Chapter 38
Federal Research and Development in Oregon

- Approximately $320 million of federal R&D funds are spent each year in Oregon.
- Oregon ranks 31st among the 50 states, District of Columbia, and Puerto Rico in terms of the amount of federal R&D dollars received annually.
- Approximately 6 percent of all federal funds spent in Oregon each year on matters other than the direct support of individuals (i.e., such entitlements as retirement, disability, and housing assistance) is spent on R&D.

Figure 38.1 – Sources of Federal R&D Dollars Spent in Oregon (Total Federal R&D ~$320 million)
BACKGROUND

In recent years, the federal government has spent in the neighborhood of $320 million annually in Oregon on research and development (R&D) activities. On average, federal R&D dollars account for approximately 6 percent of all federal funds spent in Oregon each year on matters other than the direct support of individuals (i.e., such entitlements as retirement, disability, and housing assistance).

Most major federal agencies that currently support federal R&D efforts provide funding for R&D activities in Oregon. Foremost among these agencies is the Department of Health and Human Services (HHS), which accounts for 36 percent of all federal R&D dollars spent in the state. The Department of Agriculture (USDA), the Department of Defense (DOD), the National Science Foundation (NSF), and the Department of Energy (DOE) account for an additional 13, 10, 10, and 9 percent of the federal R&D dollars spent in Oregon, respectively. The remaining federal R&D dollars come collectively from the Environmental Protection Agency (EPA), the Departments of Commerce (DOC) and Interior (DOI), and several other federal agencies.38

All federal R&D dollars spent in Oregon either cover the costs of operating federal R&D units in the state, including paying the salaries of federal R&D personnel working at these units, or are awarded as grants, contracts, or cooperative agreements to entities in the state. The following is an overview of what becomes of these federal R&D dollars once they arrive in Oregon.

FEDERAL R&D UNITS IN OREGON

Burns, Oregon, is home to USDA's Eastern Oregon Agricultural Research Center.

- The Eastern Oregon Agricultural Research Center is a unit of USDA's Agricultural Research Service (ARS). It conducts research on rangeland and meadow ecology, restoration of wildlands, environmentally compatible livestock systems, forage

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38 For a complete agency-by-agency breakdown of these R&D dollars, see Appendix C.
crops, and alternative grazing strategies. Specific research activities include developing agricultural and natural resource strategies to maintain or enhance intermountain forest and shrub steppes. This federal R&D unit annually receives approximately $709,000 of federal R&D funds and has about five FTEs.

Corvallis, Oregon, is home to USDA's Corvallis Forestry Sciences Laboratory, National Forage Seed Protection and Testing Center, and National Clonal Germplasm Repository; DOI's Oregon Cooperative Fish and Wildlife Research Units and Forest and Rangeland Ecosystem Science Center; and EPA's Western Ecology Division.

- The Corvallis Forestry Sciences Laboratory is a unit of the Pacific Northwest Research Station inside USDA's Forest Service. The laboratory, which is on the campus of Oregon State University, conducts research on managing coastal forests, developing methods for adjusting riparian reserve boundaries in watershed analysis, and developing simulation models to predict the distribution of ecosystems based on soil and climate features. Specific research activities include identifying patterns of genetic variation in native populations of forests plants, developing aquatic and riparian effectiveness-monitoring strategies, and developing pheromones to manage insect populations. This federal R&D unit annually receives approximately $8 million of federal R&D funds and has about 170 employees.

- The National Forage Seed Protection and Testing Center is a unit of USDA's ARS located on the campus of Oregon State University. It consists of two divisions that focus on forage seed and cereal research and horticultural crops research. It conducts research to develop seed production systems of temperate grasses and legumes and to understand the physiology, pathology, and genetics of a wide range of horticultural crops. Specific research activities of this unit include studying seedborne diseases of grasses, genetic integrity of grass cultivars, weed management in grass seed production; managing microorganisms; and on-farm grass straw utilization. Other research activities in-
clude investigating biological control, beneficial microorganisms, and fundamental aspects of horticultural crop growth and development. These federal R&D units, in combination with the unit below, annually receive approximately $6.8 million of federal R&D funds and have about 84 FTEs.

- The National Clonal Germplasm Repository is a unit of USDA’s ARS located on the campus of Oregon State University. It maintains collections representing global diversity of hazelnuts, strawberries, hops, mint, pears, currants, gooseberries, raspberries, blackberries, blueberries, and cranberries. Cultivars (clones) are stored as growing plants, while wild species are generally preserved as seed. Specific research activities of this unit include conducting experiments to improve cryopreservation. This federal R&D unit’s R&D funding and employment information is included in the above description.

- The Oregon Cooperative Fish and Wildlife Research Units are part of DOI’s U.S. Geological Survey (USGS). They are on the campus of Oregon State University. They conduct research on forest wildlife management, particularly as related to wildlife and habitat relationships associated with old-growth areas as well as environmental contaminants. Specific research activities of these units include environmental physiology of fish and genetics, forest-wildlife relationships, wildlife population analysis, and environmental contaminants. Combined, these federal R&D units annually receive approximately $376,000 of federal R&D funds and have about four FTEs.

- The Forest and Rangeland Ecosystem Science Center is a unit of DOI’s USGS. Its headquarters office is on the campus of Oregon State University. It conducts research to support management and conservation of forest and rangeland ecosystems in the Pacific Northwest and Intermountain West. It uses a multidisciplinary approach combining forestry, wildlife ecology, rangeland ecology, aquatic ecology, environmental toxicology, conservation genetics, and information science. The center provides assistance to resource managers in proximity to its headquarters
and six field stations. Specific research activities of this unit include environmental physiology of fish and genetics, forest-wildlife relationships, wildlife population analysis, and environmental contaminants. This federal R&D unit annually receives approximately $3.9 million of federal R&D funds and has about 27 FTEs.

- The Western Ecology Division is a unit of the EPA’s National Health and Environmental Effects Research Laboratory headquartered in Research Triangle Park, North Carolina. It conducts experiments, field studies, modeling, and data analysis on ecological systems and on ecological phenomena at the ecosystem, landscape, and regional scales. Ongoing research activities include studies of below-ground linkages in forest ecosystems, the impact of ecological disturbances on eelgrass habitat, and the structure of landscape-scale ecosystems in the Oregon Cascades. Other activities include quantifying estuarine biota-habitat relationships, studies of microbial and other ecologic and chemical indicators of aquatic environments, and an examination of the effect of ozone and carbon dioxide on the ponderosa pine plant/litter/soil system. This federal R&D unit annually receives about $17.6 million of federal R&D funds and has about 78 FTEs.

Hammond, Oregon, is home to DOC’s Hammond Laboratory.

- Hammond Laboratory is a unit of the Northwest Fisheries Science Center inside DOC’s National Oceanic and Atmospheric Administration (NOAA). The laboratory coordinates research with the center in the areas of conservation biology, environmental conservation, fishery resources analysis and monitoring, fish ecology, and resource enhancement and utilization technologies. It also conducts research on salmon and groundfish of the Columbia River. Specific research activities of this unit focus on salmon conservation, coastal ecology, and environmental monitoring of the Columbia River. This federal unit annually receives approximately $200,000 of federal R&D funds and has one FTE.
La Grande, Oregon, is home to a unit of USDA’s La Grande Forestry and Range Sciences Laboratory.

- The La Grande Forestry and Range Sciences Laboratory is a unit of the Pacific Northwest Research Station inside USDA’s Forest Service. It conducts research on understanding the ecological linkages of insects and microbes with keystone birds, mammals, and their habitat requirements. Specific research activities of this laboratory include studies on the ecological interactions among elk, deer, and cattle and plant succession and disturbance processes. This federal R&D unit annually receives approximately $2.4 million of federal R&D funds and has about 38 employees.

Newport, Oregon, is home to DOC’s Newport Facility.

- The Newport Facility is a unit of the Northwest Fisheries Science Center inside DOC’s NOAA. The facility coordinates research with the center in the areas of conservation biology, environmental conservation, fishery resources analysis and monitoring, fish ecology, and resource enhancement and utilization technologies. It also conducts research on shore ecology, parasitology, invertebrate zoology, microbiology, neurophysiology, fish disease, fisheries aquaculture, toxiciculture, and oceanography. This federal unit annually receives approximately $1.2 million of federal R&D funds and has about 15 FTEs. It also annually receives an additional $653,000 of federal R&D funds and another seven FTEs from the Alaska Fisheries Science Center.

Pendleton, Oregon, is home to USDA’s Columbia Plateau Conservation Research Center.

- The Columbia Plateau Conservation Research Center is a unit of USDA’s ARS. The center conducts research in wind and water erosion that affects dryland farming areas on and near the Columbia Plateau. Specific research activities of this center include studies in erosion prediction and control; fertility and soil/water
impacts on cereals and legumes; pest management strategies; and other topics in soil science, hydrology, agricultural engineering, and plant physiology. This federal R&D unit annually receives approximately $1.4 million of federal R&D funds and has about 20 FTEs.

Portland, Oregon, is home to USDA’s Pacific Northwest Research Station, DOI’s Regional Ecosystem Office and Oregon District Office of Water Resources, and a Department of Veterans Affairs (DVA) R&D unit.

- The Pacific Northwest Research Station, headquartered in Portland, is a unit of USDA’s Forest Service. It conducts research on the theory and practice of adaptive management, financial and utilization potential of prospective land management, and biology and culture of forest plants. Specific research activities of this research station include studies related to the range of northern spotted owls in Oregon, compatibility between wood production and other forest values and uses on federal lands, insect disease and fire disturbance in eastern Oregon, and issues centered on relicensing of dams, water-centered recreation, water quality, and municipal watershed. This federal R&D unit annually receives approximately $6 million of federal R&D funds and has about 68 employees.

- The Regional Ecosystem Office of the Forest and Rangeland Ecosystem Science Center is a unit of DOI’s USGS. It consists of a single scientist who is directly affiliated with the center’s headquarters in Corvallis, Oregon. He conducts research to facilitate the Regional Interagency Executive Committee and Intergovernmental Advisory Committee decisionmaking and to prompt interagency issue resolution in support of implementation of the Northwest Forest Plan (NFP). Specific research efforts of this office focus on NFP’s comprehensive long-term management activities for 19 national forests and six Bureau of Land Management districts in Oregon, Washington, and California. This federal R&D unit annually receives approximately $103,000 of federal R&D funds and has one FTE.
• The Oregon District Office of Water Resources is a unit of DOI’s USGS. It oversees the R&D activities of USGS’s National Water-Quality Assessment (NAWQA), Ground-Water Resources Assessment, Toxic Substances Hydrology, and Federal State Cooperatives programs. The NAWQA program conducts research on the nation’s surface and groundwater resources to better understand the effect of pesticides, erosion, and bacterial contamination on water quality. The Ground-Water Resources Assessment program studies groundwater systems to develop models and simulations to better understand the workings of these systems. The Toxic Substances Hydrology program studies the behavior of toxic substances in hydrologic environments. These research activities investigate subsurface contamination at local releases and aquatic ecosystem contamination on a watershed and regional scale. The Federal State Cooperatives program studies the effects of agricultural chemicals, floods, droughts, and waste disposal on water supply and groundwater quality. This federal unit annually receives approximately $1.5 million in federal R&D funds.

• While the principal focus of the Portland VA Medical Center is providing medical care to veterans, it is also the location of a number of research activities. In a recent year, this federally owned and operated facility was the site of 313 projects with total funding of approximately $6 million. These R&D activities focus on a wide range of topics, including multiple sclerosis, osteoporosis, cell biology, and substance dependence.

**Federal R&D Grants to Oregon Entities**

Every major institution of higher education in Oregon is the recipient of significant federal R&D dollars each year through grants made by federal agencies to faculty, graduate students, and research centers. The vast majority of the R&D grants are made by HHS, NSF, and DOD to individual faculty members and therefore ultimately inure to the benefit of such institutions as Oregon Health Sciences Uni-
versity (OHSU), Oregon State University (OSU), the University of Oregon, Oregon Graduate Institute of Science and Technology (OGI), and Portland State University (PSU). The table below shows the number of R&D grants active in FY 1998, highlighting those made by HHS, NSF, and DOD to parties at the various institutions and estimates of the total dollars transferred to them in FY 1998 pursuant to the terms of these grants. Among the grants in the “Other Agencies” category going to OSU are ones from USDA ($7 million), EPA ($6 million), NASA ($4 million), and DOC ($3 million). The comparable grants going to the University of Oregon include $1 million each from DOE and the Department of Education. Those going to PSU come mainly from the Department of Education.

Table 38.1 – Sources of Federal R&D Grants to Higher Education in Oregon

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<tr>
<th>Institution</th>
<th>HHS</th>
<th>NSF</th>
<th>DOD</th>
<th>Other Agencies</th>
<th>Total</th>
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<tbody>
<tr>
<td></td>
<td>Amount</td>
<td>#</td>
<td>Amount</td>
<td>#</td>
<td>Amount</td>
</tr>
<tr>
<td>OHSU</td>
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<td>356</td>
<td>$1M</td>
<td>10</td>
<td>$1M</td>
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<tr>
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<td>$14M</td>
<td>202</td>
<td>$6M</td>
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<td>U of Oregon</td>
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<td>$8M</td>
<td>156</td>
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<tr>
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<td>$2M</td>
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<td>$2M</td>
</tr>
<tr>
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<td>9</td>
<td>&lt;$1M</td>
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<td>0</td>
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<tr>
<td>Total</td>
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<td>506</td>
<td>$25M</td>
<td>411</td>
<td>$10M</td>
</tr>
</tbody>
</table>

These activities are particularly significant because they fund much of the “basic research” so critical to expanding our knowledge and understanding of fundamental scientific phenomena. In addition, these funds account for a substantial portion of the dollars available each year to various academic departments within these institutions. Several other nonacademic institutions in Oregon also receive a significant amount of federal R&D grants each year. Foremost among the institutions that received R&D grants in FY 1998 are the Oregon Regional Primate Research Center in Beaverton ($18 million), the Sisters
Scattered among these grants, as well as among the contracts discussed in the section below, are small business innovative research (SBIR) awards. These are special awards made by the SBIR programs supported by the 10 federal agencies with annual budgets for extramural R&D of more than $100 million. In a recent year, small businesses in Oregon received 55 SBIR awards totaling $15 million. Examples include a $750,000 award from the Army to Flow, Inc., in Portland for work on a rapid test for malaria diagnosis and treatment and a $750,000 award from HHS to the Oregon Center for Applied Science in Eugene to develop comprehension and spelling programs for the hearing impaired.

Also included among these grants are formula grants from federal agencies. Formula grants differ from the much more common project grants in that the money transmitted through formula grants is allocated to a state or one of its subdivisions in accordance with a distribution formula prescribed by law or regulation. Among the formula grants benefiting Oregon are ones valued at more than $3.3 million from USDA's Cooperative State Research, Education, and Extension Service (CSREES) to State Agricultural Experiment Stations, forestry schools, and veterinary colleges for the support of research in agriculture, forestry, and animal health and disease. Similarly, a modest formula grant goes from DOI's USGS to the Water Resources Research Institute in Oregon every year to foster research in water and water-related problems.

**Other Federal R&D Activities in Oregon**

Several entities in Oregon also receive notable sums in the form of contracts or cooperative agreements from federal agencies for specific R&D efforts. A large share of the funds go to Templex Technology Corporation, which in FY 1998 received close to $2 million in R&D contracts from DOD for its development of innovative optical networking technology. In addition, Bend Research, Inc. ($1 million),
Hood Technology Corp. ($1 million), Flir Systems, Inc. ($1 million), and the Kaiser Foundation ($1 million) received large R&D contracts from federal agencies in FY 1998. Note that these amounts are in addition to any federal R&D grants also received by these companies. For example, Bend Research received over $1 million in federal grants in FY 1998. OGI ($2 million), OSU ($2 million), and OHSU ($1 million) also received contracts from various federal agencies to conduct R&D for the federal government. Although these amounts are notable, they do not come close to eclipsing the funds that these institutions receive from federal R&D grants.

A total of $19 million of federal R&D dollars was also received in FY 1998 by entities located in Oregon in the form of cooperative agreements. The largest of these cooperative agreements ($2 million in FY 1998) went from the Department of Interior to OSU to conduct research in natural systems management relating to forest and rangeland ecosystems in the Pacific Northwest. Other federal agencies awarding cooperative agreements to Oregon-based entities include DOC and USDA.