

North Dakota View Outreach Mini-grant Report
Implementation of GIS/Remote Sensing Capability at Educational
Institutions
RFP# 72-2006

Recipient: Turtle Mountain Community College, Belcourt, North Dakota.

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Grant dates: November 2005 to August 2006.

Report data: August 1, 2006

Narrative: The North Dakota View outreach mini-grant (part of the larger America View grant administered by the University of North Dakota) was awarded to Turtle Mountain Community College in November, 2005. The grant provided for mainly training and travel for faculty members of the college in order to upgrade GIS capability and GIS-dependent programs and curricula at the college.

Broad objectives listed in the proposal:

1. Transfer of remote sensing tools and technology to educational institutions for use in developing curricula.
2. Promotion of use of satellite data to educators, scientists, community leaders and general public.
3. Increased and simplified access to remote sensing data and affordable programs.
4. Facilitation of growth of applications of remote sensing in agriculture, forestry, geology and hydrology.
5. Advance availability and timely distribution of remote sensing data to the public.
6. Tribal data sharing.

Specific objectives listed in the proposal:

1. To provide training in ArcGIS I and II (ESRI classes) for two instructors at TMCC.
2. Travel and lodging for the two TMCC faculty at ESRI facilities for GIS training and other grant meetings.
3. Offering of GIS I and GIS II as course offerings at the TMCC campus.
4. Use of GIS-trained faculty in implementation of a NASA/USRA grant providing for GIS and remote sensing integration into physical science curricula at tribal colleges.

Current status of broad-based objectives:

1. Training of two faculty at TMCC in ArcGIS I and II classes has indeed allowed transferal of technology to Turtle Mountain Community College. This has translated into the offering of GIS I classes in spring 2006 and the planned

offering of GIS I classes for fall 2006. GIS II classes are also being designed for the future.

2. Aerial photographs of the area have been imported as raster data for baseline maps of Rolette county and are used regularly by students in GIS classes. MODIS reprojection software has been installed on all computers in the GIS laboratory and satellite data will be downloaded when needed for GIS classes and for other course requirements. Outreach to the public at large will consist of sharing data and maps with college and tribal officials and possible publication in local newspapers as well as transferal of simplified GIS databases to local high schools.
3. Access for students, faculty and administrators to satellite and GIS data has been greatly simplified by providing for training for faculty in these fields. The personnel in the technology department at the college have also learned a great deal by helping with downloading of GIS and satellite programs. Administrators are currently planning on Homeland Security grants which will be partially dependent on building up from GIS basics at the college.
4. TMCC already had GPS capability, but downloading GPS data to GIS maps has streamlined data collecting for land use studies required by the concurrent NASA/USRA grant. Several previous studies involving water quality (1999) and ongoing radon studies (2003 to present) have been mapped with new-found GIS capability, allowing greater precision in spatial analysis of trends and patterns.
5. Water quality data mapped from the 1999 study have already been shared on water quality posters (college awareness day) and radon maps have been shared with college administrators and tribal housing offices. Timely release of forthcoming data to the public is planned for in further studies.
6. Tribal sharing is important in that many tribal colleges are understaffed and faculty are typically serving in several important capacities at one time. Training and findings in research are often shared as part of grant requirements. Currently, a number of tribal colleges are participating in the North Dakota View grant and the NASA/USRA grant and sharing of curricula and training techniques has already started.

Current status of specific objectives:

All specific objectives of the North Dakota View mini-grant have been implemented, including training of two faculty members, offering of GIS classes as part of general coursework and incorporating GIS/remote sensing capabilities into curricula in other coursework. Currently, GIS I courses are being offered at the college and GIS II courses are being planned.

Implementation of GIS and remote sensing into coursework (other than GIS courses) has progressed steadily due to training of faculty and additional funding from a NASA/USRA grant. Two laboratory projects have been introduced to classes to date: 1) Environmental Science 124: Mapping of phosphate, nitrate, dissolved O₂, pH and temperature data from a 1999 water quality study and 2) Introduction to Chemistry 115: Locating of student home GPS coordinates from a raster map of Rolette County and reporting of coordinates with radon readings from the student home. This data is entered into the ongoing radon study at TMCC.

Further land use studies are planned, which will encompass sampling of tree/shrub species in forests, location of illegal dumps, monitoring of wetlands over at least three years, and historical comparison of land use in Rolette County from 1960 to the present.

Budget expenditures:

<u>Category</u>	<u>Proposed expend.</u>	<u>Actual expend.</u>
Training in GIS I and II	\$2000 for one instructor	\$2700 for two instructors
Travel for training/meetings	\$1500 for one instructor	\$2477 for two instructors \$350 for one instructor for meetings
ArcView 9.0 software and site educ. site license	\$2500	\$0. (not needed due to computer sci. grant)
Indirect costs	\$1080	\$1080
Proposed supplies (currently waiting approval)		
1. Print heads-map plotter	-	\$125
2. ESRI "Building Geodatabase"		
<u>Textbooks/workbooks</u>	-	<u>\$340</u>
Total:	\$7080	Total: \$7072