



**METRO**

2000 S.W. First Avenue  
Portland, OR 97201-5398  
503/221-1646

# Memorandum

Date: December 28, 1992  
To: Casey Short, Council Analyst  
From: Neil Salinger, Director of Regional Facilities  
Subject: Proposed Drip Irrigation System

The above subject will be aired at the next Regional Facilities Committee meeting. The question is whether Metro should install a drip irrigation system at the new Metro Regional Center as a demonstration project.

The proposal by Bill Metzler was originally rejected by the Project Manager on the following bases:

- No significant dollar savings in cost of water saved (about \$10.00/year)
- Higher initial installation cost (about \$3200 to \$4300)
- More intensive maintenance requirements
- Loss of warranty on plantings

The Solid Waste staff (Gorham and Goddard) appealed to me to intercede. I asked Vicki Rocker to evaluate the value to Metro of such a demonstration project in terms of its public relations value. She found the project to be of little public relations value and could only endorse it if the "system (could) be installed and maintained without significant additional cost to Metro."

The project contingency can probably afford the added initial cost. However, I am concerned about the continued maintenance cost and the potential for loss of the warranty on the plantings. I believe the policy issue involved is the role Metro should play in undertaking demonstration projects which are not directly related to our mission.

I have attached the various pieces of correspondence which I have received on this suggested demonstration project.

cc: Susan McLain  
Debbie Gorham  
Berit Stevenson

enclosures




**METRO**

2000 S.W. First Avenue  
Portland, OR 97201-5398  
503 221-1646

# Memorandum

Date: December 15, 1992

To: Neil Saling, Director of Regional Facilities

From:  Bob Martin, Solid Waste Director


Re: Proposed Drip Irrigation Demonstration Project for New  
Metro Regional Center

I strongly support the proposed drip irrigation demonstration project. It emphasizes Metro's commitment to efficient resource use. Metro must assume a leadership position by taking the risks required to demonstrate and establish new resource efficient technologies like drip irrigation.

Water savings alone (400 gallons/week during irrigation season) can justify the project. We should show leadership in responding to the need for water conservation that was seen again this summer. Installation and maintenance costs may exceed those of a conventional sprinkler system (though not by a significant amount). The additional cost will be more than justified when the concept of urban drip irrigation becomes accepted and proliferates within the region.

I strongly encourage consideration of the larger implications to the Metro region of drip irrigation in the headquarters project. Resource conservation is generally worth the risks associated with being the first to apply new technologies. Next summer, on a hot day when the conventional water sprinklers are spraying water into the air, and watering concrete along with plants, we won't want to explain why the cost of an intelligent system was too high a price for the public to pay.

attachment: Memo referencing project dated December 9th

cc:   
Debbie Gorham, Waste Reduction Manager  
Bill Metzler, Associate Solid Waste Planner  
Jim Goddard, Senior Solid Waste Planner  
Rosemary Furfey, Senior Solid Waste Planner  
Pat Merkle, Project Coordinator

s:\share\wr\sali1214.mmo

# METRO

Planning Department  
2000 S.W. First Avenue  
Portland, OR 97201-5398  
(503) 221-1646

# Greenspaces

DEC 16 RECD

cc Sugihara  
Vicki Becker  
Neil Salting

DATE: 14 December 1992  
TO: Pat *Andy*  
FROM: Ellen  
SUB: living our values

I agree!  
Also, John Fresonese says  
from his experience in  
Ashland that it is more  
expensive than normal. He has  
more info. *Buddy*

I know that the decision on the proposed drip irrigation system at the new building is not my "bailiwick" but since hypocrisy goes against my professional and personal values, I would like to encourage additional effort towards Metro taking on the challenge of living its own values.

What kind of credibility do we have as an agency or as professionals in leading our community in making a better world if convenience of maintenance (as viewed from the short-term, self-serving view only?) and low cost are the two items that weigh out strongest in the balance on our decisions? Do we not have a role to play as a demonstrator or modeler of commitments to make that may reflect perhaps difficult short-term decisions or investments? Is not public education a part of our charge? When would a demonstration project, as recommended, be able to stand up to the challenge that it be "installed and maintained without significant additional cost to Metro"? Is that the role of a demonstration project? What message does that give our professional staff and the community?

I believe we could get, with some good professional public affairs work done, better press play on how Metro's move to the Sears building enabled us to not only use recycled paint and construction materials but to also demonstrate long-term water conservation and landscaping choices that are good for the community, as a whole, and good examples for others to come look at and copy, as may be appropriate. If there ever was an image that Metro needed more, it is that we are working as a part of the community to lead the way, to practice what we preach, and that we may make some sacrifices to do so. Isn't that what we're asking the community to do, potentially; when we ask for them to believe in our planning premises and in implementing the programs that carry out these plans?

It seems like it's time to expand our vision to go beyond simply demonstrating leadership in resource conservation in the solid waste arena. As an agency, we could stand for a lot more than that.



**METRO**

2000 SW First Ave.  
Portland, OR 97201-5398  
(503) 221-1646

*Memorandum*

**RECEIVED**  
DEC 10 1992

Date: December 9, 1992  
To: Neil Saling, Regional Facilities  
From: Vickie Rocker, Public Affairs  
Re: Drip irrigation proposal for Metro Regional Center

As you requested, this memo addresses my opinion on the public relations impacts related to the drip irrigation demonstration project recommended by the Resourceful Renovation committee.

I appreciate the time and enthusiasm members of the committee have invested in pursuing drip irrigation at the Metro Regional Center, and was especially impressed with the information supplied in Bill Metzler's memo. However, given minimal projected water savings, the benefits of incorporating the system may not outweigh Flor's maintenance concerns and the potential added costs of installation and plant replacement.

As a visible public agency, Metro should demonstrate leadership in resource conservation, especially in the solid waste arena. But we must also spend public funds responsibly. Consequently, I cannot endorse the irrigation proposal unless your staff is confident that the proposed system can be installed and maintained without significant additional cost to Metro.

cc: Bill Metzler  
Debbie Gorham ✓  
Jim Goddard



**METRO**

2000 S.W. First Avenue  
Portland, OR 97201-5398  
503/221-1646

# Memorandum

**Date:** November 30, 1992  
**To:** Vickie Rucker, Public Affairs Director  
**From:** Bill Metzler, Associate Solid Waste Planner *um*  
**Through:** Debbie Gorham, Waste Reduction Manager *Debbie*  
**Subject:** Proposed Drip Irrigation Demonstration Project for the New Metro Regional Center

The purpose of this memo is to request your guidance and opinion regarding the public relations value of a water conservation drip irrigation demonstration / education project for the new Metro Regional Center. This project represents Metro's opportunity to exemplify its leadership in efficient use of natural resources, that is consistent with the philosophy of the Resourceful Renovation project.

The Resourceful Renovation committee (Waste Reduction Coordination for HQ Renovation) has recommended to proceed with the installation of the proposed demonstration project. Installation is proposed for the southern plaza planting area (excluding grass areas). The system would incorporate proven state-of-the-art drip irrigation technology. This recommendation is, however, contingent upon the public relations value of the demonstration / education project as compared with the additional maintenance costs.

The committee has been involved in waste reduction, recycling and resourceful renovation projects for the new Metro Regional Center. The committee suggests practical applications and provides funding from the Solid Waste Department budget for projects that implement this resourceful renovation concept. Funds to help mitigate the added installation cost of this project are available. This project will complement the other resourceful renovation projects now being implemented, including the Xeriscape techniques used in the landscape design.

As is true with most demonstration projects, much of their value is in the public relations and community education benefits. This project is exceptionally timely and beneficial in light of the water shortages that were experienced in Portland this past summer. The severity of the recent drought has generated intense public concern and media coverage. The proposed drip irrigation demonstration / education project will provide an excellent opportunity to illustrate Metro's leadership role in resource conservation using innovative and efficient technologies. The public image of the new building might be further enhanced if drip irrigation is used, and information about it is shared with the public.

There are several disadvantages to the proposed irrigation system. Extra costs are associated with maintenance that would be borne by Metro. In return for these expenditures, Metro would be in a unique position to provide the region with an urban demonstration of the water saving technology possible through drip irrigation.

The following is a summary of identified advantages and disadvantages of installing a drip irrigation system.

## **PERCEIVED ADVANTAGES OF DRIP IRRIGATION**

**Adequacy and reliability of the product and design** have been verified through contacts with independent registered landscape architects, landscape designers, construction contractors, and landscape maintenance personnel. The drip irrigation system proposed project utilizes high quality state-of-the-art irrigation equipment with product manufacturer warranties. These products are distributed locally by both H.D. Fowler and the Toro Corporation, that is one of the largest, well known and trusted irrigation manufacturing and distributing companies in the United States.

**Water savings.** An increasingly important advantage of drip irrigation. Properly managed drip irrigation systems can result in a savings of 30 percent to 50 percent of actual water used. It is estimated that the proposed demonstration/education project would save approximately 30 percent of the water used by a conventional sprinkler irrigation system (approximately 400 gallons per week during irrigation season). Water is directed directly to the plant root zones, precisely where it is needed. There is no waste from over spray and evaporation.

**Energy savings.** Because drip is administered through low pressure systems, pump stations can be reduced in size considerably, and energy costs can be reduced dramatically (not applicable to project site).

**Runoff reduced.** The low flow rate of drip irrigation enhances soil percolation. Conditions such as steep slopes that might pose erosion problems with conventional sprinklers can be irrigated very simply with drip.

**Easy installation into shrub beds and ground cover beds.** Minimal trenching is required (the drip line is generally installed just beneath the mulch) that results in lower labor input.

**State-of-the-art emitters.** Emitters are built into the line at regular intervals. The drip system lines are flexible tubing that can be installed just under the mulch layer or buried a few inches underground. Both lines and emitters are specially designed to operate without clogging, cracking or deteriorating in any way. The proposed system can be tied in to any existing system and operated with the same controls.

**Near 100 percent uniformity** can be achieved using pressure compensating drippers. Irrigated zones of 600 feet and longer can be designed without complex pressure loss calculations.

**Adaptable to topography.** Special pressure compensating drippers and lines assure uniformity of watering up or down slopes, on all terrain.

**Adaptable to all soil conditions.** Plants can be grown in even marginal soil by controlling the rate of irrigation to match that of the absorption capacity of the soil.

**Reduced exposure to vandalism.** Dripperlines are commonly installed below ground, or below mulch, and are not visible to would-be vandals.

**Reduced exposure to liability.** Drip irrigation keeps water in the plant root zone where it is needed, and off of sidewalks, widows, cars, benches and people.

**Flexible hours of irrigation.** Drip does not interfere with pedestrian or automotive traffic, nor does wind affect the performance of drip zones. Therefore, drip zones can be scheduled for operation during daylight hours.

**Simplified maintenance.** Emitters and lines operate without clogging. Proper filtration and seasonal flushing of the lines keep the system operating at top efficiency. Flush cycles are automatically actuated before and after the irrigation system is turned on. Unique design rules out root intrusion.

**Large areas can be irrigated in a single set.** Because drip uses low pressures and low flow rates, smaller pipe sizes can often be used. Moreover, the number of automatic control valves are typically reduced, saving both equipment and maintenance costs.

**Simple modification of existing installations.** Pressured compensating drippers permit many designs to be re-configured or expanded if the landscaping plantings are modified.

**Faster plant growth** and reduced incidence of root diseases are the result of better soil water/oxygen balance. This results in reduced plant loss following transplant, and a landscape that becomes more rapidly established.

**Reduced plant disease and longer lasting blooms.** Foliage and flowers are never wetted.

**Reduced weed growth** in planting beds, as less soil surface is wetted.

**No additional design or technical assistance costs.** Technical and construction documentation material has been collected anticipating project implementation. This includes technical assistance to the landscape installation contractor and Metro staff (provided without charge by H.D. Fowler).

### **PERCEIVED DISADVANTAGES OF DRIP IRRIGATION**

The costs and perceived risks of the proposed project are largely associated with overcoming unfamiliarity with this type of irrigation system. The following is a summary of project concerns and potential mitigation measures.

**Additional maintenance.** Filters require occasional cleaning and lines need seasonal flushing. Additional operating costs are estimated at .05 FTE/year (approximately \$1,600). However, these costs would be incurred primarily during the first few months of operation for system start up and the learning curve required to become familiar with system. Costs would not be incurred during the rainy season.

**Requires additional education.** Because drippers operate at low pressures, problems can sometimes go un-noticed. Maintenance staff needs to be aware of routine maintenance procedures, and how to troubleshoot drip zones (this maintenance item might be mitigated by the reduced number of control valves in the project planting area and associated maintenance: 3 valves with proposed drip system, 5 valves with existing sprinkler system).

**Additional project installation costs.** Approximately \$1,500 in added labor charges, primarily due to the landscape installation contractor's unfamiliarity with the drip irrigation system. Note that contractors who are familiar with the system would probably not have additional labor charges. The actual materials for the proposed system are less expensive than conventional irrigation equipment. Note that the additional costs for installation will be mitigated through Resourceful Renovation / Solid Waste funding.

**Past difficulties with other drip systems at the Metro Washington Park Zoo.** Through conversations with Rick Hanes, Senior Gardener, Zoo Facilities Management, it was discovered that their problem with

drip irrigation (keep in mind that there are a number of different types of drip irrigation systems, some more effective and reliable than others) were associated with the need to replace plant material in large quantities on a regular basis. Their program calls for color and planting themes that require replacement of annuals and bulbs on a very regular basis. Mr. Hanes indicated that this would not be problematic in situations where the planting beds are planned out and don't require massive change over. This is significant in that the planting area for the proposed demonstration project will not be subject to these conditions. The planting beds and plant materials were designed by the landscape architect as a permanent, integral design, not as an annual planting bed subject to wholesale replacement every season. Mr. Hanes indicated his support for the proposed drip irrigation demonstration project at the new Metro Regional Center.

**Potential for reduced warranty for plant material irrigated by drip method.** There is some speculation that plant material to be watered by the drip system would not be warranted by the general contractor. Standard warranties of this type are for a period of one year. However, it may be possible to negotiate a limited warranty protecting against disease and installation practices not directly associated with the irrigation system. A limited warranty on plant material for the project area could be useful. If plants should die due to malfunction of the irrigation system (lack of water or excessive water) contractor would not be liable for their replacement. However, the plants should be warranted for the standard full year to cover both plant health and installation.

Note that this issue is due to the fact that the project landscape architect (who designed the conventional sprinkler system) indicated in the early proposal stage that they could not approve the proposed drip irrigation system. Many of their concerns involved liability issues, scope of proposal, and not being familiar with the product. However, the scope of the project has since changed and the landscape architect has indicated that they are reconsidering their position, as they feel significantly more comfortable with the proposed system. They support this project and would like to take a second look at the proposal, discuss it with the contractor and come to an understanding for project endorsement.

#### **PROJECT ENDORSEMENTS**

- This project has been endorsed and is supported by the Portland Chapter of the American Society of Landscape Architects (Paul Morris, President).
- The project landscape architect (Carol Mayer/Reed) is willing to endorse and support the proposed demonstration project.
- Metro's Environmental Planning Division (see attached letter).
- Other registered landscape architects in the Portland area have been contacted and are familiar with this system and endorse and specify its use. A set of working drawings and construction details (for a project using the same irrigation system) has been obtained to compare system design, materials and specifications. This provides us with an added degree of confidence for the proposed project.

## CONCLUSION

The committee has concluded that this proposed educational project - demonstrating a functional state-of-the-art drip irrigation system - would be a valuable asset to the new Metro Regional Center. It would be a model for residential, commercial, and institutional projects, benefiting landscape architects, designers and the building and construction industry. The Resourceful Renovation committee has, and will continue to take a cooperative, enthusiastic "can do" attitude toward the proposed project. Furthermore, we recognize the practical and financial constraints of such a project, and are eager to assist in discovering creative solutions that are acceptable and practical.

WM/ay/

Attachment

cc: Bob Martin, Director Solid Waste  
Neil Saling, Director Regional Facilities  
Terry Petersen, Manager Planning and Technical Services  
Berit Stevenson, Project Manager  
Michel Gregory, Senior Public Affairs Specialist  
Jim Goddard, Senior Solid Waste Planner  
Rosemary Furfey, Associate Management Analyst

# METRO

2000 SW First Avenue  
Portland, OR 97201-5398  
(503) 221-1646  
Fax 241-7417

November 30, 1992

Ms. Vickie Rocker, Public Affairs Director  
Metro  
2000 SW First Avenue  
Portland, Oregon 97201

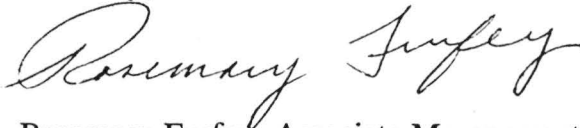
Dear Ms. Rocker:

I have recently been informed about the drip irrigation demonstration project that Metro's Resource Renovation Committee is proposing for the new Metro headquarters building. Based on my involvement in regional water resource issues and this project's public education and water conservation benefits, I strongly endorse this project. This demonstration project enables Metro to show leadership and innovative use of available technology to conserve water and educate the public about the value and benefits of such a system.

The recent drought has heighten citizen and business leaders' awareness about the need to conserve water and to use it wisely. By establishing this demonstration drip irrigation system at its new headquarters, Metro will be showing by example that there are alternatives available to conserve water and that Metro believes the issue is important enough to take action. This project is a tangible and visible product that engineers, planners and local citizens can observe to learn about water conservation techniques available to them.

This project also complements the innovative use of native plants and turf alternatives already being planned by the Resource Renovation Committee at the new building. The demonstration drip irrigation project is one of many important water conserving techniques that Metro can promote throughout the region.

Sincerely,



Rosemary Furfey, Associate Management Analyst  
Water Resource Planning

cc: Pat Lee

Executive Officer  
Rena Cusma

Metro Council

Jim Gardner  
Presiding Officer  
District 3

Judy Wyers  
Deputy Presiding  
Officer  
District 8

Susan McLain  
District 1

Lawrence Bauer  
District 2

Richard Devlin  
District 4

Edward P. Gronke  
District 5

George Van Bergen  
District 6

Ruth McFarland  
District 7

Tanya Collier  
District 9

Roger Buchanan  
District 10

Ed Washington  
District 11

Sandi Hansen  
District 12

## TRANSMITTAL

TO: BERRIT STEVENSON

PROJECT: DETRO HEADQUARTERS

PROJECT NO:

DATE: 11-23-92

SENT VIA: 273-5588

NO. OF PAGES: 1

| NO. | DATE | DESCRIPTION |
|-----|------|-------------|
|-----|------|-------------|

BASED ON AN AVERAGE NEED OF .15 INCHES OF WATER PER DAY (1.04 INCHES PER WEEK) WE WOULD BE APPLYING 1560 GALLONS PER WEEK OVER THE TOTAL AREA (2405 SQ. FT.) (SHRUBS ONLY).

THIS CONVERTS JUST AS WE THOUGHT - TO 78 GPM FOR 10 MIN. TWICE A WEEK.

## COMMENTS:

DRIP IRRIGATION WOULD NEED TO BE APPLYING JUST AS MUCH WATER AS CONVENTIONAL.

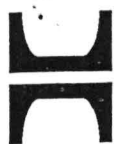
THE ONLY DIFFERENCE IS HOW MUCH WATER IS BEING LOST DUE TO OVERSPAY, EVAPORATION DIRECT INTO AIR, ETC. I FIND IT HARD TO BELIEVE 50% WOULD BE LOST. BUT IF THAT IS THE FIGURE TO USE, THEN  $1560 \text{ GALLONS} \times .50 = 780 \text{ GALLONS PER WEEK}$

THANKS, CALL IF YOU HAVE ANY QUESTIONS.

BY: CHRIS INGALLS

COPIES TO:

20 WEEKS  
OR  
1560 GALLONS  
\$9.95/yr



# HOFFMAN CONSTRUCTION COMPANY OF OREGON

DEC 01 Recd

cc: G  
35

RE: Metro Headquarters  
Our Job No. 9214

Date: 11/30/92

TO: A. Hoffman

|                                     |             |                                     |                 |  |              |
|-------------------------------------|-------------|-------------------------------------|-----------------|--|--------------|
| <input checked="" type="checkbox"/> | Don Nail    | <input checked="" type="checkbox"/> | Wayne Drinkward |  | Kent Pothast |
|                                     | Bill Stotts | <input checked="" type="checkbox"/> | Cade Lawrence   |  |              |

## B. Architect & Owner

|                                     |       |  |  |  |  |
|-------------------------------------|-------|--|--|--|--|
| <input checked="" type="checkbox"/> | Metro |  |  |  |  |
|                                     | TVA   |  |  |  |  |

→ By FAX 638-9211

|  |                           |  |                          |                                     |                          |
|--|---------------------------|--|--------------------------|-------------------------------------|--------------------------|
|  | City of Portland          |  | D & D Door               |                                     | Portland Rebar           |
|  | KPFF Consulting Engineers |  | Davidson's Masonry       |                                     | Precision Asbestos       |
|  | Glumac                    |  | DeaMor Associates        |                                     | Precision Rebar & Acces. |
|  |                           |  | Grasle Electric          |                                     | Selectron                |
|  |                           |  | Harmon Contract Glazing  |                                     | Snyder General Corp.     |
|  |                           |  | HSI                      |                                     | Sound Elevator           |
|  | Access Control Systems    |  | Information Drilling     |                                     |                          |
|  | Allied Demolition Company |  | Johnson Western Gunitite | <input checked="" type="checkbox"/> | Landscape West           |
|  | B.C. Installation         |  | Lone Star                |                                     |                          |
|  | Basic Fire                |  | McBride Sheet Metal      |                                     |                          |
|  | Blessing Electric         |  | McKenzie Waterproofing   |                                     |                          |
|  | Brothers Concrete         |  | McKinstry Company        |                                     |                          |
|  | Buckaroo-Thermoseal       |  | Ming                     |                                     |                          |
|  | Carbon Dioxide            |  | Oregon Air Reps          |                                     |                          |
|  | Carr                      |  | Oregon Machine & Tool    |                                     |                          |
|  | Chown                     |  | Pace Equipment Co.       |                                     |                          |
|  | Concrete Coring           |  | Pardue Restoration       |                                     |                          |
|  | Crawford Roll-Lite Door   |  | Pen-Nor, Inc.            |                                     |                          |
|  | W.H. Cress                |  | Performance              |                                     |                          |

Gentlemen:

Enclosed are the following: Landscape West Pricing Dated 11/23/92 Concerning  
Demonstration Drip Irrigation Proposal

These are transmitted as checked below:

\_\_\_\_ For approval  
\_\_\_\_ For price  
\_\_\_\_ As requested

☒ For review and comments  
\_\_\_\_ Approved as submitted  
\_\_\_\_ Approved as noted

\_\_\_\_ Returned for corrections  
\_\_\_\_ For your use  
\_\_\_\_ Return corrected prints

Other: \_\_\_\_\_

Comments: Dan - The new drip system proposal was issued w/ a smaller scope yet  
your price is over \$1,000 more expensive. Please explain why the new design costs are  
so high. A response by 12/4/92 would be appreciated. TX

Enclosure

Very Truly Yours

Cade Lawrence  
Cade Lawrence

Assistant Operations Manager



# Landscape West Inc.

P.O. Box 1033 Wilsonville, Oregon 97070 Phone: 638-3200/222-4035

## PROJECT MEMO:

DATE: 11/23/92

FROM: Dan Kesterson

TO: Cade Lawrence/Hoffman Construction

RE: Metro Headquarters/Drip Irrigation add, sheet L-10

CADE LAWRENCE

NOV 24 1992

Sent To Metro, Landscape  
West + Field

- 
1. Add for irrigation on sheet L-10 as per plans is \$4,340.

Orig. Proposal Was

→ ± 3200

Dan → Please explain why the new  
proposal was more than the orig.  
drip design?

This was for the  
Whole landscaped area  
not demo area

Demo area s/bc only  
1,500 or so.

# LANDSCAPE WEST, INC

PO BOX 1033  
WILSONVILLE, OR 97070  
(503) 638-3200

## FAX COVER SHEET

COMPANY: Hoffman 221-0934

ATTN: Cade FAX NO.: 11/24/92

FROM: Dr Kesterson DATE:

RE: NO. OF PAGES:  
(Including Cover Sheet)

COMMENTS:

"Drip"

SHEET  
L-10

# Possible water supply shortage plans aired

■ Mike Lindberg outlines goals of Project 2050 to cope with the possibility of drought

By DANA HAYNES

Correspondent, The Oregonian

BEAVERTON — Last summer's drought may be so much water under the bridge now, but Portland City Commissioner Mike Lindberg says it could happen again.

"I'm not really sure that, whether it's El Nino or some other global warming, we won't have the same water rationing again," Lindberg said Monday while addressing the Washington County Public Affairs Forum.

Lindberg, the Portland commissioner in charge of the Water Bureau, spoke about future shortages, short- and long-term planning and logging in the Bull Run Reservoir, the major source of the region's drinking water.

Thanks to low or nonexistent rain levels in March, May and June, along with depletion of water reserves caused by unusually hot weather, metropolitan-area residents and businesses used more water than Bull Run was receiving last summer. Portland and several surrounding cities instituted water rationing as the dry spell lingered.

Lindberg said the rationing plans were unpopular and not very effective. "People wanted equity but they didn't like the Big Brother approach that turned neighbor against neighbor," he told community leaders at the Greenwood Inn. "This hit us so fast, and frankly we'd never faced anything like it before, so I think mistakes may have been made."

During the summer, the Water Bureau received approximately 30,000 calls with suggestions or com-

plaints, Lindberg said, including such proposals as cutting off Washington County and Gresham from Bull Run water. The crisis "brought out the worst in some people."

Because such a shortage could happen again — and could be worse next time — Lindberg said members of the region's various water boards have joined together on the 2050 Project, designed to study population growth and water needs for the next 60 years. The project began with 29 proposals for additional water.

That list has been pared to six proposals: build a third dam on the Bull Run River; develop underground storage of winter waters to be retrieved in the summer; and enhance the usable water systems on the Willamette, Columbia, Clackamas or Trask rivers.

Members of the 2050 Project also are examining long-range conservation, rather than emergency restrictions, Lindberg said. Short-term restrictions, such as President Carter's call for lowered thermostats and sweaters during the oil crisis of the 1970s, are poor management, he said. "You weren't becoming more energy efficient, just less comfortable."

Bull Run logging also was discussed. Lindberg, who opposes all logging in the reservoir area, said no living trees are being harvested, only trees felled during storms. "In some ways, we have the good fortune of the spotted owl," he said. Much of the area falls within the spotted owl recovery zone, from which logging is restricted.

The water shortage could have been avoided if the Water Bureau had had access to back-up wells in East Multnomah County, Lindberg said. Use of those wells has been curtailed due to pollution in adjacent underground water tables.

The Oregonian, Tuesday, November 24, 1992