Environmental Management System

City of Eugene Wastewater Division
Eugene, Oregon

Profile

The City of Eugene is located at the confluence of the McKenzie and Willamette Rivers, at the southern end of the Willamette Valley in Oregon. Home to approximately 138,000 people, Eugene is Oregon's second largest city. It covers approximately 36 square miles, with the Willamette River running through the heart of the city and the McKenzie River joining the Willamette to the north of town. The elevation is 426 feet above sea level. Eugene's climate, with an average temperature of 53 degrees, is one of the city's attractive features. Mild winters, long growing seasons, and few drastic weather changes are characteristic. Average annual rainfall is 43 inches falling mostly between September and June. One third of the city's population has completed four or more years of college. The City is home to the University of Oregon, and is known for being progressive and embracing the "counter culture." Oregon has a well-deserved reputation for environmental protection and conservation, resulting in part from the celebrated clean-up of the Willamette River in the 1960s, and pioneering land use regulations to prevent sprawl.

The City of Eugene employs about 1,450 regular full time employees involved in all aspects of managing the City, including wastewater and stormwater management, police and fire, library and recreation, planning and development. The City has traditionally been on the forefront of environmental management initiatives. For example, Eugene was the second medium-sized (population 100,000 to 250,000) city in the US to receive a National Pollutant Discharge Elimination System (NPDES) municipal stormwater permit, and the City operates an award-winning regional wastewater management facility.

Recently, the City has embarked on a number of new environmental management efforts, driven by a renewed concern to ensure that the City is appropriately managing its environmental impacts, and also by the recent listing of Willamette River spring Chinook salmon as a threatened species under the Endangered Species Act (ESA). These efforts include the development and implementation of an environmental management system in the City's Wastewater Division; a comprehensive review of the City's activities and associated environmental impacts; a review of the City's regulations and rules to identify any "gaps" for ESA compliance; and a general effort to increase the City's "sustainability."

Fenceline

Eugene/Springfield Regional Water Pollution Control Facility
(Willamette River in background)

The development and implementation of the environmental management system was restricted to the activities conducted by the Wastewater Division within the Eugene Public Works Department. The City's Wastewater Division provides operation and maintenance services under contract to a regional wastewater Commission that serves 215,000 customers in the Eugene/Springfield metropolitan area. Under this contract the Division operates and maintains a 49 MGD secondary wastewater treatment plant, a biosolids processing facility, a land application site for the irrigation of food

processing wastewater, and 49 sewage pumping stations. The fenceline of the EMS does not include the operation and maintenance of the wastewater collection system. The division has about 80 employees, including administration, operations, maintenance, laboratory, source control, and information systems staff and an operating budget of about $7.5 million.

Key Drivers for Adopting an EMS

The Division has been actively engaged for many years in efforts to improve service efficiency and effectiveness. Aggressive programs have been undertaken for energy management, control of chemical costs, and staff optimization. In September of 1999 the Division made the decision to direct its service improvement activities towards the development of a formal environmental management system. This decision was made in response to several driving factors: (1) listing of spring Chinook salmon in the Willamette River as a threatened species under the Endangered Species Act (ESA); (2) federal rules restricting sanitary sewer overflows; (3) Clean Water Act provisions for improving water quality in "water quality limited" streams; (4) the availability of a new State of Oregon "green permit" program for facilities which develop an EMS; and (5) the potential to realize cost savings in terms of lower operational costs (further reduced chemical and energy usage, less waste generation), and greater effectiveness in staff training.

Biosolids Management Facility
(storage lagoons and drying beds)

In addition, the NPDES discharge permit for the wastewater treatment facility was up for renewal and the process of developing an EMS would help to concentrate the Division's activities on ensuring full regulatory compliance in all of its operating systems. The EMS is focused on the wastewater division's core responsibilities of protecting public health and the environment, and clarifies the guiding policies, ensures integration of the different functional components of the regional wastewater program to optimize environmental benefits, and helps to establish and maintain an effective documentation system. The Wastewater Division's EMS is also viewed as a demonstration project for other City divisions as a means to support the Eugene City Council's resolution on Sustainability of City functions.

EMS Graphic Identity

Early in the EMS development process the Division developed a "graphic identity" for the system (see top left of page one). This graphic, which is intended to represent water, land, and air (the principle environmental impact receptors), is used on all EMS documentation, forms, training materials, etc. This helped give the system development project a clear identity, and make it "real" during the early development stages.

Significant Aspects and Impacts

As part of the EMS development process, the Division went through an exercise to identify all the environmental aspects and impacts from the Division's activities and practices. These aspects were then prioritized, and the high priority (significant) aspects identified. The division has identified 65 discrete activities that have a significant environmental impact. These impacts include not only the obvious impacts for a wastewater treatment facility, such as the treated discharge to the receiving river, and the impact of power use, but also other impacts such as those resulting from paper

use, and disposal of used parts from equipment maintenance. The significant impacts have been divided into the following impact categories:

Air pollution	Stormwater pollution	Land contamination
Power consumption	Hazardous Waste	Solid waste
Noise	Water consumption	Odor
Groundwater Contamination	Natural resource consumption	Treated wastewater discharge
Other		

Operational controls, in most cases new procedures, have been developed for all significant aspects.

Objectives and Targets

The Division has identified four initial objectives for the EMS, with corresponding targets, as follows:

Objective	Target	Time-Frame
Reduce Consumption of Natural Resources	Reduce overall consumption of paper goods by 30% (Baseline 2000)	1/01 - 12/01
	70% of the gross amount of all paper goods purchased will be made from material with a minimum of 30% post- consumer recycled content	1/01 - 12/01
	Reduce vehicle fuel consumption by 10% (Baseline 2000)	1/01 - 12/01
Reduce Power Consumption	Reduce annual electrical power consumption by 5% (Baseline average of 1999, 2000)	1/01 - 12/01
Reduce Solid Waste	Minimize quantities of non-recyclable wastes	On-going
	Minimize recyclable wastes from solid waste disposal sent to landfill	On-going
Improve Quality of Treated Wastewater Effluent	Maintain ammonia concentration at edge of mixing zone at least 20% below the water quality standard	On-going
	Reduce wastewater facility influent mercury loading by 10% (Baseline summer 2001)	1/01 - 12/04
	Survey other agency source control programs to identify gaps in our program, particularly with unregulated compounds. Develop a report recommending any necessary changes to local regulations	1/01 - 12/01

Benefits of Adopting an EMS

Some of the benefits from developing and implementing the Division's EMS are already beginning to be recognized, while other benefits will be accrued over time.

- As a result of EMS development, a new documentation system for the Division was initiated. This new system, which is now used for all the Division's documents, makes controlled documents quickly available to all Division employees from computer work stations.
- The Division staff have an increased understanding and awareness of the environmental impacts resulting from their work, and are implementing procedures and other practices to reduce those impacts whenever possible.
- The EMS has integrated the environment into everyday facility operations, and environmental stewardship is becoming part of the daily responsibility for all employees.
- The EMS changes the focus of the Division from complying with regulations and permits to "beyond compliance" - and allows the Division to move towards sustainability.
- Financial savings are already resulting from the measures put into place, and further financial savings are expected in the future.

  Examples of savings realized in 2001 include:
  - Electrical power savings: Approximately $18,000, plus $28,500 in credits.
  - Paper use savings: Approximately $1700 (Combination of paper savings and reduced copier costs)
  - Garbage disposal savings: $2800

Resources

The Wastewater Division's EMS development and implementation project has consumed about 5000 hours of staff time, and about $50,000 in costs spread over a two-year period. Most of the external costs are related to staff training, consultation, and registration.

Registration

The Wastewater Division EMS was registered as ISO 14001 compliant in October 2001 following an audit by National Sanitation Foundation – International Strategic Registrations (NSF-ISR).

Observations

Observations from the Eugene Wastewater Division's experience developing the EMS include:

- Developing and implementing an EMS is a lot of work. Significant staff time and a long development time are common. Part of this is due to the unfamiliar terminology of the ISO standard, and the challenge of setting boundaries around the impacts assessment and determining the level of detail in describing and prioritizing potential environmental impacts.
- Wastewater services have a head start/advantage in environmental assessment since the core business function is environmental protection. The system builds upon existing employee strengths and their pride in providing an essential public service. It also provides a forum for involving staff in improvements and attainment of greater environmental benefits.
- The process of EMS development highlights other organizational issues, such as those related to document control, employee training, and internal communications. Every organization has areas that are known weaknesses or deficiencies, and the ISO EMS standard presents a tool to address those weaknesses in a systematic, integrated manner. The audit process that supports the EMS is a valuable approach to reviewing the system components and tracking appropriate follow up. The Division found internal audits to be very useful in identifying weaknesses in the linkages between policies, practices, training, and documentation and for directing corrective actions.
- Environmental responsibility = effective business management. Achievement of the environmental objectives will reduce operating costs and produce environmental benefits. The Division has gained clear standards guiding our operational decisions, and will be in an improved competitive position as a result.