

Brown County

South Dakota

“A Local Perspective on Drainage”

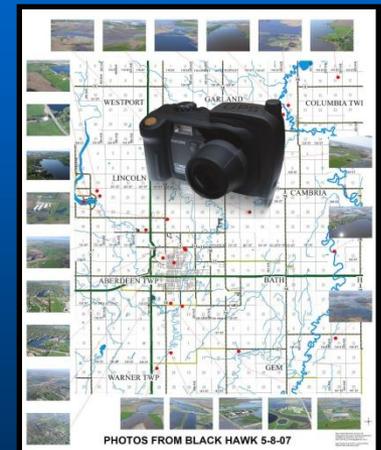
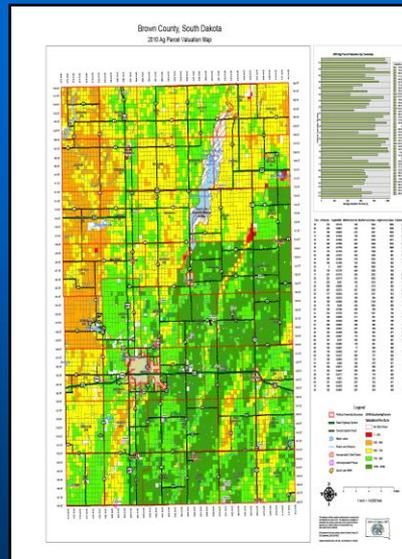
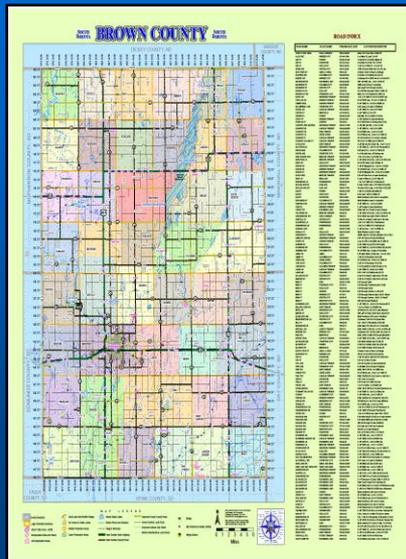
Gary Vetter

Commission Assistant/P &

Z Director

Floodplain & Drainage

Administrator





Water, Water Everywhere...

Brown County Flood of 2007

9" Rainfall in
24 Hours



2007 Flood

\$1M Rural



**Over \$1.7M in
Damage to
Public
Infrastructure**

\$700K Urban



Brown County Flood of 2009



Brown County Flood of 2010



2010 / 3 / 18

The Social and Economic Impact

General Impacts:

- **Damage to Infrastructure, Property, Crops, Livestock & Land**
- **Disruption of public services including E911. Mutual agreements to send two response teams to every call. Volunteers required to spend more time away from work.**
- **Out of 675 centerline miles of County road, nearly 100 miles had been closed at some point over a three year period.**
- **Revenue loss to agriculture-related businesses and industries**
- **Negative impact of economic multipliers – ‘trickle-down’ effect**
- **Revenue loss from travel and tourism opportunities**
- **Mental and physical stress associated with loss of property**

The Social and Economic Impact Cont.

General Impacts:

- Shorter growing season for crops
- Concerns of feedlot runoff
- Higher soil pH and salt levels
- Flooded acreage means lower tax revenues
- Hefty Seed proclaims in their April 2011 newsletter that their estimates for 2010 were well over \$1 Billion lost in South Dakota due to poor drainage. They said Brown County lost over \$100 million alone and Lincoln County over \$50 million.

2007-2011 Planted vs. Prevented Planted Acres Summary

2007 - 2011 Planted vs. Prevented Planted Acres Summary Brown (also 2011), Day, Edmunds, Marshall, & Spink Counties										
County	2007 Planted	2007 Prevented Planting	2008 Planted	2008 Prevented Planting	2009 Planted	2009 Prevented Planting	2010 Planted	2010 Preventing Planting	2011 Planted	2011 Prevented Planting
Brown	773,561	143,744	1,148,015	33,418	886,518	142,725	664,185	318,925	523,078	201,508
Day	415,915	26,586	445,376	10,509	463,472	20,383	435,484	32,590		
Edmunds	608,203	5,058	684,139	545	639,908	33,527	502,004	167,722		
Marshall	381,013	50,606	458,385	12,699	403,637	50,672	384,880	69,992		
Spink	742,616	80,027	865,801	11,174	817,822	47,722	704,886	144,614		



Historically Good Roads
Begin to Break Up

Additional Load Limits and
Restrictions Applied



2010/ 3/17



**Others
Disappear**

**Desperation
Sinks in for
Suppliers...**



**...and for
Producers**



ICE AND LOG JAMS RESTRICT FLOWS



2012 / 1 / 6



???



2011 / 4 / 20



BROWN
13
COUNTY

WEIGHT LIMIT
6 TON
PER AXLE
TRUCKS
40
MPH



DRAINAGE STATISTICS BROWN COUNTY

EOC (Emergency Operation Center) was open for 3 years in a row before last year

Over 5,000 acres put into NRCS Easement the past 4 years

54 Drainage Board meetings – 194 applicants 2010-2011

Over 1200 notification letters for Drainage Board meetings sent for 119 applicants just in 2011

Drainage Board met 10 of the 12 months 2010-2011

PROGRESSION OF DRAINAGE ACTIVITY

James River historically will stay at or above flood stage for 1 month. In 2011 it stayed for 9 months. In 2010 for 5 months.

Request for many more culverts and size increases

Small trenches then started appearing once the culverts were in place

Then larger trenches started appearing in fields

Ditches started being dug out to accommodate more drainage - now concerns over their liabilities



2011 / 6 / 3



2011 / 6 / 3



2011 / 4 / 11



2011 / 5 / 9



2011/11/17

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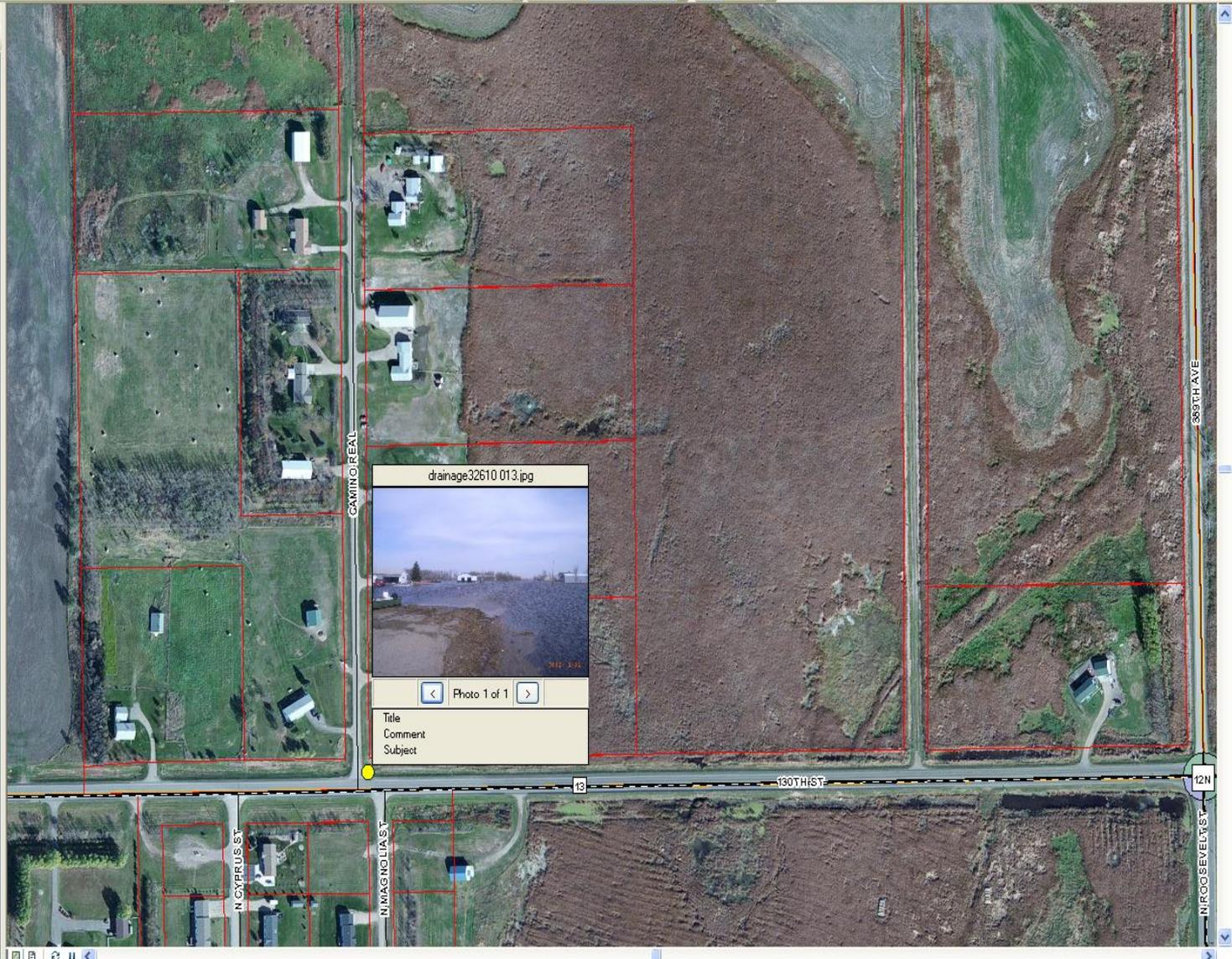
Ownership Data
d_Places_12_01_08

655,968.583 Feet

ns_2009
ours_2009

69%

Arial 10



drainage32610 013.jpg

Photo 1 of 1

Title
Comment
Subject



2010 / 3 / 26



2010 / 4 / 20



2011 / 9 / 1



2011/9/1



2011 / 4 / 6



2011 / 5 / 3

Per Highway
Department the
County spent almost
\$81,000 pumping this
road



2010 / 3 / 26



APR 8 2019



meyers
meyers
meyers

MAR 26 2009

COUNTY DRAINAGE BOARD CONCERNS

- **Litigation – County concerns of being brought into Court and also concerned about having to take citizens to court which could take a huge amount of time and resources**
- **Outside County drainage continually comes from across state and county borders without notification or discussion**
- **County Drainage Permit requirement only did not stop digging. There are currently no fines or charges strict enough to deter action**
- **Development has occurred that completely has blocked original natural drain ways. Possible need for fill regulations and laws**
- **Farming right of ways has overtaken ditch drains and causes blockages of culverts**

COUNTY DRAINAGE BOARD CONCERNS

- It takes a lot of time to do proper engineering analysis when you are in a crisis mode
- Numerous jurisdictions involved (State, County, Townships, City, Corp of Engineers, Railroad, NRCS, Fish & Game etc.)
- Citizens draining onto neighbors that do not have the resources to take legal action
- Citizens have blockages on private land that backs water onto neighbors
- DENR/FEMA/CORP Issues (Soil Stabilization, Diverting water to different watersheds, changing drainage ways, National Flood Insurance program concerns, etc...)
- Drainage Board is good communication tool, but need other tools (Engineering help, possible penalty and fine structure, etc...)

COUNTY CURRENT AND FUTURE DIRECTION

- **Drainage Permit Ordinance Repeal and Replacement (4-12)**
- **A LiDAR (Light Detection and Ranging) is an optical remote sensing technology that can measure the distance to, or other properties of a target by illuminating the target with light. Flight was done two years ago showing approximately 8% or 133 square miles of county was covered in standing water**
- **Inventory of Culverts for State, County and Township roads requested**
- **Looking at alternatives of replacement of an existing gate structure from the early 1900's**
- **Continue to work towards a Brown County Water Management Plan**

Questions?

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