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Taking the Next Step

Tualatin Valley Water District's
Journey toward Sustainability



Printed on 100 % post-consumer waste recycled paper.

Taking the Next Step –

Tualatin Valley Water District's Journey toward Sustainability

This is a handbook to accompany the video/DVD *'Taking the Next Step.'*

'Taking the Next Step' introduced you to the Tualatin Valley Water District (TVWD) and some of the actions TVWD and others have implemented to ensure their organizations are able to continue successfully well into the future in a cost-effective way that produces positive benefits for society and minimal negative effect on the environment. This business principle, which has been adopted by TVWD, is also called the Triple Bottom Line: measuring performance along three lines: economic success, environmental sustainability, and social responsibility.

This handbook will provide more detailed information that may be helpful to you in your own journey toward a more sustainable life at your business or agency, as well as at home. It simply outlines what one organization and its employees have done to work toward living more sustainably. Of course, there are many paths. And there are actions you can take that are even better than those listed. While this does not deal with every action you may wish to take, it will likely provide a 'jumping off place' for you to work from. Most of the actions we have already undertaken. Some are in process, and some are still in the idea stage. We include them all, as each organization will have a different set of measures that make sense for them. We hope our efforts will provide you with ideas for your own next steps. Welcome to the journey!

Composting:

EPA's Composting Website:

www.epa.gov/epaoswer/non-hw/composting/index.htm

Cornell Composting:

http://compost.css.cornell.edu/Composting_Homepage.html

Composting for Kids:

<http://sustainable.tamu.edu/slidesets/kidscompost/cover.html>

Master Gardener Program

<http://extension.oregonstate.edu/mg/program/index.php>

Energy Efficient Appliances:

Energy Star: <http://www.energystar.gov/>

Water Efficient Appliances, Contractors, etc.:

Water Sense: www.epa.gov/watersense

Recycling:

Far West Fibers 503-643-9944 www.farwestfibers.com

East County Recycling Center 503-253-0867

Electronics Recycling:

Earth Protection Services, Inc. 503-620-2466

www.earthpro.com

Ink Cartridge Recycling:

TonerInx 503-669-3439 www.tonerinx.com

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**Many thanks to the crew from the Television Production Program at Mt. Hood Community College. The TV program is part of the Integrated Media Department.**

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Bureau of Environmental Services

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[www.ci.gresham.or.us](http://www.ci.gresham.or.us)

METRO Recycling Hotline: 503-234-3000

[www.metro-region.org](http://www.metro-region.org)

Master Recycler Program: 503-823-7530

<http://www.masterrecycler.org/>

Environmental Protection Agency: [www.epa.gov](http://www.epa.gov)

PGE Renewable Power Options for Your Home:

[www.portlandgeneral.com/home/products/renewable\\_power/default.asp?bhcp=1](http://www.portlandgeneral.com/home/products/renewable_power/default.asp?bhcp=1)

PGE Clean Wind:

[www.portlandgeneral.com/home/products/power\\_options/fix.asp?bhcp=1](http://www.portlandgeneral.com/home/products/power_options/fix.asp?bhcp=1)

PPL Clean Energy:

[www.pplweb.com/community+partners/energy+for+the+future/clean+energy.htm](http://www.pplweb.com/community+partners/energy+for+the+future/clean+energy.htm)

Rainstore stormwater storage and porous pavements:

800-233-1510 [www.invisiblestructures.com](http://www.invisiblestructures.com)

Tri-Met: 503-238-RIDE [www.trimet.org/](http://www.trimet.org/)

Westside Transportation Alliance:

503-617-4844 [www.wta-tma.org/](http://www.wta-tma.org/)

NW Energy Efficiency Alliance: [www.nwalliance.org/](http://www.nwalliance.org/)

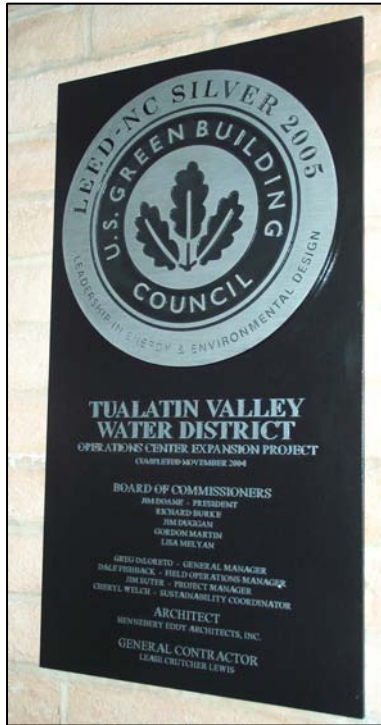
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## **Section 1. Building** **A. General Systems**

### *Leadership in Energy and Environmental Design (LEED)*

**LEED certification** is one way to ensure that new construction or building remodeling results in a built environment that is energy efficient, not environmentally damaging, and is of positive value to those using the building. The Tualatin Valley Water District headquarters building is LEED certified at the Silver level. Items found at the TVWD headquarters building addressed by LEED criteria include:



### *Heating, Ventilation and Air Conditioning (HVAC) Systems*

The facility provides for **thermal comfort** including temperature, humidity and air movement ranges. **Indoor air quality** is enhanced by carbon dioxide, carbon monoxide and nitrogen dioxide sensors in office and fleet areas. Additional ventilation is brought in as needed.

Building occupancy times are precisely programmed into HVAC equipment with a digital control system, which **conserves energy** by shutting down heating and cooling equipment evenings, weekends and holidays.

**Regular maintenance** practices are performed to be certain that equipment is performing as designed and filters are changed on schedule.

Outreach methods include:

- Water efficient Demonstration Garden
- Water efficient Demonstration Restroom (for public use)
- Water Conservation info kits & give aways
- Educational displays
- Website
- Brochures
- Water efficiency audits
- Educational signage both indoor and outdoor

## **Section 9. Additional Resources**

*(Information current as of July 2006)*

Tualatin Valley Water District:

[www.tvwd.org](http://www.tvwd.org)

*Cheryl Welch*, Sustainability Coordinator

503-848-3012 [cheryl@tvwd.org](mailto:cheryl@tvwd.org)

Conservation Department 503-848-3056

Regional Water Providers Consortium

Conservation Committee

[www.conserveh2o.org](http://www.conserveh2o.org)

Lease Crutcher Lewis Contractors: 503-223-0500

The contractors for our LEED certified Headquarters Expansion

*Jeff Oeding* [www.lewisbuilds.net](http://www.lewisbuilds.net)

Hennebery Eddy Architects: 503-227-4860

The architects for our Headquarters Expansion – visit their website for more pictures of our project

*David Byrne* [dbyrne@henneberyeddy.com](mailto:dbyrne@henneberyeddy.com)

[www.henneberyeddy.com](http://www.henneberyeddy.com)

## **Section 8. Education & Training**

Training and Education for TVWD staff and the community are key to TVWD's mission. We deliver quality customer service by looking at proactive ideas to increase efficiency, save money and promote social responsibility among our employees, customers, vendors and neighbors.

### **A. Staff**

Employees are encouraged to not only stay up-to-date in their fields, but to expand their skills through cross training and other means of education. Various options include:

- Teleconferences
- Seminars
- Website
- Intranet (District in-house internet training)
- Library of educational resource material
- All employee meeting presentation including outside speakers

### **B. Community**

TVWD actively participates in community and trade events such as:

- Fairs
- District Open House
- School presentations/assemblies
- Home improvement Shows
- Landscape Shows
- Trade Association Conferences/Meetings
- Vendor Fairs

### **Natural Lighting/Motion Sensors**

The facility uses **energy saving ballasts and lamps**. **Occupancy sensors** and a **lighting control panel** help conserve energy by shutting off lighting during periods of non-use and by reducing the amount of exterior lighting needed during evening hours and weekends. Employees are asked to shut off lighting in rooms or areas not controlled by sensors when they leave and **visual prompts** are posted by doors to remind employees of this.



### **Janitorial Products**

**Cleaning supplies** at TVWD must carry the Sustainable Earth, Green Seal or EPA Design for the Environment labels. We have reduced our cleaning supplies to primarily



four formulations provided by Coastwide Laboratories. These solutions come in bulk containers and are dispensed from a cabinet. The cleaning staff adds water

to achieve the proper dilution and is able to clean everything from glass to floors. All these products are Green Seal certified. We are currently developing a District-wide inventory of all chemicals in use at the District, including cleaning supplies, and are formulating a process to track any new chemicals that are purchased to ensure we know what

is being used and stored at all our facilities. From a safety, as well as environmental, angle this is important to us.

### *Floor Coverings, Furniture, Cabinets, Paints*

Indoor air quality contaminants are reduced by using materials **low in volatile organic compounds (VOCs)** for paints, adhesives, sealants, etc. Composite woods are used that are urea-formaldehyde free.

### *Garbage/Recycling*

**Marked containers** are provided for garbage, recycling, batteries, glass, compostables and other items throughout the facility. See Appendix A for a list of items recycled at the District. An **Employee Recycling Center** is provided to allow staff to bring in items they are unable to recycle at home. Contracted custodial staff is educated regarding placement of collected materials in appropriate waste hauler's containers. Authorized foods and materials for composting are placed in marked containers set in lunch and break rooms.



and the District is taking full advantage of our access to **employee input and suggestions**, soliciting information regarding working relationships and efficiencies as well as resource data. The information collected in these meetings is currently being synthesized into a strategic plan to be reviewed by the TVWD Sustainability Steering Committee and approved by the District's 5-member elected Board.

### *Employee Recycling Center*

A brainstorm of our Human Resources Manager, TVWD employees are now able to bring in items for recycling that they are unable to recycle at home. As public servants, District employees may not receive any benefits that are not also available to the public. Therefore, TVWD could not allow employees to bring in recyclables without taking them from the public also, which our facilities are not equipped for.

By creating an **Employee Recycling Benefit** as part of the staff benefit package, workers may now bring in everything from batteries to electronics to tennis shoes and the items are sent out for reuse when possible, or at least recycling. An **Employee Recycling Center** was established to provide a convenient outside drop off location for employees as they arrived for work. The TVWD Board was fully supportive of this plan, approving it unanimously in September of 2005. To date, the District has sent over 30 electronic items to Earth Protection Services, Inc. (EPSI), covering EPSI recycling fees for employees, and has collected items from motor oil to pallets to Styrofoam to lawnmowers. All items recycled are sent to reputable collectors who keep as much material as possible within United States boundaries.

environment and benefiting society by their actions. The group brings information and speakers to TVWD employees and proposes and encourages policies and practices that minimize or eliminate TVWD's damage to the environment.

### *Employee Participation*

The **Sustainability Steering Committee** concentrates on issues of policy and changes in procedures. Because the committee is comprised of all District Managers, as well as ten additional staff from all areas of the District, significant changes may be achieved with minimal bureaucracy. Though education is continual, 2005 brought two especially valuable opportunities to TVWD staff:

Five District staff went through a series of Natural Step workshops in 2004 to learn how to implement **Process Mapping and Backcasting** at the District. In January of 2005, the workshop participants began to put these processes into action. All employees attended a half day session to gain a background in sustainability and The Natural Step. The staff was then divided into 19 work groups based upon their daily tasks, and workshop participants met with each group to identify what the group does, what resources it consumes, and what waste it produces.

A second set of meetings by work group revealed the frequency of usage, cost and degree of influence the District has over the purchase of these items, and areas staff thought could be investigated for improved sustainability. Though time-consuming, these meetings have already yielded employees suggestions for ways to reduce the use of resources, increase operational efficiency, and reduce costs. Many of those ideas have already been implemented, though the actual process is not over. It is rare to have the opportunity to meet with every employee in an organization,

### *Rainwater Collection System*

**Rainwater is captured** from 6,500 sq. ft. of our roof surface, filtered for debris and stored in a 40,000-gallon



membrane storage tank located beneath one of our employee parking lots. The rainwater is then pumped through filters and an ultraviolet sterilization system to an isolated piping

system that supplies water for flushing toilets and urinals. This **reduces the amount of potable water required** for flushing by 60% or more. This water is also available for irrigation, if needed. This system was expensive, but was an investment we wanted to make to test this water-saving opportunity.

### *Smoking Restrictions*

Our building is **100% smoke free**. Designated outdoor smoking areas are provided in areas that ensure that nonsmokers are not subject to secondhand smoke.

More LEED information: <http://www.usgbc.org/>

## **B. Office Spaces**

### *Ergonomics/Safety*

Employee **workstations are evaluated** by an outside professional as needed to provide a safe, healthy working environment. Accessories such as foot rests, tilted keyboards, phone headsets and desk elevators are provided to employees where indicated. Office equipment is placed at proper height and with appropriate safety features to meet or exceed OSHA standards and protect employees from unnecessary risk.

### *Equipment*

All electronic equipment purchased is now **Energy Star rated**. Copiers in common areas are capable of **duplex (double-sided) copying** and employees are encouraged to set their computer defaults for those machines with duplexing capability.

### *Supplies*

Office supplies made from materials such as cardboard, metal or glass that can be easily recycled are preferred to plastic. When no items with **easily recyclable materials** are available, those containing high recycled content are purchased. Only when no items meeting the above criteria are available are virgin plastic items purchased.

**Reusable items** such as plates, cups, glasses, flatware, and refillable writing utensils are preferred to disposables. Items no longer needed by one employee are returned to the supply room for use by another. From file folders to staplers, items are reused before new ones are purchased. One employee even noticed an abundance of used legal size file folders and began cutting them down to letter size because there were no used letter size folders in the supply room.

### *Customer Assistance*

Of course, we exist to be involved with our customers. For four years, TVWD has donated money to Care to Share, a Washington County non-profit, to screen and provide District customers with **water bill financial relief** when emergencies arise. The **District Conservation Program**, established almost 15 years ago, is dedicated to **reducing customer water usage** through **rebates** on water efficient fixtures and appliances, **give away items** such as low-flow faucet aerators, shower timers and leak kits, and free advice in the form of **educational publications, audits and workshops**.

## **B. Employee Relations**

### *Employee Behavior*

Even the most sustainable building is useless unless its occupants behave in sustainable ways. To mobilize and involve employees in sustainability efforts at all levels of the organization, the Tualatin Valley Water District has established two different groups: the Sustainability Steering Committee and the Green Team. With the District's Sustainability Coordinator, these two groups work in tandem to drive progress toward sustainability at the District.



The **Green Team** is a grassroots employee effort that brings staff together to educate District employees about cost-effectively protecting the

## Section 7. Social Interactions

### **A. Community**

#### *Community Participation*

The District has a long history of participating in its community. Three acres of land adjoining District headquarters **property was loaned** to Tualatin Hills Parks and Recreation District (THPRD) for use as sports fields until TVWD has need of it. TVWD **shares its fuel tank** with THPRD fleet vehicles, eliminating the need for them to install a separate tank, and keeping costs down for both organizations. And THPRD chips up some of TVWD's tree debris for use on trails – a beneficial partnership for both groups.

A team of employees periodically **picks up litter** along streets in the neighborhood. TVWD's **Speakers' Bureau** is available to make presentations regarding sustainability, water resources, careers in the water industry, and much more. Presentations may be geared toward children or adults. Conservation Program members are very active with the Regional Water Providers' Consortium, and can always be found at **local and regional events**, touting the benefits of sustainability and of water conservation, in particular!



#### *Paper Use*

Copy paper, letterhead and stock for our bills are all made from **100%**

**postconsumer waste (PCW)** recycled paper. *[PCW is paper that has been*

*used for its initial purpose, sent through the recycling system, and remanufactured into a new product. It does not include trimmings, etc. that never make it out of a mill.]*

Printed-one-side paper is reused for **drafts**. Paper that has come through the color copier that uses wax-based ink cannot be rerun for drafts as the color runs when put through the heat of another printer run. As mentioned before, duplex copying is encouraged as the norm. That paper is collected in marked boxes in copy rooms and a vendor pads it and returns it to us for use as **scratch pads**. Recycling bins are at each desk, in common areas and by copiers and printers to encourage recycling of paper as well as other items.



#### *Technology*

Technology has made paper use far less necessary at the District. **Electronic communication** is encouraged and requested by most employees when documents need to be transmitted. Almost all computer-generated reports are **automatically electronically archived** instead of printing out large quantities of green bar reports, as had previously been the norm. Archiving is possible from our main copiers so items not previously in electronic form may be saved electronically.

The District has instituted **online billing and payment options**, which continue to reduce the amount of paper needed for financial transactions. Additionally, most employees choose **direct deposit for their payroll checks** and many **vendors accept electronic payments** from our Accounts Payable Department.

### **C. Kitchen/break rooms**

Our kitchen and break rooms utilize low-flow **faucet aerators** to minimize water usage, Energy Star appliances to save energy and water, **cloth dish towels, recycled content paper towels and sensor lights**. In addition, we run the dishwasher only when full, washing our reusable plates, cups, glasses, bowls and flatware for future use. These rooms also house **Recycling and Composting Containers** for ease of use by our employees.

### **D. Restrooms**

Our restrooms also make use of low-flow faucet aerators, as well as low flow showerheads, high recycled content toilet



paper and paper towels, and sensor lights (or signs reminding staff to turn off lights). The public bathroom off our lobby sports a dual flush toilet, enabling customers to use as little as 0.8 gallons per flush, as well as numerous

educational signs. To reduce resources used, we have also gone to plug-in air fresheners, which last several weeks, instead of aerosol sprays.

## **Section 6. Events**

### *Meetings*

Double-sided copying is **requested of speakers** at District presentations. Presenters are also asked to keep number of handouts to a minimum and provide an electronic copy for employees to access if desired.

Board agenda packets are **available electronically** to commissioners in order to reduce paper usage.

### *Food*

Food brought in for meetings is served family-style instead of in individual plastic 'clam shell' containers. Participants make their sandwich or take their food from a common reusable tray. One of our staff has even gotten Safeway to put condiments in hollowed out green peppers instead of the usual disposable plastic bowls. These vegetable 'bowls' can then be rinsed out and composted in our onsite **composting bins** if not eaten!



Food is purchased in bulk when possible, and if individual containers are needed, containers that we can recycle onsite are preferred.

### *Emergency Preparedness*

Weather alerts and other important communication documents are **sent electronically** to all employees with computer access.

Security system – door locks, etc. – is electronic, reducing labor needed to set for varying situations and ensuring employee safety.

## Energy Usage

The District uses approximately 4 million kWh of energy annually, which has held steady over the last two years, even though our customer base and our Headquarters building have expanded. This is due in large part to our energy conservation efforts. Our LEED certified Headquarters building incorporated many **energy efficient technologies** in the areas of lighting and HVAC, decreasing by 26% our kWh usage per square foot.



Our pump stations, which bring water to customers at higher elevations, continue to be retrofitted with **Variable Frequency Drives** (pictured above) that are more efficient and use less electricity than conventional drives. And since we do still use a lot of electricity, we purchase **Green Tags** from *Bonneville Environmental Foundation* and *3 Phases* to partially offset the negative effects of electricity production. Green Tags are the environmental attributes of a renewable energy system, including the ability to offset greenhouse gas production. They support the installation of more renewable energy, usually wind power in our geographic region.



The District began offsetting 25% of total usage (~1 million kWh) in 2004, and increased that to 75% (almost 3 million kWh) in February, 2006.

## Section 2. Grounds



### Xeriscape

Our garden and grounds incorporate the following xeriscape practices:

- Planning and Design
- Appropriate Plant Selection
- Practical Turf Areas
- Efficient Irrigation
- Use of Mulches
- Appropriate Maintenance

These measures **minimize the amount of water, energy and labor needed** to keep the grounds looking well kept and professional. Our garden is also a demonstration to neighbors and other interested citizens of measures they can take at their own homes to use resources efficiently.

### Fertilizer/Pesticides

By utilizing plant material suitable for our local environment and employing weather-based irrigation technology **minimal fertilizing is required**. The District

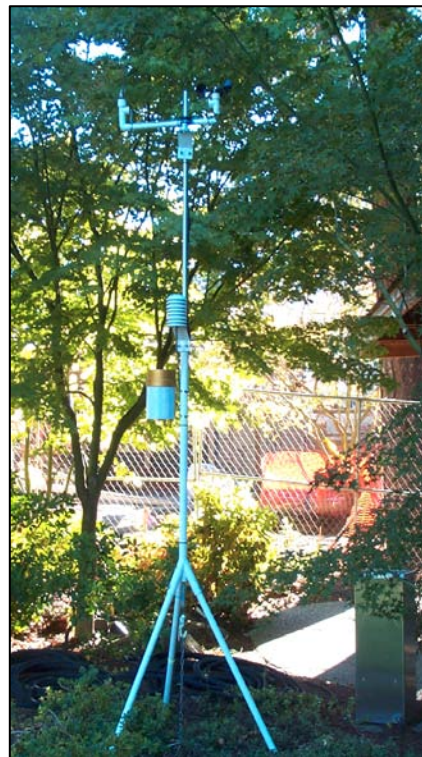
does not use Restricted Use Pesticides but instead uses only low toxicity General Use Pesticides when required.

### Surface Water Runoff

In addition to roof rainwater collection for toilet flushing, **stormwater is detained longer on-site** by using an oversized detention pipe and permeable collection areas. Parking lot Water Quality Catch Basins are also equipped with storm filters.

### Irrigation

Irrigation run-times and frequencies are determined by an **on-site weather station**. The station collects data such as temperature, wind, and moisture and signals watering to only replenish the amount the plant material needs for healthy growth.



### Plant materials

Plants and grasses are selected for their **drought resistance, compatibility with our local climate and color** throughout the growing season.

was required to ensure the paper would meet the exacting standards required. Annually, the District saves more than 150 trees, 64,000 gallons of water, 7,000 pounds of solid waste, 100 million BTUs of energy and 14,000 pounds of greenhouse gases by using this paper. The District also uses 100% PCW paper for its copying, letterhead, and as many other printing needs as possible.

### Online Billing and Payment System

In 2005, TVWD Information Technology staff created an **online billing and payment system** to reduce resources used and, for some, customer travel time. In the Nov/Dec 2005 billing period, TVWD issued over 70,000 bills, 34% of which were paid by electronic means. An increasing number of customers are choosing to be billed electronically, as well, further reducing the paper needed to send out bills.

## Section 5. Purchasing

### *Purchasing Preferences*

Whenever possible, office products, kitchen supplies and other items contain a **high percentage of recycled material**. Food brought in for meetings or events is served **family-style** instead of in individual plastic 'clam shell' containers. See Section 6 (Events) for more information.

**Reusable items** such as silverware, cups, glasses, plates, kitchen towels, and refillable writing instruments are commonly purchased instead of disposables.

Our latest vehicle purchase was a **Ford Escape Hybrid** for our Conservation Technician to drive when he conducts **onsite water audits** to help commercial customers reduce their water usage. **Biodiesel and Ultra Low Sulfur Diesel** are being studied by our Field Operations Department.

### *Bidder Integrity Policy*

TVWD's Board of Commissioners initiated a **Bidder Integrity Policy**, which requires suppliers of pipe, hydrants and fixtures (our major purchases) to be free of current OSHA and EPA claims in order to sell to TVWD. This shows vendors that TVWD is paying attention to the way they operate their organizations, and that price is not the only consideration. **Preference is always given to Oregon suppliers** and other **sustainability criteria are included in Requests for Proposals** as appropriate for the product or service required.

### *100% Postconsumer Waste Recycled Paper*

Though many printers said it couldn't be done, Tualatin Valley Water District has successfully used **100% postconsumer waste (PCW) recycled paper for its bill stock** since 2005. These bills go through precise machinery at several stages in their processing, and thorough testing

## Section 3. Field Operations

### *Meter/Hydrant repair materials*

All **usable parts are extracted** from old hydrants and meters and used for repair of others. Unusable metal (cast iron, brass, steel) is put in a **scrap metal bin**, so very little ends up as trash.

### *Hydrant Flushing*

The District maintains a **hydrant flushing program** to clean the mainlines of sediment and ensure all valves are working and in the proper position. This also keeps the water clean and extends the life of the pipe. **Ascorbic Acid (Vitamin C)** is added to all water going into storm drains to



neutralize chlorine used in the flushing process.

**Diffusers** are used to disperse water flushed from hydrants to prevent erosion to surrounding landscape. **Food grade lubricants and cleansers** are used to prevent water contamination.

### *Scrap Metal*

All unusable metal is returned to the District bin for sale as scrap.

### *Construction*

**Bark bags** are used for soil retention to decrease erosion and near storm drains to reduce silt. **Silt fences** are installed around debris piles and spoils are moved to less vulnerable areas as appropriate. Concrete and asphalt

pieces that are cut out of streets for leaks and repairs are separated and recycled.

### Field Technology

The majority of all District field information, including mapping, repair and maintenance logs is entered on **laptops** and uploaded into the District's main computer system, reducing the need for additional paper and labor.

### Sandbags

**Unwanted bicycle tire tubes** are collected from a local bicycle repair shop and filled with sand. These sandbags divert water when flushing out hydrants.



### Shop Heater

**Used motor oil** is burned in the fleet area's shop heater.

## Section 4. Transportation

### Trip Planning

**Routes are plotted in advance** to reduce unnecessary mileage on fleet vehicles.

### Commuting

**Carpooling** is encouraged, and there are several designated parking places close to the building entrances to promote carpools. Walking and riding bikes is also encouraged from both sustainability and wellness perspectives. *IDEAS: Post sign up sheet online and in lunchrooms for employees to find commuting partners. Plan incentive program for riding bike to work. Explore feasibility of using company van as commuter van from outlying areas.*

### Alternative Vehicles and Fuels

Preference is given to purchasing **hybrid** vehicles when available in the type of vehicle needed.

Preference is given to purchasing crew cab vehicles to

accommodate four people vs. sending two pickups to a job site. **Rerefined oil** is used in all fleet vehicles. *IDEA: Continue to explore biodiesel and Ultra Low Sulfur Diesel.*



### Vehicle Idling

Education is being undertaken to promote **reduced vehicle idling** in our District yard. Some vehicles at job sites have had to be left on in order for emergency flashers to work. New **Optima batteries** are being installed in vehicles that allow flashers/safety lights to work while vehicle is turned off without compromising the vehicle's ability to start up again. *IDEA: Employees are free to shut off vehicles that have been idling for more than 5 minutes.*

### Teleconferencing

When appropriate, teleconferences are encouraged instead of meetings involving travel.

### Alternative Work Schedule

All employees follow a "9/80" work schedule, working 9 hours per day and getting every other Friday off. Fridays worked are at 8 hours, making a total of 80 hours per biweekly pay period. Business hours are 7 a.m. – 4:30 p.m., putting our 100+ employees on the road slightly earlier than many commuters and reducing prime time traffic congestion.