

## Solid Waste Management

An LWVLC Study, 2007

### **INTRODUCTION**

The League of Women Voters of Lane County (LWVLC) first studied solid waste management and adopted a position statement in 1972. This was amended in 1989. A copy of the current position appears as Appendix 1. This position supports source reduction, resource recovery, and recycling, which along with reuse and safe disposal remain the basic principles of waste management.

The purpose of this report is to describe the current state of solid waste management, which has changed dramatically in the 18 years since the last study. The report is not a comprehensive discussion of all aspects of the subject. It is intended to be an overview of some issues the study committee expected would be of particular interest to members.

### **WASTE MANAGEMENT INFRASTRUCTURE**

An eight-page primer on the solid waste management system in Lane County is located in the community pages at the front of the current DEX telephone book (the brown pages). The information provided makes it clear that simply dumping garbage in a large hole is no longer the primary management strategy.

The local government with the broadest responsibility is Lane County. The Waste Management Division of the County's Public Works Department operates the Short Mountain Landfill near Goshen as well as 16 transfer stations throughout the county. In 2006 the landfill received 292,000 tons of garbage, approximately 800 tons of trash per day. At the projected rate of use, the landfill is expected to have available capacity until 2087. Because siting such facilities is difficult, efforts continue to extend its life by increased recycling, reduced waste generation, and other strategies.

All transfer stations accept both refuse and some source-separated recyclables, though the Central Receiving (transfer) Station in Glenwood accepts more types of recyclables. Garbage is hauled by truck from the transfer stations to the Short Mountain Landfill. Recyclables are managed

through contracts with commercial and not-for-profit organizations. Details of some of these programs are described in other sections of this report.

The Waste Management Division has 79 full-time employees and is financed solely with tipping (dumping) fees paid by individuals and commercial haulers. The fees are placed in a dedicated self-supporting fund that is used for operations as well as for facility development and closure and post-closure costs of Short Mountain and the closed Oakridge, Florence and Franklin landfills. The tipping fees also fund other Division activities such as education and recycling.

The primary role of cities in waste management is the regulation or franchising of garbage haulers that operate within city boundaries.

## **SOURCE REDUCTION**

The waste reduction section of the LWVLC position focuses on packaging and planned obsolescence of products as a way to reduce waste at its source. However, the concept of source reduction has been broadened to include sustainability and lifestyle choices.

The Oregon Department of Environmental Quality (DEQ) addressed both waste generation and waste prevention in its report to the 2007 Oregon Legislative Assembly on solid waste management activities.

## **Waste Generation Trends**

The DEQ reports that the total amount of solid waste generated each year continues to increase steadily after leveling off in 2000 and 2001. Annual waste generation per person increased from 5.7 pounds-per-day in 1992 to 8.4 pounds per day in 2005, up from 8.0 in 2004. Consequently, Oregon failed to meet its first legislated waste prevention goal of no increase in the per capita generation rate in 2005. Oregon will probably not meet its more stringent 2009 goal of no increase in total waste unless Oregonians rapidly develop effective waste prevention programs. These goals were adopted by the 2001 Legislature.

Waste generation is measured as the sum of materials disposed and recovered -- roughly the amount of material discarded by households, businesses, and government. This includes garbage as well as materials separated for recycling and off-site composting.

Areas where waste generation has grown most rapidly are construction; remodeling and demolition wastes; plastics; and durable goods such as home furnishings, electronics, and clothing. An example is the growth in the number of plastic water bottles discarded in landfills, estimated to have increased from less than 40 million in 1998 to more than 120 million in 2005. This is an average of about 33 water bottles for each of the estimated 3.64 million people living in Oregon in 2005.<sup>1</sup>

## **Waste Reduction Strategies**

According to the DEQ report to the 2007 Legislature, methods to reduce waste generation include waste prevention (by acquiring fewer items as raw materials, packaging, and consumables or by purchasing more-durable goods), reuse (using something in its original form), and on-site composting.

David Allaway of the DEQ comments that it is important to understand that recycling shares many of the benefits of waste prevention. Most of the environmental benefits of recycling are "upstream" (in reduced extraction and processing of raw materials), not in landfill avoidance. The increasing focus on prevention should not be viewed as a criticism of recycling, although it is generally the case that a ton of prevention has greater environmental benefits than a ton of recycling. Waste generation, recovery, and disposal data from DEQ suggests that even as recycling has increased, generation has increased as well. This implies increasing environmental impacts associated with increased natural resource consumption and production of goods. Recycling mitigates against the overall impact of increasing consumption, but the trend of increasing consumption is widely viewed as inherently unsustainable.

DEQ is drafting a waste prevention strategy to help citizens decrease the amount they need to discard. Department staff have pointed out that the harmful effects of producing goods that are later trashed can be greater than the harm caused by land filling. As an example, much pollution is generated in the manufacture of cheap furniture, televisions, and toys that become obsolete quickly.<sup>2</sup>

Strategies to reduce the total amount of waste generated are considered critically important by other groups as well:

\* Lane County Waste Management Division staff state that "The act of reducing garbage is far better than recycling because it avoids the high energy consumption, air pollution, and habitat destruction of natural resource extraction in the first place."<sup>3</sup>

\* BRING Recycling has shifted its emphasis from recycling to what its website describes as an even bigger problem - the wasteful consumption of natural resources. The organization believes that the wasteful use of resources is linked to every serious environmental problem we face: global warming; degradation of air, water, farmland, and natural spaces; declining species and habitat; and depletion of finite resources and energy supplies.

\* Julie Daniel, executive director of BRING, believes that one cause of increasing natural resource use is the larger size of homes and the growing number of vacation homes. Resources are consumed in operating (heating/cooling), maintaining, and furnishing these residences.<sup>4</sup> Data from the U.S. Bureau of the Census confirms how the average new American home has changed. In 1950, the average area was 981 square feet, and 62% of homes had less than 1200 square feet. More recently, the average area was 2349 square feet, only 4% of homes had less than 1200 square feet, and 39% had more than 2400 square feet. According to a 2006 Windermere Real Estate Survey of homeowners throughout the West, about 16% also own a vacation home.

\* In Lane County and throughout the world, individuals are joining groups that are dedicated to buying no new consumer goods for a year and acquiring what they need by borrowing, bartering, or buying used. Individuals making such a commitment are trying to lighten their own environmental impact.

## **REUSE**

Another strategy in solid waste management is to reuse products in original or close to original form rather than recycling them or disposing of them in a landfill. Reusing existing products eliminates the need for the raw materials and energy to manufacture new products as well as the energy used in transporting recyclables, making them into other products, and packaging and transporting the new products to the point of sale.

Lane County has many reuse opportunities including thrift stores, other not-for-profit retailers such as BRING Recycling and NextStep Recycling, and for-profit businesses selling books, music, clothing, and other items.

NextStep Recycling (formerly known as Computer Reuse and Recycling Center) is a Eugene not-for-profit organization which has facilitated the reuse of computers and other electronic devices. The company has accepted donations of unwanted electronic equipment, refurbished or repaired the equipment, and donated it to other not-for-profits or individuals. In approximately three years of operation, it has donated 5,000 computers and other devices and has also repaired, rebuilt, and sold over 22,000 other electronic items in its thrift store.

## **RECYCLING**

The DEQ tracks the rate of recycling as part of an overall recovery rate, which includes the rate of recycling, composting, and energy recovery. In both 2004 and 2005, Oregon's recovery rate was above the state's interim goal of 45% for 2005. The recovery rate of 49.1% is the highest rate the state has achieved since starting to measure recovery rates in 1992. The total amount of materials collected for recycling, composting, and energy recovery in 2005 was almost 24% greater than the amount collected in 2002.<sup>5</sup> In Lane County, the 2005 recovery rate was 53.7%.<sup>6</sup>

### **Recycling of Rigid Plastic Containers**

Although overall recycling goals have been met, recycling rates for rigid plastic containers have fallen below 25%. In December 2006, the DEQ issued a report on Oregon's recycling of rigid plastic containers, concluding that the aggregate recycling rate for such materials was less than 25% for 2005 and projected to be less than 25% for 2007. Falling below the threshold of 25% is significant because, under the provisions of 1991 legislation, companies that package certain products in plastic containers may need to take additional steps to remain in compliance with state law. This is the first time that DEQ has determined that the recycling rate for compliance purposes has fallen below 25% in Oregon. Between 1993 and 2005, the rate was highest in 2001 at 29.8% and declined to 24.3% in 2005.

The recycling rate is calculated as the ratio of tons recycled over the total of tons recycled and tons disposed of. Thus the rate is affected both by the quantity recycled and by the total quantity of material produced and available to be recycled.

Oregon's Rigid Plastic Recycling Law was originally passed as part of the comprehensive 1991 Oregon Recycling Act (Oregon Revised Statute 385). Under this law, any rigid plastic container sold in Oregon must meet at least one of three criteria: 1. Contain at least 25% recycled content, 2. Be made of plastic that is recycled in Oregon at a rate of at least 25%, or 3. Be a reusable container, made to be reused a minimum of five times. Rigid plastic containers are defined in regulations (OAR 340-090-0330) as plastic bottles, jars, cups, tubs, pails, "clamshell" containers, or other plastic containers that, among other criteria, are designed to hold a product for sale. Generally, containers of beverages and non-food products such as detergents, automotive fluids, and other consumer and commercial products are covered under these requirements.

DEQ's determination that the 2007 aggregate recycling rate is estimated to fall below 25% triggers certain actions: reporting to a legislative committee, holding legislative hearings on the recycling rate, and potentially implementing requirements for alternate compliance or recordkeeping in 2008. In February 2007, the Environmental Quality Commission rejected a petition submitted by businesses and interest groups that would have weakened existing rules by artificially inflating Oregon's rate of recycling for rigid plastic containers. The proposal was to redefine "recycled in Oregon" to include containers that were not actually recycled but were "intended" to be recycled.

According to the DEQ, the following factors contributed to the decline in rigid plastic container recycling rates over the last decade:

- Soft drink containers have the highest plastic container recycling rate in Oregon (70-80%), but sales of soft drinks have declined in recent years. This results in less soft drink plastic available to be recycled. Meanwhile, water and juice sales have increased. These containers have a much lower recycling rate (approximately 30%) since they are not covered under the 1971 Oregon Bottle Bill.
- Although curbside programs have significantly increased the amount of plastic containers being collected, close to 20 percent of those containers are being mismanaged at Oregon's material recovery facilities and end up being tossed.
- Sales of containers with low recycling rates, such as tubs and clamshells, have increased substantially over the years.

The DEQ report lists strategies that could bring the recycling rate back above 25%:

- Changing curbside programs to collect additional plastics and to use large roll carts for collection.
- Changing the Oregon Bottle Bill to include water, juice, or other beverages.
- Improving the sorting efficiency at Oregon's commingled recycling processing facilities to reduce the loss/disposal of containers collected curbside.
- Increasing recovery of 5-gallon buckets and other containers not collected curbside.

The DEQ report included information about differences in recycling programs around the state. In 2005, most Lane and Marion County recycling programs used roll carts for collection and also included most non-bottle rigid plastic containers in their programs.

The recycling composition study conducted by DEQ in 2004-2005 shows that these programs collect significantly more plastic than do the bin curbside programs that are common in the Portland area and much of the rest of the state. In 2006, the City of Beaverton moved to roll-cart collection and added some plastic tubs and other containers to their curbside program. DEQ's conclusion is that if other Metro-area jurisdictions and recycling programs throughout the state make similar changes, the tonnage of rigid plastic containers recycled will significantly increase, although probably not soon enough to significantly affect the 2007 recycling rate.

## **Commingled Recycling**

Commingling of materials for recycling has been a growing trend in the last ten years with most Oregon cities now commingling their recyclables. The Eugene-Springfield area has been using commingled recycling since 2001.

Local garbage haulers collect commingled recyclables from businesses, apartment complexes, and residences. The list of recyclables includes nearly all types of paper and cardboard, tin and steel cans, aluminum, glass containers, and many plastics. Plastics are limited to materials bearing a recycling number other than #6. Accepted materials and instructions for preparation vary by garbage hauler. In general, all materials can be mixed together except for glass since crushed glass is very destructive of the machinery used in the recycling of paper.

Garbage companies deliver the commingled materials and separated glass to Eco-Sort, a locally owned company that began processing recyclables in 1996. Eco-Sort is known as a materials recovery facility or MRF. The

company shares the facility next to the Glenwood Transfer site with Weyerhaeuser and is a separate business entity of the owners of Sanipac. Eco-Sort receives 2600 tons of commingled material each month, some of it partially compacted in the collection trucks. This material is all trucked to SP Recycling Corp., another MRF in Clackamas, Oregon.<sup>7</sup>

At SP Recycling Corp., the material is processed on a sort line using a system of screening equipment to break down the stream of material so that it is more easily sorted by sorters positioned at points on the sort line. Recyclables are sorted into bunkers and bins for shipment to end use markets in either baled or loose form. Any contamination present in the commingled material is removed and sent to a landfill for disposal. In 2006 this facility processed over 130,000 tons of commingled recyclables from metropolitan areas in Oregon and Southwest Washington. Approximately 2% of the material received was ultimately sent to a landfill.

The SP Recycling Corp. operation in Clackamas, Oregon was established to provide a secure supply of recovered paper for SP Newsprint Co., located in Newberg, Oregon. After sorting, SP Recycling sends the recycled newsprint, magazines, and catalogues to the Newberg Mill where it is de-inked and combined with pulp from residual Hemlock wood chips to produce newsprint. SP Newsprint Co, the parent company of SP Recycling, is owned by three large newspaper publishers, headquartered in Atlanta, Georgia.<sup>8</sup>

The rest of the separated recyclables are sent to various markets and used for various purposes as shown in the chart in appendix 2.

## **Changes to the Bottle Bill**

Several "bottle bills" have been introduced in the 2007 Oregon Legislative session. Proposals included an increase in deposit amounts and expansion to beverage containers not covered by present law. The bill under committee consideration in early April would add only plastic water bottles to the containers covered while keeping the deposit at a nickel and retaining most provisions of existing law.<sup>9</sup>

## **SPECIALIZED WASTE**

### **Medical Waste**

Medical waste is generated in hospitals, research labs, doctors and dentist's offices, and veterinary clinics.

Since 1990 the federal Environmental Protection Agency has defined and regulated medical waste and its handling and disposal.<sup>10</sup> Various federal agencies regulate different aspects of medical waste: OSHA and Department of Health Services - in the workplace; Food and Drug Administration - medical devices such as sharps containers; the Nuclear Regulatory Commission - some types of radioactive medical waste; and Department of Transportation Office of Hazardous Material and Safety and Transportation

Also applicable in Oregon are the requirements of Oregon Revised Statute 459.405. This infectious waste law, adopted in 1990, regulates collection, storage, transportation, treatment, and disposal of such waste. Under this law there are four kinds of infectious waste: 1) pathological waste, 2) biological waste, 3) cultures and stocks, and 4) sharps. Included are flesh, body fluids, blood-soaked bandages, sharps such as dirty needles, used scalpel blades, syringes, and infusion sets with needles attached.<sup>11</sup>

By Oregon law, infectious medical waste must be incinerated. There is only one facility in Oregon, licensed by the DEQ, that is allowed to accept this waste for disposal, the Brooks Covanta Burner near Salem. It was built in 1986 and in 1997 outfitted with the latest technology in filters. The mandated installation of the filters for fly ash resulted in a 90% reduction of mercury and dioxin emission and particulate matter. It is a waste-to-energy incinerator that also burns solid municipal waste from several Oregon counties and generates 13 megawatts of electricity, enough to power 8,000-10,000 houses.

In 2006, approximately 182,000 tons of solid waste were burned, of which 783 tons were medical waste (383 tons came from Lane and Polk Counties). The resulting bottom ash and the recovered fly ash from the filters goes to the North Marion County ash mono-fill in Woodburn, which is a type of landfill that contains no raw garbage.<sup>12</sup>

McKenzie Willamette Hospital has a contract with Sanipac to transport its medical waste to the Brooks Covanta Burner. The infectious waste is burned, and the sharps containers are buried in the ash monofill.

Peace Health Hospital uses Stericycle, a company licensed to transport and dispose of medical waste and sharps. The material is picked up twice a week

and hauled to Morton, Washington for disposal. About a ton and a half of material is shipped every week from Peace Health.

Both hospitals are mandated by law to use tracking systems that allow them to know where materials are at any given time. The Nuclear Medicine Department at Peace Health keeps all used radioactive materials in drums until it reaches a defined level, on average for 3 weeks. The waste is mostly needles and is treated the same way as sharps, that is, disposed of by Stericycle. Chemotherapy drugs are considered a biohazard and are incinerated according to the same DEQ rules as other biohazardous waste.

Both hospitals have extensive recycling programs and have achieved a marked drop in the use of mercury. The goal is to be mercury-free. Use of the plastic polyvinyl chloride (PVC), which produces dioxin when burned, has been reduced. Peace Health has achieved a 25% reduction in plastic waste by disinfecting and reusing their sharps containers 6 times. McKenzie Willamette buys sharps containers made from recycled plastic.<sup>13</sup>

Typically about 15% of the total waste stream in a health care facility needs special handling; the rest is ordinary municipal waste. Sharps make up around 1% of a hospital's waste.<sup>14</sup> Nationwide, 3.2 million tons of medical waste are generated every year, representing about 2% of the entire U.S. waste stream.<sup>15</sup>

Sharps from households, such as needles from diabetics, pets, and livestock are accepted at all Lane County transfer stations. The sharps must be either in proper sharps containers or in rigid, red plastic jugs that are puncture proof, such as a liquid detergent bottle. The HIV Alliance, which collects 50,000 dirty needles every month and gives out clean ones, has an agreement with Peace Health to accept their needles for disposal.<sup>16</sup>

## **Prescription Drugs**

The disposal of prescription drugs poses some environmental problems. People often flush leftover, outdated drugs down the toilet or drain. This is not a sound practice since wastewater treatment plants and septic systems do not treat pharmaceuticals, so these wastes wind up in rivers or groundwater. The DEQ recommends disposing of pharmaceuticals in garbage that is intended for a permitted waste landfill or incinerator.

The drugs should be left in the original container, enclosed in a sealable plastic bag and then in a cardboard box, and placed in the trash.<sup>17</sup> Pharmaceutical compounds should break down over time in the landfill.

Healthcare facilities like hospitals have thousands of prescription drugs in stock. They contract with private removal companies to redistribute outdated medication back to the manufacturer or clearing houses. Pharmacies contract with these companies as well. White Bird Clinic in Eugene accepts unused drugs, that are verified and used in their patient programs.

## **Hazardous Wastes**

Many common household products contain hazardous ingredients that can be dangerous to children, pets, and others. These include oil-based paints, stains, thinners and strippers, fuels and other automotive fluids, corrosive cleaners, lawn and garden chemicals, pool chemicals, fluorescent lights, ballasts, and car care products. When they become wastes, these products can pollute ground water and streams if not properly handled.

Lane County collects these items by appointment only at the Household Hazardous Waste Collection Center at the Glenwood Transfer Station. A total of 100 tons per year of such waste is handled by the Glenwood facility. After collection, these materials are disposed of in various ways, but none are placed in the landfill at Short Mountain. Pesticides, herbicides, and household chemicals are sent to two contractors in the Pacific Northwest. Flammable liquids and solvents are used as a fuel source for industrial incineration, and pesticides are incinerated. Latex paints are sent to the Metro Regional Government facility in Portland, where they are recycled into a high grade paint that has a retail market. Rechargeable batteries are sent to a plant in Pennsylvania. (Alkaline batteries are no longer considered hazardous waste since mercury was banned from them in 1996.)

Lane County also has sponsored special hazardous waste collections to allow farmers to dispose of unwanted or obsolete chemicals that are now illegal to use. They also sponsor hazardous waste collections as part of community events such as the City-wide Cleanup Day in Cottage Grove scheduled for May 19, 2007.

## **Electronic Waste**

Electronic devices constitute the most rapidly growing percentage of the waste stream. The process of dismantling electronic materials has been targeted by the DEQ as a source of environmental degradation.

Televisions and computer monitors contain on average 5 to 10 pounds of lead and small amounts of barium. Circuit boards contain trace amounts of lead and cadmium. Mercury is found in switches and flat screens. Brominated flame retardants are sprayed onto the inside of circuit boards, cables, and plastic casing.<sup>18</sup>

Lane County has an Electronics Recycling Collection program available at the Glenwood Transfer Station by appointment. The materials collected are dismantled in this country in compliance with strict environmental regulations rather than being shipped overseas to create hazards for workers and the environment. Small fees are associated with some of the equipment collected.

NextStep Recycling also recycles electronics. It has a zero landfill policy. All obsolete/non-repairable machines and parts are recycled with regional recycling vendors who must meet their environmental stewardship requirements. Small fees are charged for monitors and televisions, and pick-ups are available. The company has recycled over one million pounds of electronic waste in just a few years. However, it believes there are still tens of thousands of outdated electronics stored away that the owners don't know how to dispose of.

The 2007 Oregon Legislature is considering HB 2626, which is aimed at problems created by the disposal of certain items such as televisions, personal computers, laptops, and electronic monitors. This bill proposes a statewide recycling system for toxic electronic wastes and a phased-in landfill ban on those wastes. As of early April, the bill had been approved by the Energy and Environment committee and sent to the Ways and Means committee.

The concept of product stewardship can be applied to the discussion of e-waste management. According to the DEQ, "Product stewardship is an approach in which all parties involved in the manufacturing and marketing of a product share responsibility for the environmental impacts of it from design to end-of-life management. The greater the ability of the party to influence the life cycle impacts, the greater the degree of responsibility. Product stewardship, both voluntary and regulatory, is a growing trend in many

industries and countries. A primary end of product stewardship is to internalize the costs of end-of-life management into the costs of producing and selling products so that government and the tax-paying public do not pay those costs.”<sup>19</sup>

## **Demolition Waste**

Construction, demolition, and remodeling debris have contributed significantly to the solid waste generated in Lane County. It is estimated that about one-third of the garbage discarded in landfills from Eugene sources is construction and demolition debris. Some construction debris is recyclable, but much of it winds up in the landfill, according to Scott Bales, co-owner of Royal Refuse, one of the local garbage haulers that supplies big trash bins used at construction sites. About 26% of the 1,000 tons a month that his workers sort is recycled.<sup>20</sup>

Eco-Sort also processes wastes from construction and demolition of buildings. It receives 32,000 tons of such material annually from commercial garbage haulers. The wood waste and sheet rock are taken to the Eugene facility of Lane Forest Products, where the wood is ground up and used for hog fuel and the sheet rock is ground up and used as a supplement for planting mix. Scrap metal and aluminum are transported to Metro Metals in Portland. The "shaker fines," which are the small particles that shake out of the mixed waste, are taken to the Delta Sand and Gravel landfill. Concrete is taken to the Short Mountain Landfill and recycled as road base.<sup>21</sup>

Asbestos disposal has its own specialized requirements. The Lane Regional Air Pollution Authority (LRAPA) regulates construction, demolition, and remodeling projects that involve asbestos-containing material as well as disposal of asbestos wastes. Many building materials manufactured before 1979 contain asbestos, including vinyl flooring, cement asbestos board used as siding and roofing, pipe and boiler insulation, ceiling texture coats, and about 3000 other construction materials. Because it is fire-retardant, asbestos was considered ideal for application as insulation. It was banned from use due to the many diseases associated with the material including lung cancer, asbestosis, and mesothelioma, a deadly cancer of the lining of the lungs.<sup>22</sup>

## **Styrofoam**

Solid waste experts estimate that styrofoam makes up only one quarter of one percent of the waste generated in Lane County. Yet, it still adds up to one million pounds a year of material that can't be commingled with other plastics to be recycled. For two years, the Lane County Waste Management Division sponsored a two-day styrofoam recycling event. In January 2007, the Division sponsored a two-week event at NextStep Recycling. At this time Next Step regularly accepts various types of foam for a small fee to cover transportation costs. It accepts the following if sorted by category: #6 polystyrene (brittle and snaps easily), #4 polyethylene foam (bendable, not brittle), #5 polypropylene foam (bendable, not brittle), #6 foam food trays (any color), and # 6 packaging peanuts (any color.) The material is sent to PC Plastics in Portland, where it is made into plastic pellets that are used in TV and computer shells, car parts, video cases, and other products. <sup>23</sup>

## **ENVIRONMENTAL ISSUES**

### **Landfill Leachate**

Leachate, which is the liquid produced when water passes through waste in a landfill, often poses environmental problems that must be addressed by the landfill operator. Lane County's landfill at Short Mountain near Goshen has handled the leachate in various ways since beginning operations in 1976. The first phase of excavation was lined with clay and used the philosophy of "natural attenuation," which relied on the soil filtering out the toxics from the landfill runoff spread over the property via an irrigation system. No research on ground water impacts was conducted.

In 1996 the Friends of Camas Swale sued Lane County on the basis that ground water and wetlands were being impacted by Short Mountain Landfill leachate.

As a result of the suit, Lane County Solid Waste adopted a remedial program of double lining the leachate lagoon, stopping irrigation, and monitoring ground water as part of a DEQ semi-annual program.

In order to dispose of the leachate that could no longer be irrigated on the land, Lane County proposed a pipeline from the landfill to the Eugene-Springfield metropolitan wastewater treatment plant . The plan met with public backlash because of the fear that access to the pipeline would encourage urban sprawl. A county citizen advisory committee then recommended that the leachate be treated at the landfill.

Lane County contracted with the Pall Corporation for a reverse osmosis on-site treatment plant located by the existing leachate lagoon. The plant was designed to concentrate the rain-diluted leachate and separate the 10% sludge from the water. The solidified sludge was to be returned to the landfill. Unfortunately, the evaporator for cooking off the liquid at the plant has never functioned properly, and the plant was shutdown by the county because of LRAPA concerns due to odor complaints from the neighbors. Lane County continues to work with Pall Corporation to find a technical solution.

Since 1998 leachate has been trucked from the landfill lagoon to the Glenwood Central Receiving Station and pumped into the sewer system to be treated at the metropolitan wastewater plant. The county pays the Metropolitan Wastewater Management Commission (MWMC) for treatment of the leachate.

However, there are some environmental concerns with this strategy. Heavy storms in our area increase sewer system flows and occasionally overwhelm the capacity of the treatment plant, causing untreated sewage to be released directly into the Willamette River. In 2005 the MWMC threatened to discontinue treatment of leachate during storm periods due to the capacity limitations. Adjustments in trucking volumes during storm periods have solved the problem. This leachate disposal method is currently viewed as the on-going solution for Lane County due to the superior cost efficiency of less than 3 cents/gallon for the volume of 15 million gallons/year. The landfill is the single largest contributor to ammonia levels in the treated water; however, leachate accounts for less than 0.08% of the flow to the treatment plant. A second leachate lagoon will be constructed in the summer of 2008. This will give the landfill more capacity and backup during heavy storms.

Many other Oregon counties also dispose of leachate from their landfills at treatment plants. Douglas County is an example of using this system in tandem with constructed wetlands. Benton County's Coffin Butte landfill has been discharging into the Corvallis and Albany treatment plants but does not currently have an agreement with either plant for receiving leachate on a consistent basis. Coffin Butte is currently dismantling its onsite treatment facility due to technical and financial difficulties with operating the facility.

The Riverbend Landfill in McMinnville is testing the use of leachate as a liquid nutrient for poplar tree groves. The trees are harvested for paper pulp.

Marion County incinerates its garbage, and the ash placed in the landfill produces a reduced amount of leachate that is particularly toxic. The leachate is trucked to a paper plant in Toledo and mixed in its lagoon for release into a river mixing zone flowing directly into the ocean via the Newport outfall.<sup>24</sup>

## **Methane**

Another by-product of landfill operation is methane, a major greenhouse gas. At Short Mountain it is monitored by Lane County, LRAPA and DEQ on the surfaces and side wells of the closed sections. The Emerald Peoples Utility District (EPUD) uses harnessed Short Mountain methane to make electricity sufficient for 1,200 homes. EPUD's plant, on-site at the landfill, was designed for future growth but has used only one half of its capacity to date and is not expected to reach full capacity in the foreseeable future. Paper recycling throughout the county, the City of Eugene green-waste diversion programs (leaf collection and separate garbage hauler containers for yard waste), and home composting efforts targeting both green waste and food waste have significantly reduced organic materials, the major contributors to methane, in the landfill.<sup>25</sup>

## **Reductions in Energy Use and Greenhouse Gases**

According to the DEQ, the energy and greenhouse gas savings attributable to the state's successful recovery programs are significant. The agency estimates that recycling by Oregon businesses and households in 2005 led to energy savings of 30 trillion BTUs which equates to roughly 2.6 % of total energy use in the state. Net greenhouse gas reductions associated with materials generated in Oregon that are recycled, composted, or burned for energy in 2005 are estimated at 3.3 million metric tons of carbon dioxide equivalent. This amounts to 4.6% of the state's greenhouse gas emissions from all sources.<sup>26</sup>

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## **DISCUSSION QUESTIONS**

1. BRING has shifted its emphasis from recycling to waste reduction and education. Do you agree that this change is appropriate? Why or why not?
2. It is estimated that 120,000,000 plastic water bottles were disposed of in Oregon in 2005. What are viable strategies to reduce this waste and increase recycling?
3. Should the product stewardship approach be used to pay for the disposal of electronic waste? What should be the manufacturer's responsibility in the disposal of E-waste? What about the retailer? What about the consumer?
4. What can individuals do to reduce the waste they generate?
5. What can governments and businesses do to reduce the waste they generate?
6. Are there any changes that should be made to the LWVLC Solid Waste position? Are there any issues that should be covered by the position?
7. Are there actions or educational programs the LWVLC should undertake to reduce waste or increase recycling?

**Study Committee Members:** Flo Alvergue, Nancie Fadeley, Doreen Jones, Sylvia Shaw, Dorothy Soper, Veronika Walton, Pat Hocken, chair.

## NOTES

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7. Interview and correspondence with Lori Rossow.
8. Interview and material from John Lucini.
9. Steves, David, "Legislators Scale Back Plans for Bottle Bill," *The Register Guard*, April 4, 2006.

10. [www.epa.gov.epaoswer](http://www.epa.gov.epaoswer)
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## APPENDIX 1

### **SOLID WASTE POSITION** adopted 1972, amended 1989

The League of Women Voters of Lane County supports solid waste management policies that promote source reduction, resource recovery, and recycling. These policies should

1. Preserve air and water quality.
2. Be compatible with sound land use.
3. Be long range and flexible enough to accommodate new technologies and regional differences.
4. Provide a uniform, equitable collection system in order to make it easier for the public to participate.

Waste Reduction In order to decrease the quantity of waste material in need of handling and to use the least disposal capacity,

1. Overpackaging and planned obsolescence should be avoided;
2. Containers (packaging) should be reusable, recyclable, or biodegradable; and
3. The price of a product should more closely reflect the true cost to the public for disposal; for example, by taxing items which contribute significantly to disposal problems.

Public education: Public education concerning solid waste problems should include:

1. The contribution of various segments of society (individual, agricultural, industrial, municipal) to the solid waste stream.
2. The alternatives to disposal of solid wastes in landfills and incinerators.
3. The immediate and long-term economic and environmental benefits of source reduction, resource recovery and recycling.