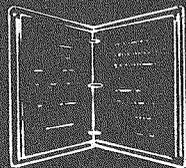


ENGINEERING  
TECHNICAL  
INFORMATION  
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FIELD NOTES • TECHNICAL REPORTS  
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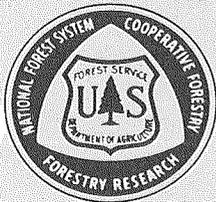
Washington Office Engineering  
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Washington Office News



FOREST SERVICE

JANUARY 1978

U.S. DEPARTMENT OF AGRICULTURE



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## ENGINEERING FIELD NOTES

Volume 10 Number 1

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**FOREST SERVICE  
U.S. DEPARTMENT OF AGRICULTURE  
Washington, D.C. 20013**



## OPERATIONS

*Harold L. Strickland*  
*Assistant Director*

### *A PROCESS FOR EVALUATION AND REHABILITATION OF DISTURBED LANDS*

The WO Geometronics Development Group is working on a process for using computer-assisted photogrammetry, computations, and graphic displays to aid in the planning and execution of materials moving operations. The computer-assisted process is believed to be a more effective and less costly way of:

1. Visualizing the effects of disturbances and/or enhancements in existing terrain.
2. Comparing design alternatives.
3. Estimating materials handling volumes and haul.
4. Estimating costs.
5. Construction staking and project control.
6. Determining pay quantities for contract obligations.
7. Preparing graphic displays for describing the project (EIS, public involvements, etc.)

Using the Digital Terrain Model (DTM) of the existing site as a base, designers tools (slope, aspect, contours, perspective plots, seen areas) will be prepared. Using these tools, a multidiscipline design team can simulate modification of the terrain to conform with the prescribed use of the land, for timber production, recreation development, wildlife and wild fowl habitat, etc. The existing and newly designed DTM's can then be compared, and alternatives explored to produce quantities and costs of the material(s), excavation, placement, and haul. The design can then be evaluated and, if it meets the prescribed criteria, final plans, cost estimates, construction control data, and graphics can be produced. A construction contract can then be prepared and advertised.

The process briefly described above uses existing and newly designed data coupled with previously developed software (TOPAS, DTIS, MOSAIC, etc.) except for the comparison of digital terrain models for earthmoving and materials handling. Software packages will be developed to:

1. Determine quantities of materials between two digital layers.
2. Determine haul distances from excavation to placement.
3. Provide and interface with existing software.

WO Geometronics Project Leader, Dick Mahan, has been assigned the responsibility of developing software packages.

The development of this computer-assisted process was prompted by the following two proposed demonstration projects:

1. Surface Environment and Mining (SEAM) Region 4 and Simplot Corporation of Idaho are working on a cooperative effort to demonstrate the uses of computer-assisted, photogrammetric and graphics tools in mining operations on a site in Southern Idaho. An area development plan, a site-specific mining plan and a rehabilitation plan will be produced to demonstrate: (a) a more cost-effective way of using computers for gathering, manipulating and displaying data to the mining industry and (b) what can be required from mining operations when our land managers request FS approval for surface disturbances on mineral lease National Forest lands. The project has begun and will continue for about a year. The Project Leader is Dayton Nelson of SEAM.
2. Region 9 is proposing a demonstration for rehabilitation of "orphaned" mining lands on the Wayne National Forest in Ohio. The Surface Mining Control and Reclamation Act (PL95-87) has initial funding for such demonstrations on Federal lands with possibilities of continuing rehabilitation projects on eastern Forest lands.

For further information on the demonstration projects, please contact Dayton Nelson, SEAM in Billings, Montana, FTS 585-6468, or Chuck Galbreath, R-9 in Milwaukee, Wisconsin, FTS 362-3193. If you want information on applications of digital terrain information, contact Dick Mahan, WO Geometrics, FTS 235-8184.

## CONSULTATION AND STANDARDS

*Walter E. Furen*  
*Assistant Director*

### *SOLID WASTE MANAGEMENT GUIDELINES FOR BEVERAGE CONTAINERS*

Effective December 1977, all beverage sales at installations under the jurisdiction of the Forest Service must be in returnable containers unless the beverage is consumed on the premises. This requirement is in accordance with the *Solid Waste Management Guidelines for Beverage Containers (40 CFR 244)* which were promulgated in response to requirements of the *Solid Waste Disposal Act of 1965*, as amended.

The Guidelines require that Federal facilities establish a system for the return of beer and soft drink beverage containers ~~in order~~ to achieve the environmental benefits of reduced solid waste and litter, and to conserve energy and material resources. As an incentive to the consumer to return empty containers to the retail dealer, the Guidelines require that the consumer pay a minimum deposit of five cents on each beverage container; the dealer is to refund the deposit when the consumer returns the container.

"On-premise sales" are excluded from this returnable container requirement; however, empty refillable beverage containers must be returned to the distributor for refilling, and empty non-refillable beverage containers must be recycled if facilities for recycling are available. The returnable beverage containers will be marked with a label to identify the container as a refundable container, and to remind the consumer to return the container; the labels will read "FEDERAL SALE - 5¢ REFUND". This message will be either lithographed or embossed lettering on the container, or an adhesive-backed label lettered with water insoluble ink will be affixed to the container, or an ink-stamped label (also water insoluble) will be printed on the container.

There has been some speculation that the required sale of beverages in returnable containers at all Federal facilities and installations is a forerunner of a national law controlling returnable beverage containers. Although there has been Congressional resistance to the enactment of a "national bottle bill", four States and several political subdivisions have adopted returnable beverage container requirements. Also, the container industry appears to be softening its opposition to the returnable container concept, especially when viewed as an alternative to the proposed solid waste product charge which is currently being considered.

Since beverage sales that take place on Federal facilities consist of only 2 to 4 percent of the national beverage sales, the achievement of significant environmental benefits resulting from reduced solid waste and litter and the conservation of energy and material resources will be difficult. However, the guidelines may become an effective means for providing leadership and an example in national implementation of the returnable container concept.

Perhaps the best known legislation concerning returnable containers is the law passed by the State of Oregon which became effective in October 1972. Some major results of the *Oregon Bottle Bill* have been reported and are summarized as follows:

1. Roadside litter was reduced overall 26 percent on a piece count basis, and 35 percent on a volume basis the first year after the Bill went into effect. During the second year, the reduction increased to 39 percent overall by piece count, and 47 percent by volume.
2. Beer and soft drink beverage container litter was reduced by 72 percent during the first year, and by 83 percent during the second year.
3. For beer, returnable bottles captured 96 percent of the market after the Bill was implemented, compared to 36 percent before. Nonreturnable bottles, which previously had held 31 percent of the market were eliminated and can sales dropped from 33 percent to 4 percent.
4. For soft drinks, returnable bottles moved from 53 percent of the market before the Bill was implemented, to 88 percent the year following, and 91 percent 2 years after. Non-returnable bottles, which had held 7 percent of the market, were removed from the market. Cans moved from 40 percent to 12 percent 1 year later, and 9 percent of the sales 2 years later.
5. After 2 years, the return rate for the certified compact 11-oz. "stubby" bottle was 93 percent, compared to a 96 percent return rate for soft drink bottles. As a result, trippages for beer and soft drink refillables are 15 and 24, respectively.
6. Direct consequences of the enactment of the "bottle bill" were estimated to have caused an operating income change ranging between a negative 6.8 percent to a positive 3.1 percent, based on total retail sales. Energy savings, as a result of a move from 43 percent refillables to 94 percent are significant--1.4 trillion BTU's are saved annually, enough to provide the home heating needs for 50,000 people or to generate 130 million kilowatt hours of electricity worth \$2,800,000 annually.



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Material submitted to the Washington Office for publication should be reviewed by the respective Regional Office to see that the information is current, timely, technically accurate, informative, and of interest to engineers Service-wide (FSM 7113). The length of material submitted may vary from several short sentences to several typewritten pages; however, short articles or news items are preferred. All material submitted to the Washington Office should be typed double-spaced; all illustrations should be original drawings or glossy black and white photos.

*Field Notes* is distributed from the Washington Office directly to all Regional, Station, and Area Headquarters, Forests, and Forest Service retirees. If you are not currently on the mailing list ask your Office Manager or the Regional Information Coordinator to increase the number of copies sent to your office. Copies of back issues are also available from the Washington Office.

Each Region has an Information Coordinator to whom field personnel should submit both questions and material for publication. The Coordinators are:

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