Misc-pt 05 47

STATE OF WISCONSIN
DEPARTMENT OF ADMINISTRATION
101 East Wilson Street, Madison, Wisconsin

TOMMY G. THOMPSON
GOVERNOR
MARK D. BUGHER
SECRETARY

Mailing Address:
Post Office Box 7868
Madison, WI 53707-7868

DATE: June 4, 1998

TO: Senator Robert L. Cowles, Chair
Committee on Environment and Energy

Representative Marc Duff, Chair
Committee on Environment

FROM: Nathaniel E. Robinson, Administrator
Division of Energy and Intergovernmental Relations

SUBJECT: Governor Thompson's 1998 Oil Overcharge Plan
(For consideration at the next Joint Committee on Finance's s. 13.10 Meeting)

Enclosed is a copy of the Governor's Oil Overcharge Plan and transmittal letter to the two Co-Chairs of the Joint Committee on Finance, and the Chief Clerk in both the Assembly and the Senate. We are enclosing enough copies of the Plan for you and your committee members, for your information.

As usual, let me know should you have questions or wish to discuss any aspects of the Plan. Thank you in advance for your favorable support of the Governor's 1998 Oil Overcharge Plan.

Enclosure

cc: Mark D. Bugher, Secretary
Department of Administration

Patrick E. Meier, Director
Wisconsin Energy Bureau

G\energy\wpscdsm\cowlduff

MARC
DUFF
STATE REPRESENTATIVE
Chair: Environment & Utilities
Vice Chair: Urban Education
Co-Chair: Joint Legislative Council

To: Members, Committee on Environment

From: Marsha Dake, Committee Clerk Marsha

Date: June 5, 1998

Re: Governor's Oil Overcharge Plan

Enclosed please find a copy of the Governor Thompson's 1998 Oil Overcharge plan, which will be considered at the next Joint Committee on Finance's 13.10 meeting.

OFFICE: State Capitol
P.O. Box 8952
Madison, WI 53708-8952
608-266-1190
HOME: 1811 South Elm Grove Road
New Berlin, WI 53151
414-782-0763
TOLL-FREE HOTLINE: 1-800-362-9472
E-MAIL: USWLSA98@ IBMMAIL COM

TOMMY G. THOMPSON

Governor
State of Wisconsin

June 1, 1998

The Honorable Timothy Weeden, Co-Chair
Joint Committee on Finance
1 East Main Street, Suite 203
Madison, WI 53703

The Honorable John Gard, Co-Chair
Joint Committee on Finance
State Capitol, Room 316 North
Madison, WI 53702

Dear Senator Weeden and Representative Gard:

RE: Stripper XVIII 1998 Oil Overcharge Plan

I am pleased to transmit my Stripper XVIII 1998 Oil Overcharge Plan for consideration by the Joint Committee on Finance (JCF) at the next s. 13.10, Wis. Stats., meeting. As required by s. 14.065, Wis. Stats., I am also forwarding a copy to the Chief Clerks of the Senate and the Assembly.

This Plan allocates $1,590,426 ($745,244 of new Stripper monies and $845,182 of reallocated monies); helps low income citizens stay warm; develops Wisconsin's renewable energy resource base; makes our buildings and homes more energy efficient; protects the environment; and, educates our children regarding the wise use of energy. This Plan also modifies the Stripper XIV Small Business Energy Efficiency Program to make it accessible to more small businesses.

In addition to the JCF's action, the U.S. Department of Energy must also conduct a review to determine if Wisconsin's Plan conforms with Federal requirements and established definitions of restitution. The Department of Administration staff will be available to provide additional information that may be required. I appreciate your usual support.

Sincerely,

TOMMY G. THOMPSON
Governor

Enclosure

cc: Mark D. Bugher, Secretary
Department of Administration

Nathaniel E. Robinson, Administrator
Division of Energy and Intergovernmental Relations

Room 115 East, State Capitol, P.O. Box 7863, Madison, Wisconsin 53707 • (608) 266-1212 • FAX (608) 267-8983

TOMMY G. THOMPSON

Governor
State of Wisconsin

June 1, 1998

Mr. Donald J. Schneider, Senate Chief Clerk
Wisconsin State Senate
One East Main, Suite 402
P.O. Box 7882
Madison, WI 53707-7882

Dear Mr. Schneider:

RE: Stripper XVIII 1998 Oil Overcharge Plan

I am pleased to transmit my Stripper XVIII 1998 Oil Overcharge Plan for consideration by the Joint Committee on Finance (JCF) at the next s. 13.10, Wis. Stats., meeting. As required by s. 14.065, Wis. Stats., I am also forwarding a copy to the Chief Clerk of the Assembly.

This Plan allocates $1,590,426 ($745,244 of new Stripper monies and $845,182 of reallocated monies); helps low income citizens stay warm; develops Wisconsin's renewable energy resource base; makes our buildings and homes more energy efficient; protects the environment; and, educates our children regarding the wise use of energy. This Plan also modifies the Stripper XIV Small Business Energy Efficiency Program to make it accessible to more small businesses.

In addition to the JCF's action, the U.S. Department of Energy must also conduct a review to determine if Wisconsin's Plan conforms with Federal requirements and established definitions of restitution. The Department of Administration staff will be available to provide additional information that may be required. I appreciate your usual support.

Sincerely,

TOMMY G. THOMPSON
Governor

Enclosure

cc: Mark D. Bugher, Secretary
Department of Administration

Nathaniel E. Robinson, Administrator
Division of Energy and Intergovernmental Relations

Room 115 East, State Capitol, P.O. Box 7863, Madison, Wisconsin 53707 • (608) 266-1212 • FAX (608) 267-8983

TOMMY G. THOMPSON

Governor
State of Wisconsin

June 1, 1998

Mr. Charles R. Sanders, Assembly Chief Clerk
Wisconsin State Assembly
One East Main, Suite 402
P.O. Box 8952
Madison, WI 53707-8952

Dear Mr. Sanders:

RE: Stripper XVIII 1998 Oil Overcharge Plan

I am pleased to transmit my Stripper XVIII 1998 Oil Overcharge Plan for consideration by the Joint Committee on Finance (JCF) at the next s. 13.10, Wis. Stats., meeting. As required by s. 14.065, Wis. Stats., I am also forwarding a copy to the Chief Clerk of the Senate.

This Plan allocates $1,590,426 ($745,244 of new Stripper monies and $845,182 of reallocated monies); helps low income citizens stay warm; develops Wisconsin's renewable energy resource base; makes our buildings and homes more energy efficient; protects the environment; and, educates our children regarding the wise use of energy. This Plan also modifies the Stripper XIV Small Business Energy Efficiency Program to make it accessible to more small businesses.

In addition to the JCF's action, the U.S. Department of Energy must also conduct a review to determine if Wisconsin's Plan conforms with Federal requirements and established definitions of restitution. The Department of Administration staff will be available to provide additional information that may be required. I appreciate your usual support.

Sincerely,

TOMMY G. THOMPSON
Governor

Enclosure

cc: Mark D. Bugher, Secretary
Department of Administration

Nathaniel E. Robinson, Administrator
Division of Energy and Intergovernmental Relations

Room 115 East, State Capitol, P.O. Box 7863, Madison, Wisconsin 53707 • (608) 266-1212 • FAX (608) 267-8983

GOVERNOR'S 1998 OIL OVERCHARGE PLAN

Stripper XVIII Funds: $1,590,426 Available

Prepared by the Department of Administration
Division of Energy and Intergovernmental Relations

May 28, 1998

GOVERNOR'S 1998 OIL OVERCHARGE PLAN

1998 Plan At-A-Glance

The Governor's 1998 Oil Overcharge Plan (Stripper XVIII), proposes allocation of $1,590,426 ($745,244 of new Stripper funds and $845,182 of reallocated monies). The Plan is designed to help low income citizens stay warm; develop Wisconsin's renewable energy resource base; make our buildings and homes more energy efficient; protect the environment; and, educate our children regarding the wise use of energy. This Plan also modifies the Stripper XIV Small Business Energy Efficiency Program to make it accessible to more small businesses.

The recommended programs, each summarized in the Plan, are as follows:

Recommended Programs #	New Monies	Reallocated Monies	Oil Overcharge Monies	
1) Campaign to Keep Wisconsin Warm	$ 171,984	$ 528,016	$ 700,000	
2) Community Services Energy Efficiency Rewards	$ 402	$ 254,598	$ 255,000	^
3) Renewable Energy Assistance Program (REAP)	$ 200,000		$ 200,000	^
4) Home Energy Rating/Energy Efficiency Financing	$ 150,000		$ 150,000	^
5) Milwaukee Low Energy Housing Redevelopment	$ 102,149	$ 22,851	$ 125,000	
6) K-12 Energy Efficiency Program (KEEP)	$ 10,283	$ 39,717	$ 50,000	
7) Environmental Monitoring of Energy Impacts	$ 50,000		$ 50,000	
8) IES Energy Education Partnership	$ 50,000		$ 50,000	
9) Energy Program Management	$ 10,426		$ 10,426	*
Total	$ 745,244	$ 845,182	**$ 1,590,426**	

Dollars rounded, see program description for precise figure.

* Program also receives available interest.

^ Wisconsin Energy Bureau may use up to 10 percent of these monies for delivery of program services.

PROGRAM MODIFICATIONS

Stripper XIV: Small Business Energy Efficiency Program

Change the program to increase the number of Wisconsin small businesses eligible to participate in the program. Monies remaining total $179,180.57.

PROGRAM SUMMARY

1. Campaign to Keep Wisconsin Warm — $700,000

These funds will be used by Energy Services, Inc. (ESI) over a two-year period, to match $700,000, dollar-for-dollar, with privately raised funds. The funds raised will be used statewide to supplement the local Low Income Home Energy Assistance Program (LIHEAP) crises-assistance payment benefits for low-income Wisconsin households. Benefits will be targeted to high-risk households with elderly, disabled persons and children who are eligible for the LIHEAP. This project will raise matching contributions from businesses, utility customers, community organizations and individuals throughout the state to *increase* funding available to meet low-income crises energy assistance needs.

ESI successfully piloted this concept in Dane County, by using $200,000 of Stripper XVII monies. This initiative takes the concept statewide and will significantly increase the monies provided by the state that either are currently allocated to the statewide LIHEAP program or could be allocated to that program. Currently, the LIHEAP monies are administered by the Department of Administration (DOA), Division of Housing (DOH). Prior to releasing funds to the ESI, the Administrator of the DOA/DOH shall certify that:

A. Releasing the monies to ESI will result in a significant increase in the overall funds available for energy assistance statewide.

B. All funds, including the raised match, will be distributed statewide in an equitable manner and in coordination with the state's LIHEAP program.

The DOA/DOH Administrator's certifications will also indicate the amount of funds being released to ESI as match. ESI will be paid a program delivery fee of 5 percent of the oil overcharge monies for which matching monies are raised. The match requirement is $1 of contributed monies, for every oil overcharge dollar released. Oil overcharge matching funds will be released only after ESI has certified that specific amounts of money have been raised.

Funding Sources for the Campaign to Keep Wisconsin Warm

Source	Program	Monies	Reason
Stripper III	Community Energy Conservation Demonstration	$ 28,015.68	Completed
Exxon	Low Income Home Energy Conservation Program	$500,000.00	Reallocation
Stripper XVIII	**New Stripper XVIII Monies**	**$171,984.32**	**New**
TOTAL		**$700,000.00**	

2. Community Services Energy Efficiency Rewards — $255,000

This program will provide rewards to eligible child care and community based residential facilities (CBRF) for energy efficient improvements based on energy ratings and for replacement of appliances with energy efficient (EPA energy star) units. The existing Home Performance Rating Rewards Program will be expanded to include this program. Depending on the improvement in the energy rating, reward amounts may range between $350-$1000

based on the current rewards program. A contractor will be competitively solicited to provide the energy rating service as well as issue the rewards.

In the past, oil overcharge monies have supported four separate child care programs. However, with W-2 resulting in an increased emphasis on child care facilities, additional funding of energy efficiency improvements is desirable. Existing facilities and facilities that are in the process of being renovated/retrofitted will be eligible under this program. As shown in the table below, this program will be funded from a variety of sources.

Funding Sources for Community Services Energy Efficiency Rewards

Source	Program		Monies	Reason
Shamrock II	Child Care Facility Energy Efficiency Grants	$	794.33	Completed
Stripper II	Nursing Home Energy Efficiency Grants	$	143,060.46	Reallocated
Stripper XIV	Nursing Home Energy Efficiency Grants	$	18,116.32	Reallocated
Stripper VII	Child Care Facility Energy Efficiency Grants	$	18,006.76	Modified
Stripper XIV	Community Residential Based Facilities	$	74,619.92	Modified
Stripper XVIII	**New Stripper XVIII Monies**	**$**	**402.21**	**New**
TOTAL		**$**	**255,000.00**	

3. Renewable Energy Assistance Program — $200,000

The Renewable Energy Assistance Program (REAP) supports the cost effective development of Wisconsin's renewable energy resources by offering technical assistance and construction grants to firms and institutions wishing to build or modify renewable energy systems in Wisconsin. This effort has supported 139 renewable energy projects over the past seven years.

In the past, the legislature has chosen to continue this program by allocating oil overcharge monies in 1990, 1992, 1993 and 1994. For the program to continue, additional oil overcharge monies are needed. This program has assisted and will continue to support business, municipalities, state agencies, tribal governments and non-profit organizations.

4. Home Energy Rating/Energy Efficiency Financing — $150,000

This effort broadens the area of the state served by the *Home Performance Ratings of Wisconsin* program and will be leveraged with the Department of Energy funded Builder Partnership Program. Rating and financing services will be continued and expanded beyond the 15 county areas currently served (surrounding and including Milwaukee, Madison and Green Bay) to include the entire Fox Valley and possibly, the Janesville-Beloit areas. Training and incentives will be provided to builders, lenders, and realtors who sign-on as program partners. Additional home energy raters will be trained to serve the expansion areas.

The energy rating provides a uniform way to compare the energy efficiency of homes, identify and rank cost effective energy efficiency improvements, and establish market value for energy efficient features in a home. The rating provides an incentive for homeowners to increase the energy efficiency of their existing homes and to purchase more energy efficient new homes.

5. **Milwaukee Energy Efficient Housing Redevelopment** **$125,000**

This project will provide low cost, revolving loans to cover the cost to build or rehabilitate housing to an energy efficient standard established by the DOA Energy Bureau. These loans will be used only with housing units in Milwaukee that are owned, sold or rented principally by low-income minorities or single parents in distressed neighborhoods being revitalized.

A collaborative effort will consist of the Rebuild Wisconsin efforts of the DOA Energy Bureau and Argonne National Laboratory; the City of Milwaukee's neighborhood revitalization efforts; the University of Wisconsin's School of Architecture and Urban Planning; and, the weatherization expertise of Opportunities Industrialization Center of Greater Milwaukee.

The City of Milwaukee, Department of Development rehabilitates about 850 residential units a year in inner-city Milwaukee for rental and sale to low/moderate income and first time homebuyers and for owner-occupied units. Milwaukee's Targeted Investment Neighborhood (TIN) Program is the key program used for this rehabilitation activity. The City currently has six TIN project areas. Approximately 57 percent of the construction work is performed by minority business enterprises (MBE). There are also eight MBE design firms (six women-owned and two minority-owned) involved through the University.

The loans will be up to $3,000 per dwelling unit with low interest. The monthly energy savings should be more than the monthly loan payments. The loans can be used with both rehabilitated and newly constructed buildings. Loan repayments will be used for new loans. $15,000 will be provided to the University of Wisconsin Milwaukee for the development of design specifications and analysis to meet low energy standards established by the project.

The project will be based on the 10-year experience of Chicago's Superinsulation Rental Rehab Program and technical assistance currently in place for Wisconsin with funding from the U.S. Department of Energy's Argonne National Laboratory. Other potential partners and/or underwriters include Wisconsin Electric Power Company, Wisconsin Partnership for Housing Development, Inc., and WHEDA. Successful approaches from this program will be transferred to other relevant programs under the Energy Bureau's Low Energy Rental Rehabilitation Program. The City of Milwaukee will partner with its Neighborhood Improvement Development Corporation for program implementation.

Funding Sources for Milwaukee's Low Energy Housing Redevelopment Project

Source	Program	Monies	Reason
Stripper I	Business Energy Efficiency Incentives	$ 4,912.05	Completed
Stripper V	Fuel Saving Furnaces for Farmers	$ 4,856.53	Completed
Stripper XVI	Weyauwega Disaster Recovery Assistance	$ 834.86	Completed
Shamrock I	Rental Energy Conservation Incentive Program	$ 12,247.89	Completed
Stripper XVIII	**New Stripper XVIII Monies**	**$ 102,148.67**	**New**
TOTAL		**$ 125,000.00**	

6. **K-12 Energy Efficiency Program (KEEP)** **$50,000**

Wisconsin's K-12 Energy Education Program (KEEP) is an innovative, Wisconsin-specific energy education program. The program provides teachers at all grade levels and in all subject areas with real-world energy education activities. Teachers can use KEEP activities to: A) Fulfill DPI standards in various subject areas; B) Demonstrate the ties between science and social science topics; C) Facilitate a more integrated curriculum; and, D) Create hands-on learning opportunities for their students. Most importantly, teachers can use KEEP to prepare the next generation of Wisconsin citizens, consumers and business leaders to make wise energy decisions -- decisions that will improve Wisconsin's economy and environment well into the future.

In Phase 1, the basic energy educational materials for grades K-12 were completed. Phase 2 focused on developing a college level educational course for teachers and is assisting 600 public and private school teachers in taking this course by paying for their course tuition and course materials and providing a small stipend. In Phase 3, the oil overcharge funding -- along with $425,000 of Wisconsin Energy Center funds -- will provide enhancements to KEEP (focusing on K-3 and high school students) and inservice training for an additional 500 Wisconsin school teachers. The $50,000 of oil overcharge monies will pay for the course tuition and materials for approximately 227 of the 500 additional teachers taking this college course.

Because there is a need to increase the number of minorities pursuing advanced education and employment in fields related to the wise use of energy and its production, these oil overcharge monies will be directed toward paying the tuition of teachers who either have or anticipate having at least 35 percent of their class composed of minority students. This $50,000 oil overcharge program will be funded by reallocating $39,717.37 of Diamond Shamrock II Fuel Saving Furnaces for Farmers and $10,282.63 of new Stripper XVIII monies.

7. **Environmental Monitoring of Energy Impacts** **$50,000**

This program will provide the second year of state match for a potential three year, annual $150,000 contribution by Wisconsin utilities in cooperation with the Electric Power Research Institute. The first year of state match ($50,000) was provided using Stripper XVI oil overcharge monies. These monies are used to monitor sensitive natural resources that may be impacted by energy generating activities. Elements being monitored include sulfur dioxide, nitrogen dioxide and mercury in the air, water and biota of Wisconsin. The data gathered is helping to determine the impact of electricity generation on the environment and evaluate the effectiveness of existing pollution prevention and clean-up efforts.

8. **IES Energy Education Partnership** **$50,000**

This program continues the internship program at the University of Wisconsin-Madison's Institute for Environmental Studies (IES) for two additional years. This partnership is intended to advance graduate student energy education by having the Energy Bureau provide for an IES student on a part-time basis. Working with the Energy Bureau exposes the student to a variety of real world energy policy issues and the techniques used to address them.

9. **Energy Program Management** **$10,426 plus interest**

The Stripper IV, XV, XVI, XVII Oil Overcharge Plans allocated the interest (and the residual Stripper XVIII monies) to assist the Wisconsin Energy Bureau in continuing its mandated oil overcharge activities and to promote energy conservation in Wisconsin. This program continues that support by allocating Stripper XVIII interest and residual monies to this program.

PROGRAM MODIFICATION

Stripper XIV – Small Business Energy Efficiency Program

Total monies remaining equal $179,180.57.

Currently, this program is limited to small businesses not served by a major utility. The proposed modification expands the number of businesses eligible for technical assistance in reducing their energy usage. The new eligibility requirements include business Standard Industrial Classifications between 20 and 39. At least three of the following criteria must be satisfied:

A. Have gross annual sales of $75 million or less.
B. Have an annual energy bill of $1.75 million or less.
C. Have a work force of less than 500.
D. Do not have in-house energy expertise.

This program is needed for three reasons. First, utilities are typically more willing to provide technical assistance to large industrial customers rather than small businesses. Second, the move towards utility deregulation has utilities moving-out of the Demand Side Management (energy efficiency) area. Energy service companies or other third parties are expected to fill the gap left by utilities. However, this has not occurred yet, which leaves small business with no low-cost technical assistance options. Third, the U.S. DOE Industrial Assessment Center which is designed to assist small businesses, is limited to a 150 mile radius of Milwaukee. Therefore, many Wisconsin small businesses are not eligible to receive technical assistance.

PROGRAM REALLOCATIONS

I. Stripper XVIII – Milwaukee Low Energy Housing Redevelopment

Monies are reallocated to this program from the Stripper I Business Energy Efficiency Incentives program ($4,912.05), the Stripper V Fuel Saving Furnaces for Farmers program ($4856.53), the Stripper XVI Weyauwega Disaster Recovery Assistance

program ($834.86) and the Shamrock I Rental Energy Conservation Incentive Program ($12,247.89). Each of these programs is completed.

II. Stripper XVIII – Community Services Energy Efficiency Rewards

Major funding for this program comes from reallocating monies from the Nursing Home Energy Efficiency Grants ($161,176.78). The thrust of the Nursing Home Programs was to help non-profit institutions. However, most non-profits receive reimbursement for their expenses from Medicaid.

The Stripper VII Child Care program ($18,006.76) is being blended into this new program, which allows for additional appliances, such as refrigerators, to be eligible for grants. The existing Community Residential Based Facilities Program ($74,619.92) is also being merged into this new program which makes eligible, additional facilities and allows funding of energy efficient appliances during construction phases, before these facilities are licensed. Also, $794.33 from the completed Diamond Shamrock II Child Care program is reallocated to this program.

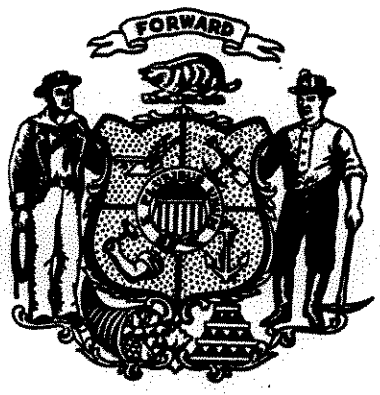
III. Stripper XVIII – Campaign to Keep Wisconsin Warm

$500,000 of Exxon LIHEAP monies will be reallocated to the Keep Wisconsin Warm program. Also, the remaining $28,015.68 of Stripper III Community Energy Conservation Demonstration monies are reallocated to the Keep Wisconsin Warm program. The Community Energy Conservation Demonstration program is completed.

IV. Stripper XVIII – Energy Center of Wisconsin (KEEP)

The remaining $39,717.37 of Diamond Shamrock II Fuel Saving Furnaces for Farmers monies are reallocated to the KEEP program. The Fuel Saving Furnaces for Farmers program is completed. All additional interest accumulated by this program will go to the REAP program.

END



END

506 North

Legislative Fiscal Bureau

One East Main, Suite 301
Madison, Wisconsin 53703
(608) 266-3847

11/19/98

Marsha –
If you have questions, please call me regarding DNR, Ron Shanovich regarding Commerce, or Tricia Collins regarding UW-Ext.

Kendra Bonderud

X Per your request ____ For your information

Received 11/18/98
from Lynda Wiese, DNR

Executive Summary

Purpose

Early efforts to improve environmental quality focused almost exclusively on safe disposal of wastes and "pollution control" – the attempt to clean up or capture water and air pollution as it leaves a pipe or stack and before it enters the environment. More recently, critics began to argue that it makes more sense to prevent and avoid pollution, rather than control it. New approaches evolved, and Wisconsin led the way. In 1989, Wisconsin Act 325 directed the Department of Natural Resources (DNR), the Department of Development (now the Department of Commerce (DCOM)), and the University of Wisconsin-Extension (UWEX) to share responsibility for government-sponsored pollution prevention initiatives. Although the roles and relationships have evolved over time, these three entities continue to work together in a remarkable partnership that capitalizes on the organizational mission and strengths of each.

This 1998 Pollution Prevention Report is the latest of many work products developed jointly by DNR, DCOM's Small Business Clean Air Assistance Program (SBCAAP), and UWEX's Solid and Hazardous Waste Education Center (SHWEC). The purpose of the report is to document recent efforts by each partner, share some of the success stories, and begin to develop a more comprehensive plan for measuring the effectiveness of our pollution prevention efforts.

Highlights

This is expected to be the first edition in an annual series of reports. Some of the highlights are summarized below:

Organization and Administration

- DNR created a Bureau of Cooperative Environmental Assistance (CEA) during the 1996 reorganization, assigning 12.5 permanent staff to work in the new Bureau. Most of the CEA staff are "business sector specialists," a new type of position with responsibility for pollution prevention, innovation, and partnership development.

- CEA, SBCAAP, and SHWEC hold monthly pollution prevention coordination meetings and constantly communicate via an electronic mail list server. The meetings provide a monthly forum for partners to share information, ideas, and lessons learned. Cooperative projects (e.g., workshops or training) are developed, grant applications are jointly developed and implemented, and workload issues are discussed to avoid duplication of effort. This conscious effort at good, efficient government is a national model for cooperation that few, if any, states have succeeded in matching.

Training, Outreach, and Technical Assistance

- Within the last year, more than 40 DNR regulatory staff received two days of training on how to integrate pollution prevention concepts into their core permit and inspection duties. Over the past five years, more than 600,000 publications have been ordered through DNR's Waste Reduction and Environmental Assistance order forms. DNR's pollution prevention

newsletter, *Waste*Less*News*, reaches more than 6000 subscribers three to four times per year with helpful information about preventing and minimizing pollution.

- All of the workshops and seminars coordinated by SBCAAP since 1995 have included a waste reduction/pollution prevention component. SBCAAP provided 62 workshops and seminars in 1997 and reached more than 3700 people from small Wisconsin businesses. In addition to providing businesses with detailed environmental compliance information through these workshops, SBCAAP continues to spread a pollution prevention message to their audience.

- In 1997, SHWEC responded to well over 350 requests for technical assistance from Wisconsin businesses interested in pollution prevention and industrial recycling, with 70 companies receiving thorough on-site assessments. Over $4 million in potential cost savings were identified, and a detailed look at just 8 of the companies receiving assistance showed more than $200,000 in actual cost savings due to SHWEC's efforts. Clients gave SHWEC's Industrial Recycling Assistance Program an average rating of 4.3 on a scale from 1 (lowest rating) to 5 (highest rating). SHWEC staff also developed pollution prevention courses for students at the Madison and Green Bay campuses of the University of Wisconsin, a number of short environmental courses open to the public, and numerous publications.

Recognition Programs

- DNR and DCOM offer recognition awards for businesses and organizations that achieve excellence in pollution prevention and recycling. The Prevention/Environment/Prosperity (P/E/P) Award is given by DNR to businesses that lead the way with successful pollution prevention projects and demonstrate the economic advantages of their innovations. Since the program began in 1993, 41 Wisconsin businesses have been recognized with P/E/P Awards for their outstanding achievements. DNR and DCOM work in partnership with several other government offices and numerous sponsors to offer two companion awards, the Governor's Award for Excellence in Hazardous Waste Reduction and the Governor's Waste Reduction and Recycling Awards. The former focuses on hazardous wastes and the latter focuses on non-hazardous wastes. Since the inception of these programs, more than 150 Wisconsin businesses and organizations have distinguished themselves and received special commendations and public congratulations from Governor Tommy G. Thompson.

ISO 14000

- DNR is working with the U.S. Environmental Protection Agency (EPA), other state environmental agencies, and University researchers to learn more about how ISO 14000 affects pollution prevention and compliance. Seven Wisconsin businesses have volunteered to collect data before and after developing an environmental management system, to determine if the systematic approach outlined in ISO 14000 in fact improves performance. The results of this research will help DNR and other agencies evaluate whether businesses meeting ISO 14000 deserve less regulatory scrutiny than other businesses.

- DCOM developed a survey to determine how Wisconsin businesses are responding to ISO 14000, find out if there are knowledge gaps, and identify the types of training or other assistance that are most needed. DCOM worked with the state's largest association of manufacturers to mail the survey to more than 800 businesses. More than 200 businesses

responded, providing one of the most comprehensive surveys on ISO 14000 needs available and enabling technical and financial assistance to be targeted where it is most needed.

- SHWEC has provided several seminars, short course programs, and guest lectures on subjects related to ISO 14000 and environmental management systems. SHWEC and the University of Wisconsin – Madison Department of Engineering Professional Development are spearheading development of a coalition of Wisconsin industries that will work collaboratively to use environmental management systems to improve environmental and financial performance.

Partnerships

- The Great Printers Project is a major collaboration between DNR, SHWEC, the printing industry, and environmental groups. An extraordinary amount of effort has gone into this partnership in order to promote best environmental practices in the printing industry. Currently, 73 Wisconsin businesses have achieved and maintained status as a "Wisconsin Great Printer," indicating their commitment to exceed regulatory requirements, adopt pollution prevention strategies, and continually improve environmental performance. Hundreds of other Wisconsin printers have received training and technical assistance through this collaboration. Resulting in part from Great Printers Project recommendations, SHWEC helped to found the Printers' National Environmental Assistance Center (PNEAC). Funded by EPA, PNEAC uses the Internet and a fax-back system to provide printers and organizations that assist printers with directly relevant and accurate environmental assistance. Two videoconferences produced by SHWEC for PNEAC reached 3300 viewers in North America, and more than 90% of the printers later surveyed said they'd adopted one or more of the waste reduction strategies featured.

- The Wisconsin Drycleaner's Partnership is yet another successful collaboration, this time between DNR, SHWEC, SBCAAP, the drycleaning industry, and environmental groups. The Five Star Recognition Program, begun in 1996, establishes five increasingly ambitious levels of environmental performance (including pollution prevention) for participating drycleaners. Even at the One Star level, businesses are recognized for doing more than regulations require. Five Star drycleaners are national environmental leaders in their industry. Roughly 14 percent of Wisconsin drycleaners (48 businesses) are now participants. Another element of the Drycleaner's Partnership is a training and certification program developed by SHWEC. More than 50 Wisconsin businesses have completed the curriculum and are now Wisconsin Certified Environmental Drycleaners.

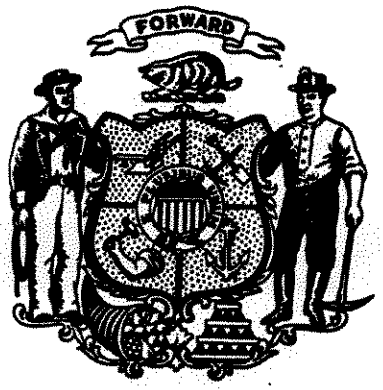
- Seven years ago, Wisconsin's pulp and paper industry leaders publicly committed their industry to continual environmental progress, with an emphasis on pollution prevention. The industry and DNR formed a Pollution Prevention Partnership and agreed to specific goals for reducing environmental releases of seven targeted chemicals by 1999. A report of 1996 data issued in February 1998 shows that releases of all but one targeted chemical had decreased substantially (18%-46%) since 1992. The industry already met their goals for three of the seven substances, three years ahead of schedule, and emissions of a fourth targeted chemical were within one percent of the goal. Industry leaders expect to meet 6 of the 7 goals by 1999. All of these reductions stem from voluntary pollution prevention over and above regulatory requirements.

Conclusion and Acknowledgements

Since the passage of Act 325 in 1989, a substantial amount of effort has been undertaken by DNR, DCOM, and SHWEC to promote pollution prevention. These programs supplement and complement the traditional pollution control regulatory approach, without in any way detracting from the importance of compliance and enforcement efforts. Even with relatively modest budgets and staffing, pollution prevention programs have generated significant benefits for the businesses and citizens of Wisconsin. But the job is not done. This report outlines key next steps toward a mutual objective of measuring the effectiveness of our pollution prevention efforts. All three partners are committed to continual improvement.

DNR, DCOM, and SHWEC would like to thank the hundreds of partner organizations and thousands of individuals who contribute so much to Wisconsin's environment and make this state a national leader in pollution prevention. We acknowledge that ultimately it is Wisconsin businesses themselves that do the hard work of actually implementing pollution prevention projects; we salute their efforts and look forward to continued collaboration.

END



END

AMTS Spinoff Applications:

- **Treatment of industrial wastewater.**
- **Treatment of effluent from home septic tanks.**
- **Purification of recirculating surface water for aquaculture.**
- **Treatment of wastewater from feedlots and other agricultural enterprises.**
- **Purifying indoor air by using plants that absorb toxic air pollutants.**
- **Planned future uses of AMTS include filtering smokestack emissions to reduce acid rain and other pollution, production of fish and animal feed, treatment of leachate from sanitary landfills, and treatment of hazardous waste.**

This material was prepared with financial support from the Mississippi Department of Economic and Community Development, Energy and Transportation Division. However, any opinions, findings, conclusions, or recommendations expressed herein are those of the author and do not necessarily reflect the views of the Mississippi Department of Economic and Community Development, Energy and Transportation Division.

For more information, write or call:

Southeast Mississippi RC&D Area, Inc.
Suite 323A, Wm. Colmer Building
701 Main Street
Hattiesburg, MS 39401
(601) 545-2753

Published By
Southeast Mississippi Resource Conservation and Development Council

Artificial Marshland Treatment Systems

THE PROBLEM . . .

Municipalities And Rural Communities Face Difficulty in Providing Adequate Wastewater Treatment At Rates They Can Afford:

*Many wastewater treatment systems are worn-out or obsolete before their debt is retired.

*The financial burden is shifting to state and local governments.

*The cost of energy and maintenance is becoming extremely burdensome.

*Older systems have difficulty meeting more stringent treatment standards.

*The cost to build, upgrade, or improve existing facilities by conventional methods exceed the financial capabilities of many Mississippi communities.

THE SOLUTION . . .

When Compared To Conventional Treatment Systems, Artificial Marshland Treatment Systems (AMTS):

*Are less costly to install and maintain.

*Require less energy to operate.

*Require non-technical personnel to operate and maintain.

*Are less subject to mechanical breakdown and shockloading.

*Are more reliable and flexible.

*Remove toxic chemicals and heavy metals from wastewater effluent.

*Improve wildlife habitat and provide other environmental advantages.

The Town of Union Solved Its Wastewater Problems with AMTS . . .

The Town of Union (population 1,931) is an example of a Mississippi community confronted with a critical wastewater treatment problem as a result of new and more stringent standards under the Federal Clean Water Act.

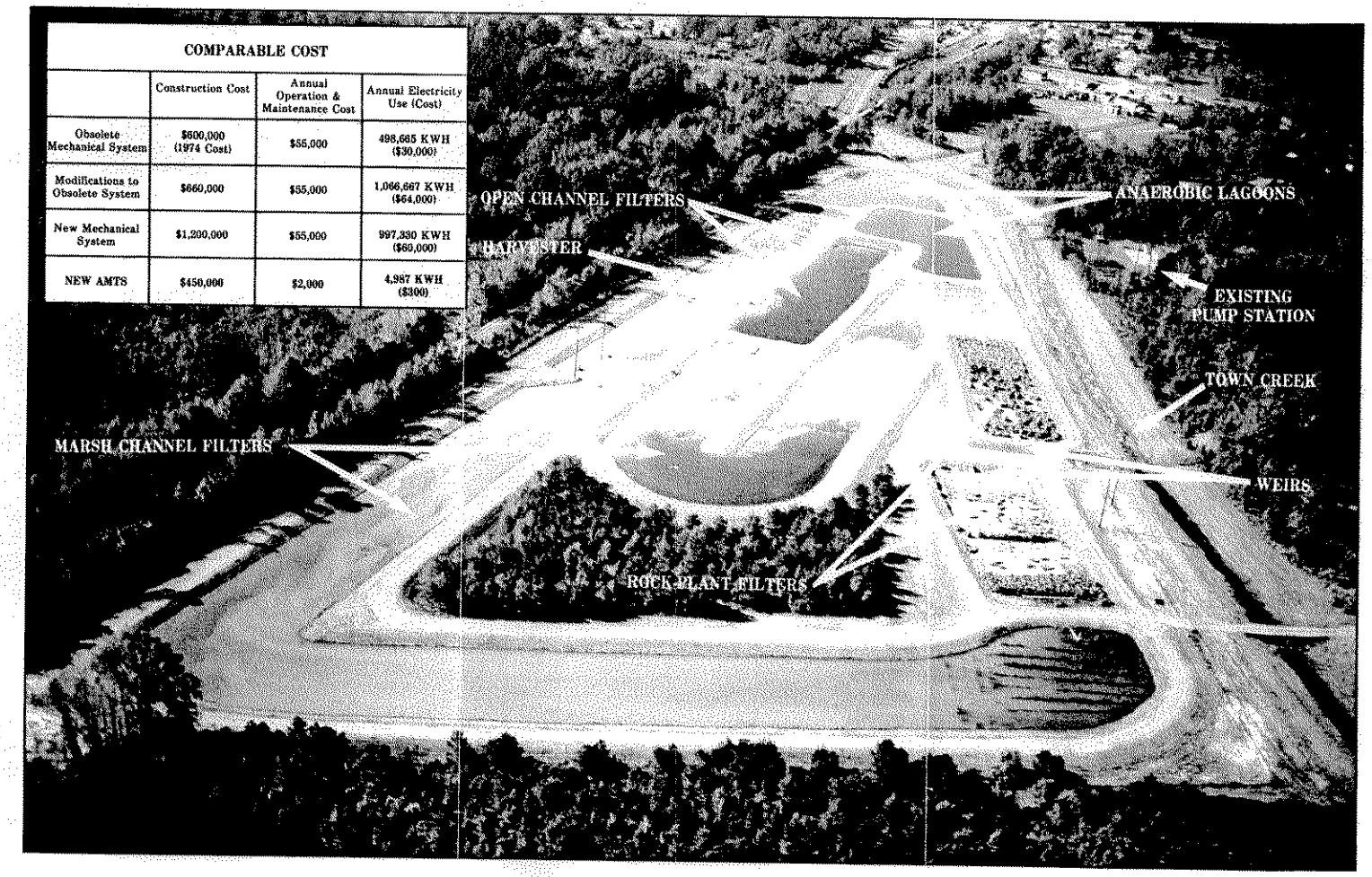
Union had a mechanical wastewater treatment system that was operating at full capacity, with a $334,000 bonded indebtedness and an annual cost of $85,000 for operation and maintenance, when they were notified that the system would have to be upgraded. Cost to modify the obsolete system was estimated to be $660,000, with a yearly energy cost of $64,000. A new mechanical system would cost approximately $1.2 million with an annual operation and maintenance cost of $55,000 and electrical cost of $60,000.

The Southeast Mississippi RC&D Council arranged for Dr. Billy C. Wolverton, retired NASA Research Scientist and one of the world's foremost authorities on artificial marshland treatment systems, to design a system for the town of Union utilizing AMTS technology. The land and construction costs were estimated to be $450,000, with an annual operation and maintenance expense of $2,000. A savings of $750,000 in construction cost and annual savings of over $112,000 in electrical and maintenance cost convinced the Union officials to install a new AMTS rather than a mechanical system.

The Union AMTS is designed as a dual system to allow half of the system to be taken out of operation if maintenance is necessary. The 14 acre state-of-the-art system is designed to treat 500,000 gallons of sewage per day, with a retention time of approximately 20 days. The system is designed to meet advanced wastewater treatment standards.

COMPARABLE COST

	Construction Cost	Annual Operation & Maintenance Cost	Annual Electricity Use (Cost)
Obsolete Mechanical System	$600,000 (1974 Cost)	$55,000	498,665 KWH ($30,000)
Modifications to Obsolete System	$660,000	$55,000	1,066,667 KWH ($64,000)
New Mechanical System	$1,200,000	$55,000	997,330 KWH ($60,000)
NEW AMTS	$450,000	$2,000	4,987 KWH ($300)



The grass grows greener over the septic tank and now, in hundreds of cities and counties across the country, a new wrinkle on that old observation is transforming the nature of municipal wastewater treatment. In a virtual "green revolution," more than 150 municipal and industrial wastewater treatment systems now in operation use common aquatic plants — instead of machines — to purify wastewater.

Artificial marshland wastewater treatment systems, also known as

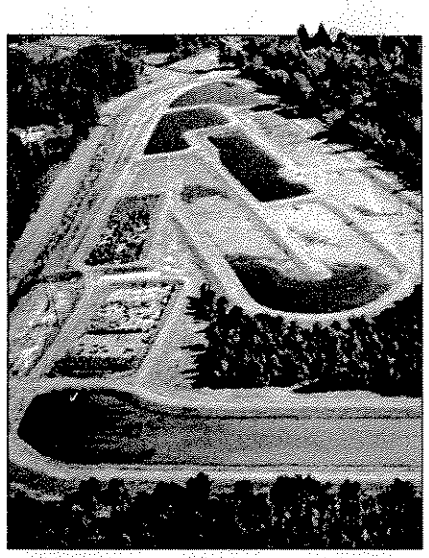
constructed wetlands, use plants such as bulrushes, torpedo grass, duckweed and even attractive flowers such as canna lilies to "farm" wastewater. It's a mutually beneficial arrangement — the plants are fertilized by waste from people, and people get purified water in return.

Artificial marshlands rely on natural biological processes to purify wastewater. In most cases, the systems use a sewage lagoon for primary treatment. For secondary treatment, the wastewater is funneled through aquatic plant systems. Organics in the wastewater are absorbed and biodegraded by plants and the associated micro-organisms that thrive on plant roots and stems.

This new treatment alternative comes at the same time that people — not to mention government regulatory agencies — are becoming increasingly conscious of the need to protect the environment by doing a better job treating wastewater. Municipal leaders across the country have been facing difficult choices as a result. Leaders want to upgrade wastewater treatment, yet federal funding for improving or replacing costly sewage treatment plants has largely dried up. The expense of new systems can be a heavy burden on local governments without outside assistance.

The mechanical systems that most cities and counties have been using are expensive to build, have high operation and maintenance costs and at times do not last long enough to pay off the debt incurred in building them. More importantly, the mechanical systems often do not do an adequate job of treating the wastewater, leaving the city or county open to fines for non-compliance with permit requirements.

What many cities and counties are finding is that artificial marshland treatment systems not only improve the quality of treated water, but they do so at a



Union, Miss., saved $750,000 in initial construction costs and continues to save an estimated $110,000 with its artificial marshland.

City Uses Computer To Control Industrial Wastewater

More stringent environmental regulations and increased public awareness have impelled municipalities to focus on the hazards of industrial wastes. State and local authorities are required to monitor the quality of the industrial water discharges that are subsequently treated by their wastewater treatment plants; a system to implement procedures to ensure compliance must also be developed.

Before any of this can be done, the municipality must have a complete and accurate compilation of the pertinent data on all industrial dischargers. To develop such a database, the city of Detroit engaged Urban Science Applications, Inc. (USAI), a Detroit-based developer of computer models and decision support software to develop an Industrial Waste Control Data Base Management System (IWC-DBMS).

The scope of the project can be gleaned from some basic statistics. The Detroit Water and Sewerage Department (DWSD) provides wastewater collection and treatment services over a 650-square-mile area that include 3.2 million people and more than 1,500 industrial dischargers. About 62 percent of the area is served by separate sewers; the rest is served by combined sewers.

Detroit has had an Industrial Waste Control Division (IWC) as a separate section of the Water Sewerage Department since 1972. Its primary purpose has been to enforce the federal, state and local laws and regulations that aim to protect the local water resources. In practice, it has meant implementing the Industrial Pretreatment Program pertaining to the commercial and industrial dischargers.

The IWC Data Base Management system has been in operation for more than two years. Discharge samples of approximately 500 companies are monitored for compliance with regulations. Ninety percent of the monitored companies have only one industrial facility. Each company's user permit with the city includes and defines the permissible parameters of discharges. Locations of the facilities, the character and volume of the pollutants generated, the acceptable limits and parameters of the pollutants and reporting requirements have been input into the system. Emphasis is on spill management of hazardous materials.

The system schedules sampling, issues work orders to field crews to obtain the samples and determines which parameters the Analytical Laboratory is to test. Routine sampling ("routine enforcement samples") are automatically scheduled by the system. The first step in determining the dates calls for dividing 360 by the previously entered sample frequency (how many times a year the wastestream is to be sampled). A random number between one and the result of this division is used to find how many days into the sampling period to schedule the sampling, with the actual scheduled date being the first day with available crew time.

If the system generates the number 72, then the sample will be scheduled for the first workday with an available field crew beginning on day 72 of the year. It also takes into account wastestreams which have multiple day sample sets and manually scheduled non-routine or special samples. All routinely scheduled streams can be sampled at once in one simple operation.

Special samples are taken outside the schedule. This is done after a spill, a complaint or when a routine sample shows an abnormality. As previously indicated, special samples are manually entered into the system.

The lab's findings are sent to the IWC which enters them into the database, keeping track of companies that are exceeding limits. The system provides the IWC with extensive capability for preparing routine and special reports based on the stored data. It keeps track of violators and has the capability to provide reports and the necessary documentation for the Enforcement Division to investigate instances of non-compliance. The Enforcement Division can send a "notice of violation" after several samples have been shown to exceed parameter limits. In general, the system helps the Enforcement Division to keep track of violators by providing a log that shows actions taken and dates for agreed upon remedial steps. It can also serve as the needed documentation for violations and actions taken if it is necessary for DWSD to bring legal action against a violator in court.

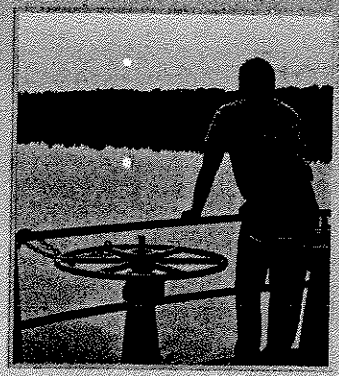
At DWSD, the system is installed on a Unisys XE530 minicomputer which supports over 30 Unisys B28 or B38 workstations and multiple printers. New programming tools and reports can be added to the system. □

YOUR ENVIRONMENTAL CHOICES ARE CLEAR

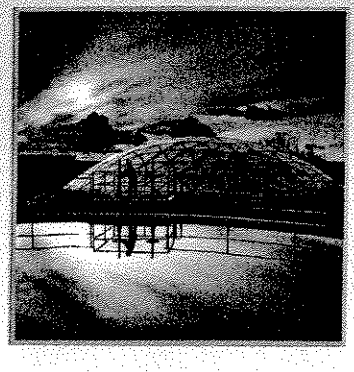
JMM Operational Services has helped cities and counties like yours manage, operate and maintain water and wastewater treatment facilities for almost 50 years.

The Power of Choice . . . JMM Operational Services puts power at your fingertips — the power of a national team of 2,500 plant managers, O&M specialists and engineers that has completed more than 10,000 projects for nearly 3,000 clients.

The Freedom of Choice . . . A contract O&M agreement with JMM Operational Services means we assume full responsibility for the management, operation and maintenance of your facility, controlling costs, protecting your capital investment and achieving regulatory compliance. But we offer a lot more than just contract O&M — from startup and training to privatization and capital improvement financing, we'll work with you to develop the right program for your community.



The Choice is Yours . . . We provide creative, sound solutions that contribute to environmental quality, protect public health and save you money. When it comes to managing and operating today's treatment facilities, there is one clear choice: JMM Operational Services.



▲ **TOWN OF WINNSBORO, SC**
Water and Wastewater Plants

◄ **CITY OF FARMINGTON, NM**
Water and Wastewater System

JMM Operational Services, Inc.

For more information, call our Marketing/Client Services Department
1700 Broadway, Suite 1100 • Denver, Colorado • (800) 234-4566

Circle No. 19 on Reader Service Card

cost that is easy on the pocketbook. Constructing an artificial marshland is estimated to cost less than half as much as a mechanical treatment system.

A case in point is the city of Union, Miss., which was notified in the late 1980s that it had to upgrade its wastewater treatment.

The city had to meet advanced secondary treatment standards because it discharges into a creek that dries up during part of the year. Union, with a population of 2,000, still owed $334,000 for a conventional sewage treatment facility that was obsolete. It would have cost an estimated $660,000 to upgrade the treatment system with no guarantees that the plant would meet permit requirements. A new mechanical treatment system would have cost an estimated $1.2 million, with annual maintenance costs of $55,000 and energy costs of $60,000 — without guarantees about meeting the advanced secondary treatment standards.

Bill Wolverton, an environmental scientist with Wolverton Environmental Services, proposed an alternative, a 14-acre artificial marshland treatment system designed to treat 500,000 gallons of sewage per day. The cost was only $450,000, with annual maintenance costs of about $2,000 and annual energy costs of $300 for aerators in the primary lagoon.

Union's marsh alternative saved the city an estimated $750,000 in initial construction costs and continues to save an estimated $110,000 per year in operating costs.

Consequently, it is no wonder that Union Mayor Max Sessums calls the marshland systems, "the future of wastewater treatment in the U.S.

"The wetland systems are very inexpensive to install and operate," Sessums says. "We have had tremendous interest in our system. We've had visitors from more than 100 cities from six or seven states."

Another believer is Mayor V.O. Smith of Collins, Miss., one of the first cities in the country to upgrade its treatment with an artificial marshland. "The marshland is zero cost for treating our wastewater," Smith says. "The only cost we have is mowing the grass on the levees."

Smith also has had numerous visitors from many cities and states and even several foreign countries come to tour the city's marshland. Cleaner wastewater was particularly important in this case because the city's system empties into the scenic Okatoma Creek, which is heavily used for canoeing and swimming.

Cannon Beach, Ore., has also seen improved treatment results in an environmentally sensitive recreational area. The city, located on the Pacific Coast, incorporated a section of natural wetlands for tertiary treatment, with lagoons provid-

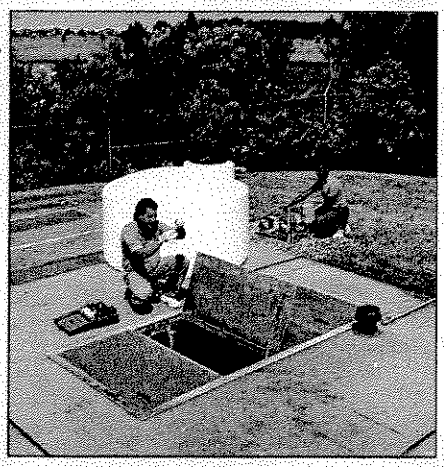
H_2O_2 Solves Florida Odor Problems

Hydrogen sulfide (H_2S) is the major cause of community odor complaints, lawsuits and corrosion in wastewater collection and treatment systems. This notoriously toxic gas, responsible for numerous fatalities, is present to some degree in most wastewater systems. Few communities escape the odor and corrosion problems associated with H_2S.

The obnoxious "rotten egg" odor of H_2S is, however, only part of the problem. In the presence of air and moisture, H_2S is biologically oxidized to sulfuric acid which corrodes concrete, metal, electrical equipment and other vital system components.

A variety of treatment options to control H_2S are available to communities. Chemical oxidation using hydrogen peroxide (H_2O_2) attacks the problem by eliminating the H_2S that causes odor and corrosion. In addition, the byproducts of the reaction, water and oxygen, are not toxic to the environment and the addition of oxygen to the system eliminates the septic conditions that promote the formation of H_2S.

Treatment of the wastewater stream with H_2O_2 provides a clean, safe, cost-effective alternative to other chemical treatments. H_2O_2, a strong oxidizing agent, reacts preferentially with H_2S in wastewater to form elemental sulfur and water, neither of which are toxic to biological organisms. Since H_2O_2 reacts preferentially with H_2S, only 1-1.5 pounds of H_2O_2 are required to destroy 1 pound of H_2S. The addition of a slight excess of H_2O_2 can provide enough oxygen in the wastewater stream to eliminate the potential regeneration of H_2S for up to four hours downstream from a single dosing site.



H_2O_2 dosing units solved odor problems at this treatment facility next to a golf course.

Prior to 1984, Clearwater, Fla., had a history of sulfide-induced odor and corrosion problems in its collection system and treatment plant headworks. Odor complaints from both city personnel and the public were numerous and angry. Peroxidation Systems was hired to survey the collection system, determine the source and levels of H_2S and recommend treatment options to eliminate odors and prevent corrosion. The complete system survey showed that the high sulfide levels found at the sites with odors and corrosion were due to sulfide buildup in long force mains with flat grades and long detention times.

Specific treatment goals, in addition to controlling odors at the Bay Front Pumping Station and Northeast Plant, were to prevent corrosion in two underwater force mains that carried flow to the mainland, and in a 3.5-mile-long gravity main that went under U.S. Highway 19 to the Northeast Plant. Odor control was also a major concern at both these sites because the Bay Front Pumping Station is located adjacent to City Hall (under the City Manager's window) and next to Tennis Court Park.

The Northeast Plant is located in a fast-growing, affluent residential area adjacent to a golf course. Dosing units were installed on Clearwater Beach to treat the flows between the beach and the Bay Front Pumping Station. A third unit was installed on Island Estates to treat a smaller flow from the north with liquid H_2S levels ranging as high as 20 mg/L and atmospheric levels averaging 100 parts per million. Low profile 1,000 gallon storage tanks were used so that when dosing sites were fenced and landscaped, the equipment could not be seen from the beach. Over the course of treatment, H_2S levels dropped from 8.5 mg/L in 1984 to 0.8 mg/L in 1991, based on data collected twice a week since May 1984.

The treatment goal at the Northeast Plant was to control odors at the headworks of the plant. Prior to treatment with H_2O_2, total sulfide levels ranged as high as 20 mg/L during certain periods of the day. The first H_2O_2dosing unit was installed in June 1984. Since then, two other dosing units have been installed, and H_2S levels have dropped from 7.5 mg/L to 0.6 mg/L, again based on data collected twice a week. □

ing primary and secondary treatment for the 500,000-gpd facility.

"It is very easily maintained," says Dave Kinash, the city's public works director. "And it is very efficient. It meets all the treatment standards."

The marshland is so attractive that many tourists who visit the area do not have a clue as to the underlying function of the marsh.

"The ponds and wetland systems are virtually downtown and create no problem whatsoever," Kinash says. "In fact, it's a wildlife habitat area, so it works out pretty nice."

The largest concentration of artificial marshland treatment systems has been in the Southeast, where the systems were built using spinoff technology from the National Aeronautics and Space Administration (NASA) Stennis Space Center in south Mississippi.

NASA researchers led by Wolverton were trying to determine the best, most energy-efficient way to recycle polluted air and water in future space stations or colonies on the moon or Mars. What they found was that the best alternative is a technologically simple system that relies on common plants, instead of machinesthat require energy input, to recycle air and water.

Wolverton retired from NASA to become a full-time consultant and has designed many of the artificial marshlands in use in the Southeast.

Besides the initial savings in construction costs, artificial marshlands have a number of other distinct advantages over mechanical treatment facilities., including:

- The artificial marshlands are gravity-flow and hence very energy efficient, saving large sums of money on electricity bills;
- Since marshlands do not wear out like machinery, the natural systems can last for generations;
- More flexibility means the marshlands are able to absorb large amounts of stormwater and are more tolerant of chemical shock loading.
- Little technical training is needed to manage the systems; and
- Birds and other wildlife are attracted to the marshlands, many of which are so attractive that they double as nature preserves.

On the negative side, the technology for the best treatment results is still being refined. The marshlands require more land than mechanical treatment plants, which limits their use in heavily populated areas where land is scarce. But even in that situation, there are possibilities for having marshlands do double duty as parks or nature sanctuaries. Wolverton even envisions that one day large city buildings will have both air and water purified with indoor plant systems. Rooftops and roadsides are also potential sites for plant purification systems in urban areas.

Most of the artificial marshlands to date have been built for small towns and counties. One of the country's largest and most innovative projects, in Crowley, La., went into operation 10 months ago.

"We're very pleased with our system," says Robert Ishte, mayor of Crowley. "It is doing an outstanding job. In certain areas, treatment results have been even better than we expected. No matter what system you have, there will be some problems to begin with. But the problems we have are very minor, and we're working on solving them."

Crowley's system, which treats wastewater from about 35,000 people and has a capacity of four million gallons a day, has an 88-acre lagoon followed by 24 acres of marshlands planted with bulrush and duckweed. Besides estimated savings of 50 percent on initial construction, Crowley officials cut their utility bills by $3,000 a month by changing over from the mechanical treatment plant in use previously. "Energy is cer-

Home Sweet Sludge? It's Possible

It looks like a brick and feels like a brick," says Joseph Delinski, associate director for sustainable energy at the Pennsylvania Energy Office (PEO). But it isn't a brick. It's sludge.

An Air Products research project that has demonstrated the feasibility of recycling municipal sewage sludge into construction bricks was spotlighted during a June ceremony in Harrisburg, Pa., in which the PEO's Recycling Technology Program (RTP) was honored with an award from Renew America, a national environmental organization. The sludge-to-brick research, funded through the RTP, investigated the use of oxidized sludge solids generated by an innovative treatment technology — the VerTech process — as raw material admixture in construction bricks.

The VerTech Treatment Process uses oxygen, the natural laws of gravity, pressure and temperature to reduce the solids content of typical municipal sludge by approximately 72 percent and convert it to carbon dioxide, an easily biodegradable liquid and an inert, non-hazardous sand-like solid.

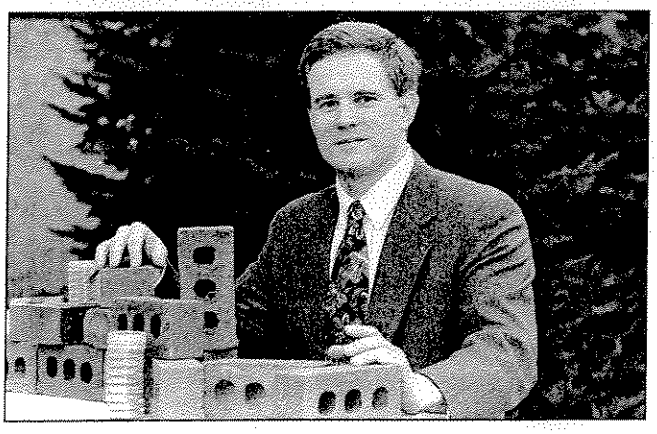
The research using this material was conducted at Clemson University's Center for Engineering Ceramic Manufacturing which is recognized by the brick industry as a leader in the field of ceramic study. Researchers confirmed that using oxidized sludge can produce brick with improved physical properties as well as lower manufacturing costs and energy requirements. In addition, environmental testing proved there were no statistical differences between brick incorporating oxidized sludge solids and standard brick.

A demonstration project in Longmont, Colo., in 1984 and 1985, processed 30 tons of sludge per day.

"The research funded by RTP creates a realistic opportunity for recycling material which otherwise would be landfilled," says Robert Freudenberg, manager of sludge treatment technology for Air Products. "It has allowed us to demonstrate to brick manufacturers that VerTech solid material can create environmentally safe bricks with excellent physical properties."

"By funding recycling programs such as this one, we can lend support to businesses with innovative or emerging technologies, promote the public good and protect the environment. Clearly, it is a win-win situation," says PEO Executive Director Brian Castelli.

The bricks are as strong as traditional clay brick, according to David Bowers, an Air Products engineer, who says that rising landfill costs make the technology a cost-effective alternative for municipalities. □



Engineer David Bowers says sludge bricks are a cost-effective technology for cities.

Photo by Dan Elek

The artificial marsh in Cannon Beach, Ore., is so attractive that many tourists who visit the area do not have a clue as to its underlying function.

tainly a factor we need to address in the U.S.," Ishte says. "This is one way we can save tremendously."

Another bonus in Crowley is that the marshland makes a much more attractive neighbor than the old facility. "There is no smell," Ishte says. "You can picnic right on the levees if you want to. If you got to within eight or 12 blocks of the old facility, you could smell it. And it was an eyesore that kept property values in the area depressed."

Because he is a fisherman, Ishte was easy to sell on the concept of using artificial marshlands since he had noticed how clean the water coming out of the marshes was.

"I like to go back to the natural things," he says. "The more that we can use the natural things around us, the better off we're going to be. We need to get away from chemicals that can harm the environment."

Marshland treatment systems at Crowley and elsewhere across the country are favorite bird watching sites because they attract large quantities and varieties of bird life.

And Crowley has been having treatment results as lovely as the marsh with biochemical oxygen demand levels as low as two or three.

Woody Reed, a private consultant in Vermont who has studied constructed wetlands across the country, says low cost combined with good treatment results has caused tremendous interest in the use of the natural system.

"Everything I've done for the past three years convinces me these systems are an ideal concept for small communities, schools, parks, office buildings, individual homes and apartment developments," Reed says. "There seems to be a tremendous interest in the use of the systems. I get calls from all over the country. I think the potential is greater than we've taken advantage of so far. But people are aware of the concept and they are pushing to apply it."

Reed, one of the authors of the book, Natural Systems for Waste Management and Treatment, says much has been learned in recent years about using natural systems to purify wastewater.

"Probably the most important thing is that three, four years ago, there was really no consensus about how these things should be designed," he says. "Everyone was going out and building them. Now there is more agreement, more of an approach to a consensus about how these things should be designed."

James Watson, senior environmental engineer with the Water Quality Department of the Tennessee Valley Authority, says artificial marshlands have good potential for solving wastewater problems at an economical cost, especially if some simple adaptations compatible with the wetlands' technology prove effective in improving treatment results. He says sand or gravel filters show promise.

While the majority of natural systems for wastewater treatment thus far have been installed in temperate zones in the South and along the Pacific Coast, experts believe there is potential for designing systems that are effective in northern areas, as well.

Watson points out that the natural systems have been in use throughout cold climates in Europe for a number of years. "I believe we'll be able to study the systems and learn enough to come up with appropriate designs for cold areas," he predicts. "The technology is effective for cold areas. It's just a matter of modifying the design."

Watson believes that subsurface gravel marshes or soil systems have the best potential for treating wastewater in colder climates.

Wolverton agrees that the systems can work in colder areas, pointing to a system for the city of Monterey, Va., designed by Wolverton and the city's mayor, George McWhorter, an engineer.

The system performs well even with sub-zero temperatures and a cover of snow. "Eighty to 85 percent of the treatment is done by microbes living in and on the plant roots," Wolverton says. "The microbial activity continues even under a cover of snow."

No matter what the climate, Wolverton says it is important to plant systems that are easily accessible for maintenance. He prefers dual systems designed so half the system can be taken out of operation when maintenance is necessary.

"What we've found is that you must have a management scheme," he says. "You can't just have a plant that is good at removing waste. You have to have a way to harvest those plants when they reach maximum size."

Harvesting of plants that could be used for animal feed is a potential source of income for cities and counties. Wolverton's newest large municipal systems g by the Micro/Agro trademark to distin guish their spinoff agricultural applic

Spec Change Cuts Costs at Wastewater Plant

Going back to the drawing board led to a cost-cutting work of art for an insulation contractor. By switching the specs from foam glass to fiberglass pipe insulation, Centin Corporation cut installed cost up to 20 percent at Orlando, Fla.'s Iron Bridge Wastewater Treatment Plant.

This enabled the contractor to complete the job — part of a $27.6 million plant expansion — well within budget. The switch also allowed the contractor to meet the plant's deadline, which had no margin for delay.

The material they specified was CertainTeed SnapOn fiberglass pipe insulation with All Service Jacketing (ASJ) and Certa Blue Self Sealing Lap (SSL), resulting in reduced labor and materials costs of up to 15 percent.

"The construction company asked us to do some value engineering in preparing new specifications," says Michelle Hermsen, sales representative for Centin. The company is involved in commercial and industrial insulation projects throughout rapidly growing central Florida.

"We were pleased to do it, even though we had to work within some very tight restrictions," she says. "We had to meet the thermal efficiency specifications throughout the plant which will treat 12 million gallons of wastewater a day. We also had to meet strict cost requirements. And we had a deadline with no flexibility. Orlando is growing too quickly for us to think about delays in public works projects."

The fiberglass pipe insulation met all the project's needs.

"It met thermal efficiency specifications, without the thickness of foam glass," says Hermsen. "Going with the thinner material contributed to reducing material costs."

By switching to fiberglass material, Centin was able to cut insulation thickness by as much as a full inch on pipes ranging from two to 12 inches in diameter.

Pipe insulation plays a key role in maintaining temperatures in the plant's process lines. "The pipe insulation helps us meet the tough sludge handling regulations mandated by the regulatory agencies," says Charles Stanley, project manager for Martin K. Eby.

At Iron Bridge, the waste is processed in a sludge digestor with a significant amount of piping. In the digestor sludge piping, bacteria are used to digest the sludge.

Temperatures in the pipes must be maintained between 90 and 100 degrees F in order to provide the optimum environment for the bacteria. "The insulation ensures that the temperatures remain constant," notes Stanley.

Once the installation phase began, crews were able to move quickly with the insulation. First, they cut pieces to fit length requirements. Workers then snapped the insulation around each section of pipe.

The expansion of the Iron Bridge plant is an intermediate step for the facility, which opened in 1981. Work has already begun on another expansion phase, which will use the recently completed digestor tank system.

"The additions to the plant will increase capacity and improve the quality of the discharge," said Stanley. "As the community grows, the utilities serving it must keep pace." □

tions. At a Micro/Agro system that recently went on line in Wolverton's hometown of Picayune, Miss., duckweed is used exclusively as the filter plant. Duckweed is cold tolerant, easy to harvest and has the protein equivalent of soybean meal. Drying is the only processing necessary before feeding the plant to fish, chicken or other livestock. An estimated 15,000 pounds per acre of duckweed can be harvested each year in nutrient-rich wastewater.

Thus the potential exists for wastewater systems to become self-supporting.

"By treating our waste and harvesting hundreds of tons of this material, we are producing a very valuable feed product," Wolverton says. "We are recycling our waste into a valuable product. So, as we learn more about using nature to clean up our environment, we're not only cleaning our waste economically, we are recycling. And that is what we must do."

City and county officials who want more information about using artificial wetlands in wastewater treatment may be interested in a video written and produced by the author of this article. Entitled, "The Green Revolution in Wastewater Treatment," the video is available for $15 from the Southeast Mississippi Resource Conservation and Development Area, Suite 323A, William Colmer Building, 701 Main Street, Hattiesburg, Miss., 39401, or call (601) 545-2753. □

Becky Gillette is a freelance writer in Ocean Springs, Miss.

Photo by Becky Gillette

Attractive flowers such as canna lilies help "farm" wastewater. The plants are fertilized by waste from people, and people get purified water in return.

"Dry Weather Flow" Definition Should Be Clarified

Arriving at fair definitions of dry weather flows that can be used for enforcement purposes is no easy task. Ideally, such definitions leave little room for interpretation by individuals. In reality, most are either incomplete or vague.

The National Combined Sewer Overflow Strategy classifies flows in combined sewers into two categories: wet weather flow and dry weather flow. Wet weather flow is defined as a combination of sanitary flow, industrial flow, infiltration and stormwater flow, including snow melt. Dry weather is defined as the flow that results from domestic sewage, infiltration and industrial wastes with no contribution from stormwater runoff or stormwater induced infiltration.

Interpretation of what constitutes dry weather bypassing is left to the enforcing agencies. The interpretation varies from region to region and from state to state.

The present United States Environmental Protection Agency strategy is to eliminate all dry weather bypasses from combined sewers. Clarifying and refining the definitions is important to the more than 1,000 combined sewer systems in the nation.

As the definition of dry weather stands now, overflows from combined sewers would be equivalent to overflows from separate sanitary sewers. Implicit in the approach is the idea that, if there is no storm, and thus, no runoff, there is low flow in the receiving stream. This assumption is valid in most cases.

However, there are a number of circumstances that may result in CSOs during dry weather that are not covered by the present definition. Flooding and the potential for damage from flooding can result in CSOs when the sun is shining in the affected community. Also, heavy rains in the upstream section of a drainage basin can result in flooding downstream. For example, heavy rains in the Pittsburgh area may raise water levels in the Ohio River and cause flooding downstream in the days following the rain. Flooded sewer systems in the affected areas will result in CSOs under dry weather conditions if the present definition is applied.

Other dry weather CSOs can occur due to wind-induced phenomena. For instance, in a shallow lake such as Lake Erie, strong northeastern winds can pile up water at the west end of the lake, resulting in floods and flooded combined sewers in lakeshore cities.

This "dry weather/high flow" or "dry weather/high water" accounts for conditions in the receiving waters and should be considered equivalent to "wet weather" when dealing with CSO abatement. Removing such CSOs from the dry weather bypassing category would substantially reduce the cost of CSO

Location of overflow and receiving water elevation and flow are important in convincing regulators to allow CSO under "dry weather/high flow" and "dry weather/high water."

abatement without significant impact on the quality of the receiving waters. CSO discharges to a river in flood stage can have little or no impact on that stream because of the large volume of stream flow. The load of silt, cans, trees and drowned animals carried by a stream in flood dwarfs any contribution from CSOs.

The inclusion of snow melt as part of wet weather flow is logical but presents problems in the enforcement area. It is difficult to prove or disprove that a CSO event occurred due to snow melt. Average daily temperatures, as well as high and low temperature for the day, the presence or absence of sunshine and the use of snow-melting chemicals affects the volume of snow melt. How is the permit holder to prove there was snow melt? How can the volume of snow melt be quantified? How is the enforcement agency to prove otherwise?

The definition of dry weather and wet weather, when applied to CSO abatement, must address flood and high water conditions in the receiving waters. This objective could be attained by using the concepts of dry weather/high flow and dry weather/high water.

Systems serving areas subject to snow melt should include provisions in the permit that reflect the situation. It would not be prudent to rely solely on the definition of wet weather flow.

Shifting this "dry weather" situation to "wet weather" will reduce the cost of CSO abatement and have minimal impact on the receiving waters. The inclusion of snow melt as part of wet weather conditions, while necessary, makes this part of the strategy almost unenforceable. During the winter months in northern climates, it may be next to impossible to determine whether a CSO is due to snow melt or is plainly a dry weather bypass. Bypasses that could be due to snow melt should be discussed during permit negotiations.

Having data available to justify the designation of "dry weather/high flow" and "dry weather/high water" is critical. Such items as location of overflow and receiving water elevation and flow are very important in convincing regulatory agencies to allow CSO under "dry weather/high flow" and "dry weather/high water."

The permit holder also should be able to show a need to bypass if overflows are the result of measures to protect the system or the POTW. Information such as what stream elevations result in street or basement flooding and historical records on flooding frequency should help in developing appropriate permit conditions. □

This article was written by Felix Sampayo, senior vice president, Jones & Henry Engineers, Toledo, Ohio.

Indianapolis Selected by EPA For Wastewater Pilot Project

The United States Environmental Protection Agency has selected Indianapolis for a pilot project to support the agency's initiative to create public/private partnerships in wastewater treatment.

EPA and the city will work closely to identify and analyze issues associated with the possible transfer of the city's wastewater treatment facilities to the private sector. The joint efforts will build on the flexibility presented by Executive Order 12803 on Infrastructure Privatization, signed by President Bush in April, 1992.

The order promotes private investment in local infrastructure by instructing the agency to assist local privatization initiatives and to remove federal regulatory impediments to privatizing assets financed with federal grants. The city and other potential pilot projects will help EPA develop effective regulations to increase public/private partnership opportunities in wastewater treatment.

Indianapolis is investigating all opportunities to involve the private sector in addressing the city's public sector needs. The city has undertaken a comprehensive study of its wastewater treatment plant operations, financial management and value.

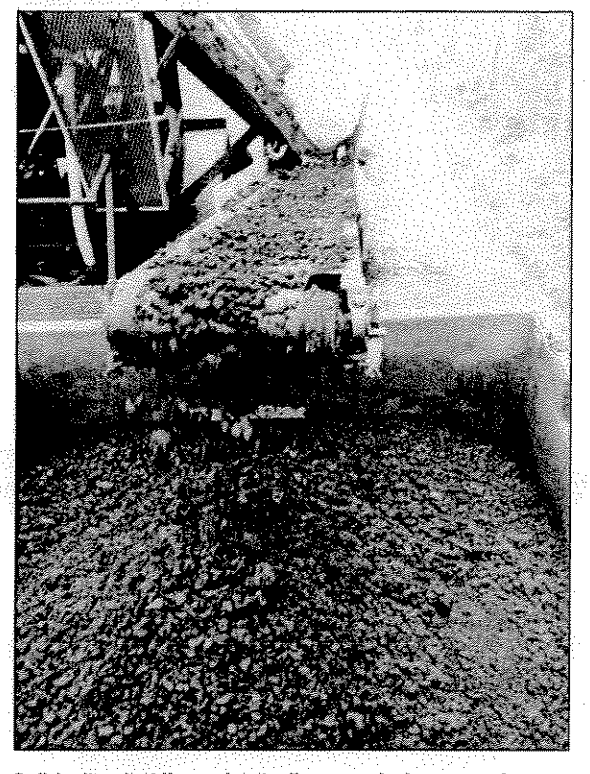
The study will explore ways to tap private sector resources while at the same time capitalizing on the city's existing resources to address the water quality infrastructure challenges it faces in the near future. EPA believes the results of the study will benefit other communities confronting similar concerns. □

New Service Solves Sludge Dewatering, Storage Dilemmas

The Cleveland (Tenn.) Utilities' sewerage system serves 12,000 residential and industrial customers. Its plant — a 9.2-mgd Australian-designed Intermittent Cycle Extended Aeration System is said to have the ability to meet rigid discharge standards even when flows reach three times design capacity. At Cleveland Utilities, treatment was effective following a 10-inch rainstorm which produced a prolonged inflow of 25 mgd. Continuous cycling permits all processing to take place in the same activated sludge tanks. Following secondary treatment, effluent is conventionally discharged through a submerged diffuser into the Hiwassee River.

Experts on the site say that, with one exception, everything has worked smoothly since startup in 1988. The exception was that the system's two lagoons, with their combined nine mg of capacity, were supposed to provide 10 or more years of sludge storage. But with only three years gone, the space was almost filled. Some experts thought that the plant was generating more solids than anticipated. Others pointed to the fact that the lagoon banks had been built on a shallower slope than planned.

Whatever the reason, it was clear that something had to be done before excess outflow developed and returned to the plant.



Solids directed through a trailer-mounted press system helped restore Cleveland's storage lagoon to its design capacity.

Already, homeowners living a half-mile away had complained about objectionable odors, and the facility was close to exceeding U.S. Environmental Protection Agency discharge standards.

The answer: dewater to maintain status. At this point, Cleveland Utilities hired consultants Hensley-Schmidt Inc., Chattanooga, Tenn., to conduct a sludge management study. Their short-term solution was to install a filter press which could dewater the sludge and maintain an equilibrium in the existing solids content. As much treated solids as were being contributed each day by the plant process would be removed from the lagoon so capacity levels would not be exceeded. A permanent solution will be recommended on the basis of further studies. The most likely choice will be to install a permanent sludge press on-site, treat the sludge cake with lime and use it as part of a composting or land application program.

To initiate the short-term treatment, the consultant and Cleveland Utilities selected Bio-Nomic Services, Inc., Charlotte, N.C. As soon as their order was signed, the supplier trucked one of its 25 self-contained trailer-mounted press systems onto the site. Setup simply required hook-up of sludge feed, washwater and filtrate discharge hoses and connection of an electric line.

In a relatively short period of time, everything was ready for processing. As the project proceeded, technicians trained local utility personnel to handle all operations themselves. Contractor representatives remained available to answer questions and help trouble-shoot the few problems that occurred.

To start the dewatering process, crews lowered a conventional utility-owned variable-speed submersible pump into the lagoon. Initially, the pump was located in 10 feet of water. As work progressed, the unit was periodically lowered into deeper material concentrations. Sludge solids, maintained at 3.5 to 4.5 percent, were pumped to a nurse tank. Incorporation of this unit into the processing circuit insured a consistent sludge feed and the capacity for continued operation.

Pumping next directed the slurry to a trailer-mounted self-contained belt press. Here, polymer was injected and rollers set at increasing pressures squeezed the free water for release through a gravity deck back to the lagoon. Sludge cake was continually bladed off the belt, directed down a chute, conveyed out to a truck and hauled to the landfill.

The operation consistently produced a material that contained 16 to 18 percent solids.

Fleet size was matched to output. Two vehicles were used for hauling, both conventional six-yard dump trucks. In the time it took one operator-driver to shuttle the loaded vehicle 30 miles to and from the landfill, the other vehicle was nearly full. Material was accepted for disposal at a charge of $28 per ton. Filtrate was returned to the storage lagoon or to the headworks of the plant.

Initially, Cleveland Utilities' crew and rented equipment produced four dry tons of material per eight-hour shift, meeting the goal of removing what the plant would add every 24 hours.

As the operators became more familiar with the machinery and the process, production increased to six to eight dry tons per eight-hour shift. □

APRIL 26, 1994 FOR IMMEDIATE RELEASE

CONTACT: STATE REPRESENTATIVE MARC DUFF 608-266-1190
STATE REPRESENTATIVE SCOTT JENSEN 608-264-6970

NASA SEWERAGE TREATMENT SYSTEM REDUCES LOCAL GOVERNMENT COSTS

Madison...Wisconsin Wastewatchers Representatives Marc Duff (R-New Berlin) and Scott Jensen (R-Waukesha) have contacted DNR Secretary George Meyer suggesting that he consider promoting a sewerage treatment method developed by a NASA scientist which would provide significant savings to local governments, reduce taxes, and help clean up the environment.

The latest Wastewatcher's effort involves a unique type of wastewater treatment method called a Natural Treatment System, which uses natural aquatic plants to purify the water. The cost of constructing a natural wastewater treatment system can be less than one-half the cost of a traditional sewerage facility, and the operating costs of the natural system are significantly less.

"Now is the time for communities to pursue construction of Natural Treatment Systems not only for their cost-effectiveness and ease of operation, but also for their advantage in contributing to a cleaner environment," said Duff.

The natural treatment method uses constructed wetlands as part of the wastewater filtration system, and is therefore considered to be good for the environment. Natural treatment systems are proven to work in a variety of climates and would be suitable even for Wisconsin's varying weather conditions. One such treatment facility is already operating in the state.

In response to the federal Clean Water Act, the state created a clean water fund to assist communities faced with the expensive task of cleaning up their wastewater treatment systems. Lowering the cost of systems will mean the state can assist a greater number of communities through the fund.

"Here is an excellent opportunity for cleaning up our water filtration systems without the use of expensive machinery and tons of taxpayer dollars, said Jensen. "I see no reason why we couldn't develop constructed wetlands in our own state."

Wisconsin Wastewatcher's was begun in January 1993 by Duff and Jensen with a goal of pointing out potential taxpayer savings of at least $1 million for every month they serve in the State Assembly. Now in their sixteenth month, the Wastewatchers have identified over $53 million in potential taxpayer savings.

###

April 26, 1994

George Meyer, Secretary
Wisconsin Department of Natural Resources
101 S Webster Street, GEF 2
Madison, WI INTERDEPARTMENTAL

Dear Secretary Meyer:

As you know, we have been looking into ways to improve government efficiencies and save taxpayers money through our Wisconsin Wastewatcher's effort. As part of this effort, we recommend that your department explore and especially promote the use of a relatively unique method of sewerage treatment, called natural treatment systems, which was originally developed by NASA. We believe this will lead to recognizable savings to local governments in need of such treatment systems, possible benefits to state taxpayers through the Clean Water Fund, and an improved environment.

There appear to be many advantages to using this type of wastewater treatment system. First, this type of treatment system is extremely cost effective. The cost of constructing a natural wastewater treatment system can be one-half the cost of building a traditional facility. In addition, the costs of operating a natural system are significantly less than mechanical facilities. Reducing the cost of treatment facilities will make it more affordable to homeowners and businesses, while benefitting Clean Water Fund efforts for hardship cases.

Second, this natural wastewater treatment method is pro-environment due to the use of constructed wetlands as part of the system. In other states the constructed wetlands are made into a park-like setting and serve as a habitat for wildlife.

Third, this type of system is now proven to work in a variety of settings and climates. Natural wastewater treatment systems can be easily constructed even in Wisconsin's cold climate for small rural communities as well as larger municipalities over 30,000 in population. These types of systems can even be made to treat discharges for a single building. It is our understanding that one facility is already working in a Wisconsin community.

We look forward to hearing from you about opportunities for promoting this technology for wastewater treatment in Wisconsin. If you agree that more can be done to promote natural systems, please advise us if there is any need for legislation or administrative rule changes to make it possible. Thank you for your cooperation.

Sincerely,

Marc C. Duff
State Representative
98th Assembly District

Scott R. Jensen
State Representative
32nd Assembly District

MCD/SRJ:mlb

April 26, 1994

Pat Osborne, Deputy Secretary
Department of Industry, Labor and Human Relations
201 E Washington GEF I Room 400X
Madison, WI INTERDEPARTMENTAL

Dear Pat:

I am writing to recommend that your department explore allowing the use of a relatively unique method of wastewater treatment called natural treatment systems, which was originally developed by NASA. We believe this could provide cost effective opportunities to property owners in need of private wastewater treatment.

There appear to be many advantages to using this type of wastewater treatment system for private purposes. First, this type of treatment system is cost effective. The cost of constructing and operating a natural wastewater treatment system can be significantly less than a traditional facility. Some natural treatment systems for buildings can also improve the climate and environment in the structure.

I look forward to hearing from you about the opportunities of promoting this technology for private wastewater treatment in Wisconsin. If you agree that more can be done to promote natural systems, please advise me if there is any need for legislation or administrative rule changes to make it possible. Thank you for your cooperation.

Sincerely,

Marc C. Duff
State Representative
98th Assembly District

MCD/mlb

U.S. DEPARTMENT OF AGRICULTURE

REFERENCE SLIP

DATE 1-6-94

TO

The Honorable Marc Duff
WI House of Representatives

- [ ] ACTION
- [ ] APPROVAL
- [X] AS REQUESTED
- [ ] FOR COMMENT
- [X] FOR INFORMATION
- [ ] INITIALS
- [ ] NOTE AND FILE
- [ ] NOTE AND RETURN
- [ ] PER PHONE CALL
- [ ] RECOMMENDATION
- [ ] REPLY FOR SIGNATURE OF
- [ ] RETURNED
- [ ] SEE ME
- [ ] YOUR SIGNATURE

REMARKS

FROM

Mr. Glen C. Powell

★U.S.GPO:1993-0-716-879/60444 FORM AD-514 (8-64)

For more information on the Artificial Marshland Treatment System (AMTS) for Wastewater contact:

Dr. Bill C. Wolverton, President
Wolverton Environmental Services, Inc.
514 Pine Grove Road
Picayune, MS 39466
(601) 798-5875 (HOME)
(601) 799-3807 (LAB)
(601) 798-5875 (FAX)

VIDEO: "Artificial Marshland Treatment Systems: The Green Revolution In Wastewater Treatment"

COST: $15.00

AVAILABLE FROM:

Southeast Mississippi RC&D Area, Inc.
Suite 315, Wm. Colmer Building
701 Main Street
Hattiesburg, MS 39401
Telephone: (601) 545-2753

PURPOSE: This 27 minute overview of artificial marshland treatment systems can be used to educate municipal and industrial leaders about the many advantages of this wastewater treatment alternative.

OVERVIEW: Artificial marshlands operate by using aquatic plants and associated micro-organisms to filter and digest waste. Basically, the plants are "farming" human waste, and duckweed used in the purification process can be used as a valuable fish and animal feed.

The construction cost of building an artificial marshland is less than half that of conventional system. Because these gravity- flow systems require very little energy to operate, cost of operation and maintenance (O&M) are very low...five percent or less when compared to the cost of conventional systems.

Artificial marshlands, unlike conventional mechanical systems, don't have moving parts that can wear out. They are very long-lasting, durable and less subject to mechanical breakdown and shockloading. Since the systems are easy to understand and operate, they don't require technical personnel to operate and maintain.

The systems treat wastewater to advanced standards, removing toxic chemicals and heavy metals from wastewater effluent. They also improve wildlife habitat, and provide other environmental advantages.

To order the Artificial Marshlands video, detach the form below, include fee, and mail to the address above.

Name: _____

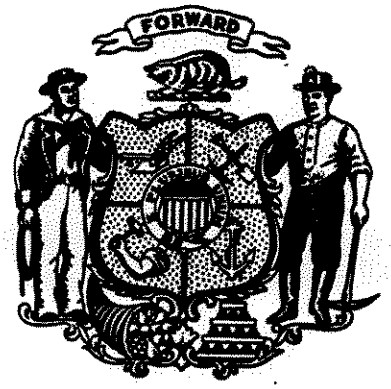
Organization: _____

Address: _____

_____

Telephone: _____

END



END

Wisconsin Counties Association

MEMORADUM

TO: Honorable Members of the Assembly Committee on the Environment

FROM: Craig Thompson, Legislative Director CT

DATE: December 15, 1998

SUBJECT: COMM 65

The Wisconsin Counties Association (WCA) thanks you for the opportunity to make a few brief comments regarding COMM 65. WCA opposes administrative rule COMM 65 as it is currently proposed.

The Department of Commerce developed the rule to regulate construction site erosion on commercial building sites. It was the objective of 1993 SB 44/1993 Act 16 to: 1) protect water quality through erosion and sediment control at construction sites of public buildings and places of employment; 2) reduce agency overlap, and 3) satisfy the requirements of the Wisconsin Pollutant Discharge Elimination System as outlined by the U.S Environmental Protection Agency (EPA).

The Wisconsin Counties Association in conjunction with the Wisconsin Land and Water Conservation Association (WLWCA) and the Wisconsin Department of Natural Resources (DNR) does not believe that COMM 65, in its current form, accomplishes these objectives.

Of major concern is that COMM 65 as proposed threatens to undermine local erosion control ordinances. Subsection 65.04 states that a local municipality may only enforce an erosion control ordinance on building sites covered under COMM 65 if the local ordinance is: 1) more stringent than COMM 65, and 2) is adopted before January 1, 1994. Although the WCA supports an administrative rule that sets forth minimum erosion control standards for construction sites throughout Wisconsin, we respectfully request a statutory change to allow for the creation and enforcement of local construction site erosion control ordinances beyond the 1994 date. Local regulatory efforts aimed at minimizing water pollution through erosion control and storm water management ordinances should not be restricted as long as they meet minimum state requirements.

100 River Place, Suite 101 ◆ Monona, Wisconsin 53716-4016
608/224-5330 ◆ 800/922-1993 ◆ Fax: 608/224-5325

Mark M. Rogacki, Executive Director
Darla M. Hium, Deputy Director

Mark D. O'Connell, Legislative Director
Lynda L. Bradstreet, Administrative Director

In addition, we respectfully request that the following standards under the proposed rule be amended to strengthen erosion control enforcement:

- Require that erosion control plans and storm water management plans be prepared and submitted for review and approval by the department or local unit of government.
- Require that the certification of erosion control plans only be issued by planners and inspectors who have thorough documentation of directly applicable experience or training.
- Require that erosion control on construction sites be enforced by county land and water conservation staff or others certified under the provisions of chapter 470.

We ask that those comments that have been forwarded to you expressing concern over COMM 65 receive careful consideration as the rule moves through the legislative process.

If you have any questions, please do not hesitate to contact the WCA office.

Thank you for considering our comments.

Wisconsin Land & Water Conservation Association, Inc. (WLWCA)

Wisconsin Association of Land Conservation Employees (WALCE)

Objections to Comm 65 - Why It's Bad For Water Quality

Submitted by: Perry Lindquist, Washington County Land Conservation Department/WLWCA/WALCE

Comm 65 is supposed to control sediment from the construction of commercial buildings. However, the current draft would relax erosion control requirements for builders and developers compared to long accepted national standards and any local ordinance. Because of this, the rule represents a significant step backward for local water pollution control efforts in urban and urbanizing areas. WLWCA and WALCE respectfully requests the Assembly Environment Committee to object to the entire rule. Below is a summary of what is wrong with Comm 65 and why it should not be approved, followed by recommendations for improvement.

The Weaknesses:

The draft rule would be very ineffective at controlling sediment from construction sites and is inconsistent with the enabling legislation. Examples include:

- ✓ Erosion control plans are not required to be submitted for review or approval by the department or a county, city, village or town as required by Section 101.1205(2) State Statute (and all local ordinances).
- ✓ The rule is silent on many issues that must be addressed in an erosion control plan (ex: runoff diversion).
- ✓ Inspection requirements are unclear and rely heavily on self inspection ("fox watching the hen house"). This is a symptom of awkward fit - trying to regulate grading activity through a building permit.
- ✓ The rule does not require compliance with any state standards for the design and installation of erosion control practices. Because of this, uniformity is lost and practice failure and law suites are certain. (Most important! Example: sediment basins, necessary for large sites, not even mentioned in the rule.)
- ✓ Site plans are automatically certified for erosion control if they are submitted by a licensed architect, who may have no applicable training or experience. (Specialty technical field, not an "after thought").
- ✓ The rule ignores post-construction stormwater management issues and leaves local contractors caught between conflicting codes/standards. Stormwater needs are based on drainage area, not building pads.
- ✓ Enforcement is left to building inspectors who may rarely visit the site and know (or care) little about erosion control/water pollution concepts or the engineering behind practice designs for large sites.
- ✓ Since many communities already had local ordinances, this rule creates much confusion and inconsistencies in jurisdiction and erosion control standards. Uniformity is again lost.

Recommendations:

Given the numerous problems listed above, the committee should object to the entire proposed rule. In addition, we strongly encourage the legislature to take the following actions:

- ✓ Request an audit of how well the erosion control requirements of the Uniform Dwelling Code have been implemented statewide, as compared to local ordinances, before expanding this approach to other codes.
- ✓ Require the Department of Commerce to work cooperatively with the Department of Natural Resources and other agencies on establishing uniform state standards for the design and installation of erosion control practices based on research, field experience and the best available technology.
- ✓ Encourage local ordinances as the most effective way to address the issue of construction site erosion. Make Comm 65 a minimum standard, or safety net, where no local regulatory efforts exist.

Nonpoint pollution is a rural and urban problem. Research shows that construction sites are the largest source of sediment in our lakes and streams on a per acre basis - averaging 10 times the rate of erosion on cropland. As farm runoff regulations continue to increase, please help ensure that urban pollution is equally addressed!

Assembly Environmental Committee Hearing on Draft COMM 65
December 15, 1998

Department of Natural Resources Comments
Comments given by Gordon Stevenson
Assistant Section Chief of the Runoff Management Section

I want to thank the Assembly Environmental Committee for giving the Department of Natural Resources this opportunity to comment on draft rule Comm 65 regulating construction site activity. It is our hope the comments given here today will improve the proposed regulation on construction site erosion control and storm water management.

The Department of Natural Resources, (DNR), is generally in support of the draft version of Comm 65. We believe that the inclusion of certified inspectors to perform site inspection along with the requirement that site erosion control plan be designed by certified erosion control planners is a significant improvement program. We also believe that the rule, over all, includes the necessary measures for an effective erosion control program. However, the (DNR), is concerned with the current draft of Comm 65 as it is written due to the absence of required provisions. The proposed draft does not provide language to address storm water management, nor does it require documentation of the construction site inspections made for the erosion control practices. The exclusion of these provisions weakens construction site regulations that the Department of Commerce currently carries out provisions under Comm 50.115 which would be repealed in the Comm 65 rule making. It also defeats the objective of 1993 SB 44/1993 Act 16 to create a program that: 1) protects water quality via erosion and sediment control at construction sites or public buildings and places of employment, 2) reduces agency overlap, and 3) satisfies the requirements of the Wisconsin Pollutant Discharge Elimination System, (WPDES), as delegated by the U. S. Environmental Protection Agency, (EPA), under the federal Clean Water Act [33 USC s. 1251 et. seq.].

Chapter NR 216, Wisconsin Administrative Code, was drafted to coordinate regulation between DNR and the Department of Commerce, (Commerce). Section NR 216.42(3) provides that commercial building sites regulated by the proposed Comm 65, "shall be deemed to hold a WPDES permit" if regulated "in a manner in compliance with this chapter". This was included in NR 216 to avoid double regulation. Since commercial sites were regulated extensively by the Commerce, adding storm water control to the Commerce's oversight was seen by the legislature as more efficient than concurrent regulation by the DNR for storm water control. The DNR believes that if building sites are regulated by proposed Comm 65, but do not include storm water plans required by NR 216.47 as well as 40 CFR s. 122.26(c)(1)(ii)(D), and Comm 50.115(1)(a), they can not be considered in compliance with NR 216. Therefore, these sites will not qualify for being "deemed to hold a WPDES permit" and would require and additional permit from the DNR to be in compliance. WPDES permits, including those for construction site

storm water discharges, satisfy the permit requirements of the federal Clean Water Act [33 USC s. 1251 et. seq.]. Discharges of pollutants without a Clean Water Act permit may be subject to USEPA enforcement. Such discharges may also subject a project, if regulated by Comm 65 as it currently reads, to a lawsuit by citizens under 33 USC s. 1365(a)(1)(A) alleging failure to prepare a long term storm water management plan. Citizens suits could be brought in federal court, which is authorized to award, at its discretion, costs of litigation to a prevailing party. We are aware of cases where environmental groups have brought such citizen suits and been awarded litigation costs.

I would like to inform the committee that the Department of Commerce has recently indicated to DNR that the Department of Commerce is considering including storm water management language in Comm 65. DNR looks forward to the discussions with the Department of Commerce and hope that the two agencies can come to a resolution.

Currently under Comm 50.115(1)(c), sites of five acres or greater that will have construction site activity requires that the landowner meet reporting and monitoring requirements specified in s. NR 216.48. NR 216.48(4) requires that the permittee conduct a site inspection of construction erosion control practices within 24 hours after rain events of 0.5 inches or on a weekly basis. It also requires that written reports be maintained for each inspection. The DNR again believes that sites not including this requirement would not be in compliance with the WPDES permit and would require an additional permit from the DNR. Therefore, Comm 65 should also include these requirements.

Finally, we believe that Comm 65 should require an erosion control plan to provide the location and nature of the receiving water where runoff from the site will discharge, as required by NR 216.46(4)(g) and 40 CFR s. 122.26(c)(1)(ii)(D).

It is the DNR's belief that the proposed version of Comm 65 has provisions that will improve water quality protection from construction sites. It is the DNR's believe that in order to meet state and federal legal requirements, the rule needs to include the above described provisions to remain in compliance with NR 216. Therefore the DNR requests that this committee advise the Department of Commerce to include the provisions for storm water management, documentation of construction site inspections, and description of receiving waters to better protect Wisconsin's surface waters, to avoid regulatory duplication, and to reduce exposure of owners of construction sites to potential legal action.

We would also like to inform this committee that DNR staff have communicated the above concerns to the Department of Commerce throughout the development and review of Comm 65, both informally and in writing.

Department of Commerce Presentation
for
Assembly Environmental Standing Committee
on
Chapter Comm 65 Soil Erosion
December 15, 1998

Chairperson Duff, members of the Assembly Environmental Committee, my name is Michael Corry. With me is Jim Quast, program manager for the development of Comm 65, which will regulate our commercial construction site erosion control program.

Comm 65 is written to include construction site erosion control as part of the review and inspection programs of the department and local municipalities that implement the state commercial building codes. This is parallel to the construction site erosion control program in the Uniform Dwelling Code (UDC).

In accordance with s. 101.1205, Stats., Chapter Comm 65 establishes uniform soil erosion control standards at building sites for the construction of public buildings and places of employment. As a statewide uniform code, local governments that adopt codes regulating commercial construction site erosion must adopt Comm 65. Local governments with more stringent ordinances relating to soil erosion that were in effect on January 1, 1994 may continue those programs. Otherwise, under ss. 59.69(4c), 60.627 (2), 61.354 (2) and 62.234 (2), Stats., local municipalities cannot enact erosion control ordinances or enforce erosion control activities that involve construction of a building.

For purposes of erosion control, the department's jurisdiction over the site begins when the ground is broken for footing and foundation work and ends when the site is stabilized. Local government programs for erosion control ordinances covering pre-construction and post-construction activities, and other erosion control activities are not affected by the uniform code. In addition, local governments that adopt Comm 65 can specify local permits, plan review and inspection of construction site erosion control activities, either as agents of the department or independently.

The proposed code requires that all commercial sites that disturb more than 2,000-sq. ft. of soil register with the department. An erosion control plan is to be prepared and sent either to the reviewing agency or retained at the site for review by the inspector.

There are two groups of inspectors that will conduct erosion control inspections. The first is the certified building inspector who will inspect the erosion control activities during the normal course of their visits to the construction site. The second is a certified soil erosion control inspector. This classification will permit local government to utilize an inspection force other than building inspectors for erosion control regulation.

The rules establish performance standards for erosion control measures to be based upon a 2-year, 24-hour storm event for overland flow and a 10-year, 24-hour storm event for channelized flow. The rules also establish specification standards for specific types of erosion control measures relating to issues such as the quality of products or practices or their limitations of use. The rules require that erosion control measures be designed, installed and maintained to limit soil from either being transported from the property or from entering the waters of the state or conduits to the waters of the state.

The rules establish two site classifications: Class I sites are those with more than 5 acres of soil disturbing activity; and Class II sites are less than 5 acres. The code requires that the erosion control plans for Class I sites be prepared by an person licensed by the Department of Regulation and Licensing, such as an architect or an engineer, or by a department certified erosion control planner.

The department has been in discussion with the Department of Natural Resources (DNR) concerning the addition of construction site storm water management activities to the code. While the storm water management program is a responsibility of the DNR, the addition of this requirement to Comm 65 would allow builders to deal with one department and satisfy DNR's WPDES permit requirements. If acceptable to the Committee, the department would consider a germane modification to the rules to include construction site storm water management in Comm 65. There are a number of potential complexities for the department and its agents, especially in anticipation of changes to the storm water regulations. The department would need to work out the details with the DNR and review the changes with department code advisory committees.

If you have any questions about the proposed Comm 65, Mr. Quast and I would be happy to answer them.