappropriated water in the Snake River Basin. ECO's analysis concentrated on the adaptation of benefit-cost methodologies designed for federal decision making to state and local policy.

Alternative Plans for Competing Water Demands

For a private client, ECO assisted with an evaluation of the importance of the Virgin River in Utah to the economy of the surrounding region. ECO evaluated the economic consequences of alternative river-management strategies.

Economic Consequences of Hatchery-Management Program

For the Columbia Basin Fish & Wildlife Authority, ECO examined the economic elements of the environment that might be affected by the alternative hatchery-management programs for the Columbia River Basin. ECO's analysis was incorporated into a Draft Programmatic Environmental Impact Statement.

Economic Analysis of Columbia River EIS

For the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), ECO prepared a response to the Draft Environmental Impact Statement for the Columbia River System Operation Review written by federal water-management agencies. ECO developed a framework for assessing the potential economic consequences of alternative resource-management proposals and applied the framework to describe the economic consequences of implementing CTUIR's alternative proposal for managing the Columbia and Snake Rivers.

Alternatives for Watershed Planning

For Whatcom County, Washington, ECO conducted an economic analysis in support of a comprehensive watershed-planning process. ECO estimated the employment, income, population, and non-market economic impacts from alternative management scenarios. ECO also estimated the water use, by sub-basin, for each scenario.

Regional Economy of the Pacific Northwest

For the Northwest Water Law and Policy Project, ECO analyzed the role of the Columbia River in the economy of the Pacific Northwest. ECO established an economic framework for analyzing the economic consequences of alternatives for managing the Columbia River. The analysis included a discussion of the extent to which water and habitat are used to support salmon and water-intensive industries.

Municipal Water Supply Management Alternatives

For the City of Florence, Oregon ECO analyzed alternatives for managing the pristine Clear Lake watershed and minimizing the future costs of municipal water.

Economic Impacts of Water-Rate Restructuring

For the City of the Portland and the Portland Development Commission, ECO estimated the economic impacts associated with a restructuring of the City's water rates. The City proposed to a adopt variable pricing policy that more closely tied the volume of water used by business and residential consumers. Using U.S. Census and Bureau of Labor Statistics data, ECO estimated that water costs represented less than one-percent of expenses for the typical Portland business and concluded that the restructuring proposal would have a very modest negative impact on employment levels in the City.