

## **Chapter 9: Loan Program Development**

No other component of the La Pine Project was as dependent on the outcome of the other components as the loan program. The field test program, the groundwater study and three-dimensional model development and the maintenance program recommendations were largely independent elements that could have been stand alone projects. The project team could have approached the loan program in a similar manner; however, given the limited funds available for this endeavor and the large perceived need, the project team agreed the most effective use of the loan funds would be to ensure they were applied in a realistic and targeted manner. The project team wanted to create a structured loan program that would “purchase” the maximum reduction in nitrogen load in the most sensitive receiving environments of the project area.

Firstly, the project team did not envision loaning funds for onsite system retrofits or replacements without a comprehensive understanding of which treatment systems would be the most effective at reducing nitrogen. The innovative system field test program took place between the fall of 2000 and winter 2004 with the final analytical results delivered by the end of March 2005. This program produced the results reported in Chapters 5 and 6 and highlighted the pros and cons of different denitrifying processes. This program provided information on the levels of treatment possible with onsite systems in actual residential applications, the general range of costs associated with the systems, the potential use of various systems as retrofits or replacements, and the homeowners reactions to the systems.

The groundwater study identified existing areas of elevated nitrate concentrations in the aquifer both at the water table and at drinking water well depths. This information, coupled with the geologic information available from well logs and other sources, characterized the existing conditions within the La Pine sub-basin and defined the baseline for the three-dimensional groundwater and nutrient fate and transport model (3-D model). This information established a foundation on which to build public support for the necessity for groundwater protection measures including retrofits to existing onsite wastewater treatment systems. The US Geological Survey (USGS) completed the compilation of this information in mid-2002. To date, reports on the findings have completed the peer review process and are awaiting publication.

The 3-D model builds upon the hydrogeologic information available from previous studies and collected during the La Pine Project to create a state-of-the-art simulation of groundwater in the La Pine sub-basin. This model incorporated information gained from the onsite system field test program to predict impacts to the aquifer under eight scenarios including status quo and varying onsite wastewater treatment performance standards. The model scenarios were completed in mid-2003 with an accompanying presentation to the public on the findings. The report on this portion of the project has completed peer review and is awaiting publication.

The 3-D model became the focus of an additional grant program as a result of its successful completion. In mid to late 2003 the National Water Resources Capacity Development Project funded Deschutes County and the USGS to enhance the 3-D model by linking it with optimization methods to create a real-time resource management tool. The optimization methods, derived from military modeling techniques for allocating scarce resources, allow resource managers to define the desired outcome and have the model produce management approaches that most efficiently produce the desired outcome. This is different from the 3-D model where resource managers are required to estimate appropriate management approaches in order for the model to predict an outcome of the scenario. (Morgan, 2005) The development of this model enhancement was an unforeseen event in the work plan for the La Pine Project and the project team decided it was worth postponing the loan program development in order to use the optimization model to identify the highest priority areas of the La Pine sub-basin for onsite system retrofits and replacements. The power of this tool became evident as the early tests of the model illustrated how small management areas can be identified according to nitrogen reduction required to meet water quality goals of the area. Not only were total nitrogen reductions for the 96 management areas defined, but also nitrogen reduction, broken down by existing vs. future development, could be produced. Currently, the optimization model is being updated with development information on the study area in order to use 2005 vs. 1999 development data. Deschutes County expects to complete the update in the fall of 2005 and then use the model to produce new scenarios shortly thereafter.

### *Loan program plan*

In cooperation with DEQ, Deschutes County developed a Request for Proposals for an organization or agency to contract with the county to provide the loan fund administration function. Potential partner organizations or agencies include, but are not limited to:

1. Local housing authority dealing with the Community Block Grant Program
2. Central Oregon Intergovernmental Council
3. Local banks
4. Local office of the US Department of Agriculture

The Deschutes County Board of Commissioners specified to project staff that a third party will be used as the administrative portion of the program in order to take advantage of the ability of these organizations and agencies to act as bill collectors.

La Pine project staff, Deschutes County long range planning and financial management staff will establish the loan fund criteria. The La Pine project staff is concerned about eliminating the opportunity for low-income residents to participate in the program if traditional financial lending institution criteria are applied to the process. Many of the lower income residents of the area own properties with the oldest onsite treatment systems and are located in areas of highest environmental sensitivity. Therefore, project staff intends to include concepts like loan repayment at time of sale or other such deferred payment options. Additionally, the loan fund criteria, as stated above, are based on:

1. Results of the innovative systems field test program
  - a. Performance data
  - b. Basic cost information
  - c. Potential for the system to be incorporated as a retrofit
  - d. Homeowner response to the innovative systems
2. 3-D groundwater and nutrient fate and transport model as an:
  - a. Educational tool
3. The Capacity Development funded project to create a nitrate loading management model (NLMM) to use in conjunction with the 3-D model
  - a. Identifies the sub-areas within the overall study area that require the most attention in terms of retrofitting existing onsite to achieve higher levels of treatment for nitrogen reduction.
  - b. Identifies the level of nitrogen reduction required in order to protect the aquifer to specific standards.

Deschutes County is considering applying for state revolving loan fund (SRF) monies directed towards decentralized systems to augment the existing funds from the La Pine Project. The project team has some reservations about using the SRF program for the La Pine region because of short repayment periods and the need to pay interest. More investigation into the demand for such a product is needed before Deschutes County can commit to using the funds.

#### *References*

Morgan, D. S. and R. Everett. 2005. *Simulation-Optimization Methods for Management of Nitrate Loading to Groundwater From Decentralized Wastewater Treatment Systems*. Project No. WU-HT-03-37. Prepared for the National Decentralized Water Resources Capacity Development Project, Washington University, St. Louis, MO, by US Geological Survey, Oregon Water Science Center, Portland, OR.