



RED RIVER BASIN MAPPING INITIATIVE 'REDEFINING THE LANDSCAPE'

The goal of the Red River Basin Mapping Initiative (RRBMI) is to develop, and publicly deliver, a seamless high-resolution digital elevation map of the entire Red River Basin (RRB).

The unique geography of the RRB compromises the usefulness of standard national coverage topographic data sets (i.e. United States Geological Survey Quadrangle Maps) and their application to the decision-making process in the region. High-resolution topography has numerous public and private applications and is essential to developing disaster resiliency – our ability to predict, understand, and respond to disasters. Accurate topographical information greatly enhances the abilities of today's decision makers and resource managers to make equitable and defensible decisions and provides the foundation for developing innovative and effective resource management strategies.

PROJECT SPECIFICATIONS

The preferred scope includes the entire U.S. portion of the RRB (including the Devils Lake Basin). This approach maximizes the economy of size benefits and results in consistent end products because the collect establishes one standardized specification and uses the same LIDAR sensors.

Data will be collected to U.S. Federal Emergency Management Agency flood

plain mapping standards. The International Water Institute will coordinate federal and non-federal funding partners, develop the Request for Proposals, ensure data specifications are met, and contract with the private firm selected to collect the data.

PROJECT BENEFITS

Benefits for resource managers, decision-makers, and residents of the RRB will be profound; enhancing resiliency, capacity, performance, and efficiency at every level of decision-making in each jurisdiction. Known benefits from high-resolution data include:

- More accurate flood plain maps
 - Flood damage mitigation
 - Increased flood and drought resiliency
- Targeted restoration activities
 - Transportation infrastructure
 - Land use management
 - Human development
- Detailed surface hydrologic and hydraulic modeling
 - More efficient/equitable natural resources management
 - Innovative tools for conflict resolution
 - Problem identification
 - Increased agricultural productivity
 - Credible flood damage and natural resource enhancement project site selection criteria
 - Enhanced project

evaluation tools

- Major cost reduction in all civic projects

Future applications using high-resolution topographic data are boundless and limited only by our ability to comprehend how these data will eventually be integrated with new technologies and used to make decisions that enhance the lives of RRB residents.

PROJECT COST

Total Anticipated Project Cost: \$5.0 million (50/50 non-federal/federal cost sharing).

The International Water Institute and partners have developed a five-phased data collection strategy based on several criteria. The intent is to reasonably

ensure that a collection area can be wholly completed based upon the available resources before proceeding to the next collection area.

NEXT STEPS

The International Water Institute will develop the necessary funding partnerships at the state, federal, and local level and work through the project Steering Committee to ensure the needs of project partners are met.

Proposals were due December 7, 2007 with a review period expected to be completed Jan. 2008. Contract negotiations will take place in January – February 2008. Expected project start date is spring of 2008.

Funding	Amount Requested	Status 9/2007	Source
Fed. Govt. (NRCS, USGS)	\$2,500,00	\$300,000	ND Nat. Resources Conservation Service (NRCS)
		\$50,000	NRSC Soil Survey Department (National)
		\$150,000	US Geological Survey
ND Local Partners	\$564,534	\$473,000	Red River Joint Water Resources Board*
		\$91,534	Remaining - SE Cass JWRB and City of Fargo
MN Local Partners	\$550,000	\$500,000	Red River Watershed Management Board
		\$50,000	Buffalo-Red Watershed District
Cities	\$185,466	\$88,118	Fargo
		\$31,296	Moorhead
		\$46,910	Grand Forks
		\$7,331	East Grand Forks
		\$8,350	Wahpeton
State of MN	\$600,000	\$25,000	MN Dept. of Transportation
		\$600,000	MN 2008 Bonding Bill
		\$200,000	2009 Legislative Session
State of ND	\$600,000	\$400,000	Included in 2007 State Water Commission budget*
		\$200,000	2009 Legislative Session
Total	\$5,000,000	\$2,133,466	

*Contingent upon evidence that all funding required for a basin wide, seamless project is in hand or formally committed by project sponsors.

FAQS

What is a Digital Elevation Model (DEM)?

Data points representing latitude, longitude, and elevation are combined to create a digital representation of the earth's surface.

What is LIDAR?

LIDAR - Light Detection and Ranging is an integration of airborne laser and global position system (GPS) technology. Laser pulses are directed at the earth's surface (early

spring or late fall) from equipment aboard an airplane or helicopter flying a predetermined grid over an area of interest. The laser reflections are recorded and the range is calculated from the instrument's orientation in space and the time required for the laser's light reflection to travel back to the aircraft.

How accurate is the information collected using LIDAR technologies?

Accuracy is directly related to the

altitude of the aircraft and the power of the laser. The current specification standard:

- Vertical - Bare earth: 15 cm (0.492 feet) Root Mean Square Error (RMSE)

Are there proven technologies to store and distribute these large scale databases?

Yes. There are numerous public and private examples of models to store and disseminate large amounts of spatial data.

Additional FAQs can be found online: www.internationalwaterinstitute.org.

A special thanks to Charles Fritz, Director, International Water Institute, for providing the information to develop this article.

WATERSHED DISTRICT DEVELOPMENTS

BOIS DE SIOUX WD

The Bois de Sioux WD reported on the North Ottawa Project. The construction season concluded on December 1, 2007 with a storm that brought 6 to 10 inches of snow to the project area. On December 3, 2007 an end of season inspection was conducted to note any items to be addressed before spring.

Two contracts remain open on the project. Barry Construction of Fergus Falls has approximately 25% of their contract left to complete, and Riley Brothers Construction has approximately 15% to complete on their con-

tract. All of the open areas have been seeded and mulched with temporary seed, with permanent seed to be planted in the spring as soon as conditions allow.

The west dike has been completed except for the intersection between structures E and F which still remains to be raised. The north dike is complete. The south dike has ½ mile completed with the second ½ mile under construction. The balance of the south dike will be let under construction next year. The east dike is still under construction and about 80% complete.

EVENTS COMING UP

January 22 -- The next scheduled meeting of the RRWMB will be held at the Ramada Plaza Suites & Convention Center, 1635 42nd Street South, Fargo, ND, on January 22nd, from 8:30 a.m. until 12:00 p.m. Please note the change of the regular meeting date (the 3rd Tuesday of each month) to coincide with the 25th Annual Red River Basin Land and Water International Summit Conference scheduled for January 22-24, 2008.

March 20 -- The 10th Annual Joint Conference of the Red River Watershed Management Board and the Red River Basin Flood Damage Reduction Work Group will be held at the Northland Inn in Crookston, Minnesota on March 20, 2008.

RRWMB MEETING HIGHLIGHTS

At its regularly scheduled December meeting, the RRWMB:

- Received a report from Ron Harnack, Project Coordinator.
- Discussed the board's Public Information Initiative with Mark Meister, CR*CS.
- Received a report from Dan Thul, Red River Coordinator.
- Received a report from Naomi Erickson, Administrator.
- Authorized the Step III submittal for the Red Lake WD's Project No. 60.
- Approved a funding request from the Wild Rice WD for the Mahnomen Drainage Project.
- Authorized a funding advance for the Redpath Project of the Bois de Sioux WD.
- Authorized a funding advance for Project No. 42 of the Wild Rice WD.

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