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Fourth Quarter Report – 2007

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From the Director



Since assuming the position of Co-Director at the National Design, Construction, and Soil Mechanics Center (NDCSMC) almost a year ago, I have had the opportunity to represent the NDCSMC at numerous meetings and events. It is my job to “tell the story” of the NDCSMC so that everyone in NRCS can access the benefits available through the NDCSMC.

The NDCSMC is proud to tell our story, and I will try to do that with newsletters such as this. This newsletter provides a summary of fiscal year 2007 and our technical expertise.

The NDCSMC staff represents the largest collection of skilled engineers and engineering related disciplines within NRCS. Take a look at the last page of this

newsletter to see the engineering disciplines at the NDCSMC. Many of the people have been here since the Center was established in November 2000.

The confined focus of providing assistance on complex engineering projects allows each of the specialists to truly be “experts” in their fields. These are the people available to answer your difficult questions on complex engineering issues.

I would also like to hear from you about ways that the NDCSMC can be of greater assistance to you. I welcome your phone calls, e-mails, and other avenues of communication as we all work together towards the Chief's priority of making conservation easier.

Sincerely,
Johnny Green

A Look at FY 2007

Assistance provided by the NDCSMC is broken down into 6 categories for internal tracking purposes. Each of these areas defines a different scope of assistance. For purposes of this summary, technology development and technology transfer have been combined into one area.

The number of requests serviced in fiscal year 2007 is 20% higher than any year to date. A summary of FY 2007 activities, along with a brief explanation of the categories is provided here.

Direct Assistance – The NDCSMC provides any type of assistance that is requested and within our areas of expertise. This includes field reviews and recommendations, failure investigations and engineering design recommendations.

- Assistance provided in 40 states
- 75 direct assistance requests completed
- Support in Afghanistan (Foreign Ag Service)

Independent Reviews – The NDCSMC provides independent review of all high hazard engineering structures, which is required by NRCS policy. In addition, we can also provide independent reviews of other complex engineering items submitted by the states.

- 18 watershed structure reviews
- 13 other independent reviews

Production Design – The NDCSMC can complete all details necessary for contracting a specific job. This typically includes design, drawings, specifications, bid schedules and cost estimates. For states that have some design expertise, we can do production work for a component of a full project. For example, the NDCSMC can provide the structural design while the state provides the rest of the design.

- 7 complete EWP designs
- 4 component designs
- 3 animal waste designs

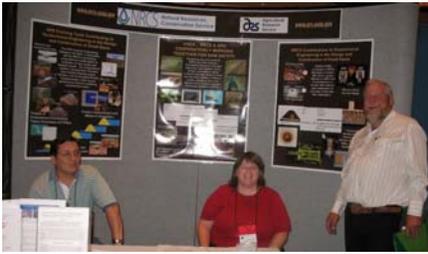
Technology Development and Transfer – The NDCSMC is a major center for production of revised NEH materials and other engineering directives.

- NEH 628.45 – Filter Diaphragms
- NEH 654—Stream Design Handbook
- Attendance at 10 non-NRCS conferences
- 6 technical papers published in scientific journals

Training – The NDCSMC provides instruction at NEDC courses, as well as workshops sponsored by states.

- 9 NEDC Courses
- 2 Geotechnical Analysis Workshops
- 12 State requested Workshops
- 10 Non-NRCS Workshops

NDCSMC Participates in 2007 National ASDSO Conference



Two members of the NDCSMC staff presented professional papers at the annual National Meeting of the American Society of Dam Safety Officials (ASDSO) held in Austin, TX in September 2007.

Danny McCook, Geotechnical Engineer, presented "20 Questions You Should Ask Before You Approve that Design." He also coordinated a session entitled "Hands-on Geotechnical Engineering -

a.k.a. Geotech for the Water Engineers" and was assisted by Ben Doerge, Geotechnical Engineer, and Steve Reinsch, Co-Director, NDCSMC – Soil Mechanics.

Dennis Clute, Construction Engineer, presented a paper he, Ken Worster and Mike Garsjo, Design Engineers, co-authored entitled "Performance of Soil Cement Plating in the Texas Panhandle."

Morris Lobrecht, Design Engineer, had a booth in the exhibit hall to publicize the cooperation between the NRCS and ARS. Both agencies have combined their efforts to develop the SITES technology and computer program.

Quality Assurance Reviews for MEO Geologists



The A-76 Geological Analysis Service contract has been underway for the last three quarters of FY 2007. Marie Garsjo and Craig Savela, NDCSMC Geologists, are two of the three designated "Quality Assurance Evaluators." They cover the west and central regions, respectively. Marie and Craig will complete a quarterly review of one of the geologists in their assigned region to evaluate performance. Updates provided to Jerry Bernard, National Geolo-

gist, indicate that all of the Geological Analysis Services evaluated so far are ranked good to excellent. The service contract was finalized and training held in March 2007. This training included a field review of the USACE Canyon Lake Dam auxiliary spillway to study severe headcut erosion that exposed unique structural and depositional geology integral to the NRCS headcut erodibility index.

Synthetic Liners for Animal Waste Containment



On August 27-29, 2007, Wade Anderson, Design Engineer, assisted in a Synthetic Liners for Animal Waste Containment Workshop in Kearney, Nebraska. The 27 participants included engineers and technicians from NE, SD, IA, and synthetic liner distributors and installers. The Workshop included presentations and discussion on the NRCS Practice Standard, Installation of Synthetic Liners, Seaming and Testing of Synthetic Liners, NRCS Specifications, and Example Drawings.

New NDCSMC Employee Gary Wells, Landscape Architect

Gary Wells joined the NDCSMC in March of this year. He previously worked with the National Agroforestry Center, and prior to that he served as Regional Landscape Architect for the Midwest National Technical Center.

Gary brings over 30 years experience in natural resource planning. Areas of expertise include: Visual Simulation, Soil Bioengineering, Water Resource Planning, Landscape Resource Mitigation, and Recreation.

He is a registered Professional Landscape Architect in Nebraska, and a member of the American Society of Landscape Architects and the Soil and Water Conservation Society. Welcome, to the NDCSMC, Gary!

Picture the Future — Visual Simulation as a Design Tool

In the design world, effective graphics help people visualize and better understand technical proposals. The added benefit is that these images speed up the planning process and encourage public participation.

Photo-realistic simulations can be created using computer software to illus-



Existing conditions at the intersection of Main St. and First St. (Lander, WY)

trate what designs will actually look like on the landscape.

Wyoming requested assistance from NDCSMC to produce visual simulations of a proposed floodwall along the Popo Agie River in Lander, Wyoming. Working from aerial photographs, designed wall heights, and photos of existing conditions, simulations were created as a visual aid to the design team and the local sponsors.

The NDCSMC provides technical assistance and training in visual simulation. We also offer a visual simulation kit for those offices that want to learn this technology. The kit contains the CanVis Image Editing software, a Visual Simulation Guide, and a self-paced training CD.

The software is CCE approved and free to NRCS. To order a copy of the kit, or to discuss visual simulation technology, contact landscape architects Gary Wells or Rosanna Brown.



Proposed floodwall

Photo simulation of the proposed floodwall at the intersection of Main St. and First St.

EWP — Guam Landslide Remediation

The NDCSMC provided assistance to Guam over a three-year period on the geologic investigation, design, and construction of a large landslide remediation project.

The landslide occurred as a result of torrential rains from Typhoon Tingting in June 2004. It encompassed approximately one acre immediately above a housing subdivision. A wall of mud and debris engulfed three houses and threatened many more.

The site qualified for assistance under the Emergency Watershed Protection (EWP) Program to remove the continuing threat to life and property.

Ben Doerge, Geotechnical Engineer, and Marie Garsjo, Geologist, performed geologic investigations in May and June of 2005 and prepared detailed geology and geotechnical engineering reports for the site. The final design was completed by the NDCSMC staff shortly after project funding was obtained in September 2006. Construction commenced in March 2007 and is scheduled for completion in September 2007.



The project design resembles that of a high hazard earth dam. All slide debris was removed down to competent, in-place materials. A drainage system was installed to intercept numerous hillside springs. The slope was rebuilt using select compacted earth and rockfill. Over 20,000 cubic yards of excavated materials were removed, and an equal volume of fill was placed, at a cost of over \$1 million. Doerge was on-site during critical phases of the construction to provide quality assurance during the installation of the drainage system and initial placement of compacted fill.



A single-story home partially buried by the landslide at Nimitz Hill, Guam (2004)



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VISION: Excellence in application of conservation engineering technology.

MISSION: To provide interdisciplinary technical support for design, construction, operation, and rehabilitation of complex engineering projects essential to resource conservation, environmental enhancement, and agricultural productivity.

PRODUCTS: Products are service based and include engineering technology development, technology transfer (e.g., workshops and formal training), independent reviews, and site specific soil mechanics testing and/or production design work in support of Field and State Office operations. Products also include expert consultation to NRCS Headquarters, Centers, State Offices, Field Offices, and Design Teams.

National Design, Construction, and Soil Mechanics Center - Design & Construction Staff

Director: Johnny Green, PE
Secretary: Jane Kahaneck

Construction Engineer

Dennis Clute, PE

Geologists

Marie M. Garsjo, PG

Craig Savela, PG

Geotechnical Engineers

Ben Doerge, PE

Danny McCook, PE

Hydraulic Engineer

Karl Visser, PE

Landscape Architects

Rosanna Brown, RLA

Gary Wells, RLA

Stream Mechanics Engineer

Jon Fripp, PE

Structural Engineers

Lawrence F. Fragomeli, PE, SE

William Wallace, PE

Design Engineers

Wade Anderson, PE

Tom Brown, PE

Mike Garsjo, PE

Morris Lobrecht, PE

Ken Worster, PE

Civil Engineering Technicians

Kathy Miller

Juan Renteria

Gregg Tompkins

Mark your calendars — Upcoming Workshops

NDCSMC is scheduled to provide instruction at the following workshops. More information on the workshops can be obtained from the State or the NDCSMC web site.

- Oct. 23-26, 2007 Blacksburg, VA—Streambank Stabilization and Restoration
- Nov. 6-9, 2007 Bishop, CA—Streambank Soil Bioengineering
- Nov. 13-16, 2007 Spartanburg, SC—Streambank Stabilization and Restoration
- Nov. 27-30, 2007 Yerington, NV—Intro. to Soil Bioengineering Treatments

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