

Managing Impacts of Non-Agricultural Land on Drainage Districts

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Non-agricultural land uses: Impacts and Board responses

Impacts

- Increased water flow
- Change in peak flow
- Sediment loading

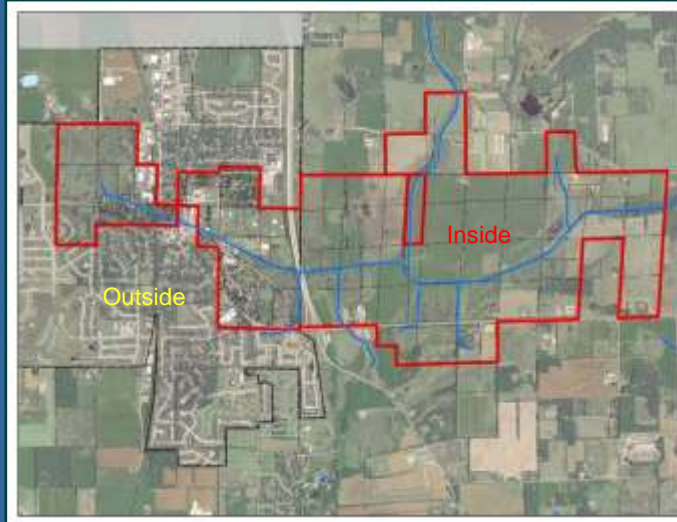


Responses

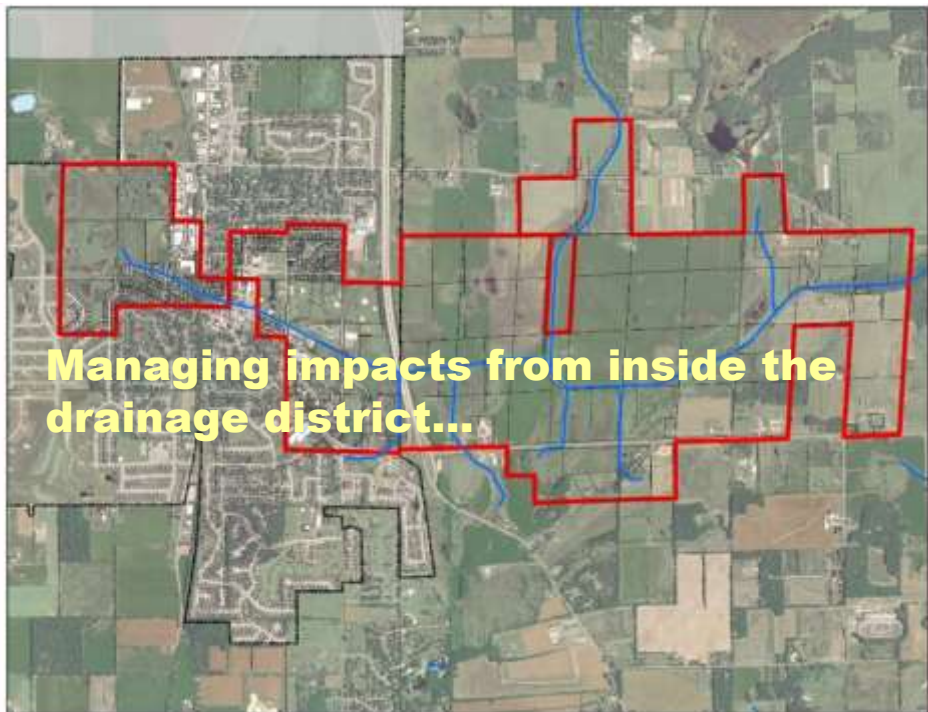
- Shift maintenance costs
- Fund projects to enlarge or enhance drain
- Take preventive action



Board response driven by location and land uses



Managing impacts from inside the drainage district...



Cost recovery for land inside district: Based on benefits assessment



- Determine landowner benefits and burdens
- Account for all expenses including drain maintenance, administration and professional services
- Apportion expenses based on benefits

Initial benefits assessments become outdated



- May reassess benefits based on:
 - Land use changes
 - Newly constructed or modified district drains
 - The subdivision of lands
 - Other factors
- Reassess, as necessary, to correct any inequities and injustices
- May adjust even if not proportional to the former confirmed benefits. See s. 88.46 (2), Stats.

Factors for determining benefit for non-ag land



- May consider same factors specified for ag lands
 - Increase in land value
 - Soil
 - Amount of drainage required
 - Reliability of drainage provided
 - Frequency of flooding
 - Difficulty of draining the assessed land
 - Other relevant factors

Factors for determining benefit for non-ag land



- May consider the cost to accommodate larger, more frequent discharges
- Additional discharges include:
 - Stormwater
 - Wastewater
- Cost apportioned to non-ag parcels for:
 - Construction costs to enlarge drains
 - Maintenance costs following construction

Assessment of county and municipal lands

- Lands owned by a county, town, village or city may be assessed benefits, awarded damages and assessed for costs the same as other lands within the district
 - A town sanitary district is subject to assessment *State ex rel. Town of Norway v. Racine County Drainage Board*, 220 Wis. 2d 595, 583 N.W.2d 437 (Ct. App. 1998), 97-2861.

Assessment of county and municipal roads



- “Land” under s. 88.01(11) includes railroad right-of-way, public highways, streets and alleys
- A municipal highway system in a district benefits from drainage and may be assessed for such benefits. *In Re Door Creek Drainage Dist.* (1920), 172 Wis. 431, 179 N.W. 581.

Assessment of state lands



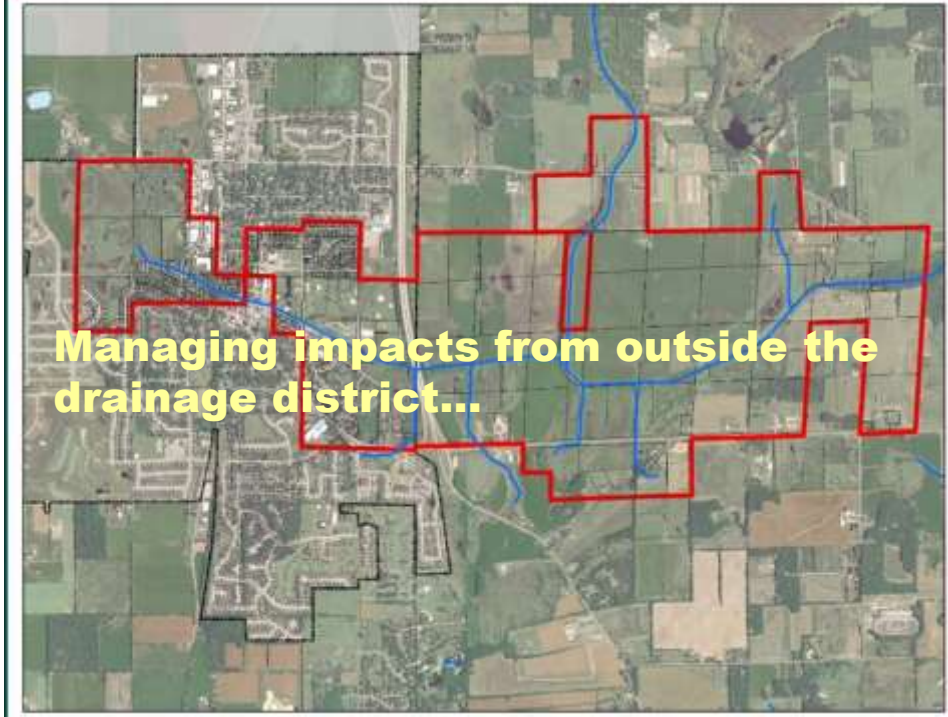
- Can assess only agricultural lands owned by the state
 - Excludes game farms
- Must remove land from assessment roll if state acquires non-ag lands
 - Retain right to conduct maintenance of existing drains, s. 88.50
- Need written permission from a state agency to construct drains on lands
 - Owned by the state
 - Controlled by state easement or lease

Norway Dover road assessment example



- Percent of district land in right of ways
 - Federal gov't, 0.19% or 28 acres
 - Wisconsin DOT, 0.85% or 269 acres
 - Municipalities, 1.88% or 591 acres
- Assessments
 - Municipalities, including county
 - Not state (not ag land) or federal (no authority)

Source: <http://racineco.com/crepository/planningdevelopment/drainageCommission/CD/summary.pdf>

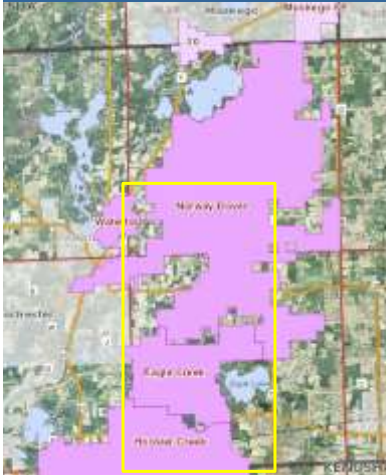


Assess costs against upstream municipalities under s. 88.64(3)



- Must show that increased flow from municipal discharge imposes costs to maintain or enlarge a drain
- Must have engineer's report documenting impact and costs
 - May cover discharges from impermeable surfaces and WWTPs
- May address more than one municipality if cost apportioned
- Assess after a hearing, with decision subject to review by state drainage engineer

Assess costs under 48.04(2) against drainage districts



- May assess costs against one district for the benefit of another district
- May consider impacts of increased flow

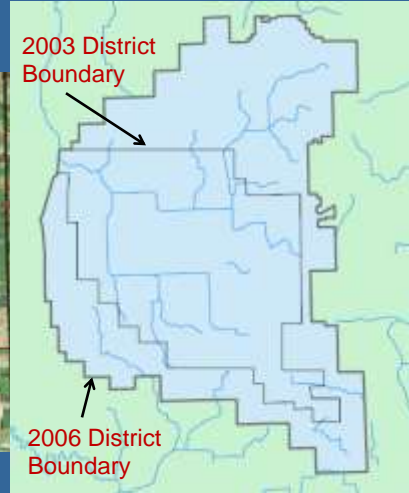
Other rights under 48.04(1) to “recover costs” from outside lands



- Refuse to permit the private drain connection
- Initiate a legal action to recover costs
- Enter into an agreement to secure compensation
- Annex benefited lands into drainage district (s. 88.78)

Annexation to incorporate watershed boundary

Brown County Drainage District #4



Transfer of non-ag lands to municipalities

- Don't transfer unless there is a favorable agreement with the municipality
- What terms might a board want to consider?
 - Municipal assurance of maintenance of, and access to, drainage corridors consistent with ATCP 48.24
 - Municipal agreement to maintain and repair part of former district drain on transferred lands
 - Right of district to perform work and assess costs if municipality fails to perform

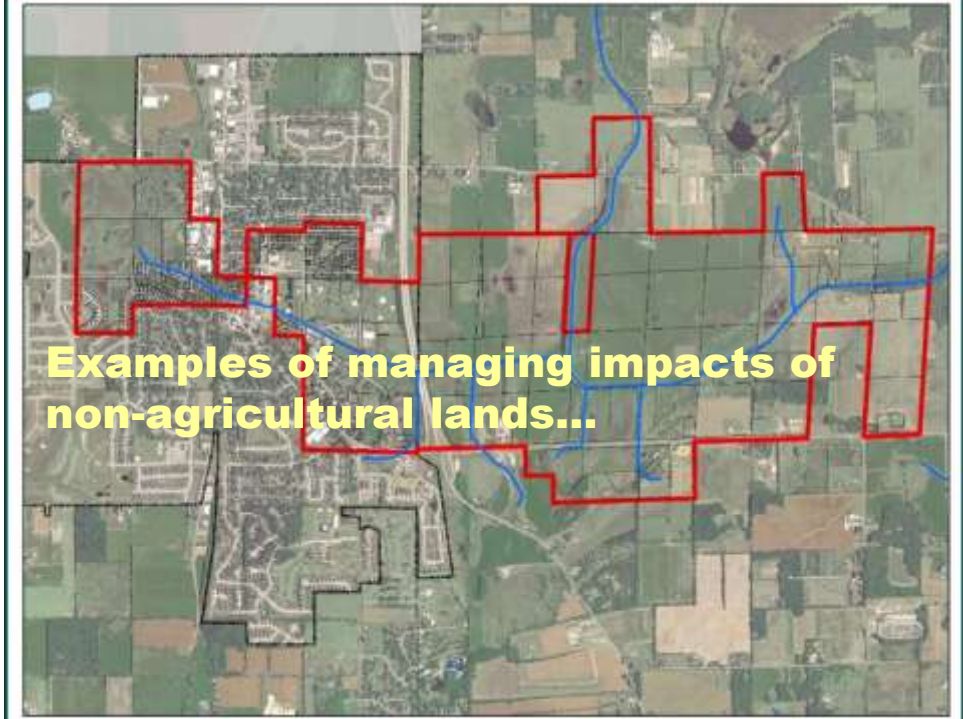


Intergovernmental cooperation agreements

- Under s. 66.0301, any municipality and farm drainage district may contract with each other
 - To jointly perform services
 - One on behalf of the other may perform services
 - To jointly exercise any powers or duties authorized by law
- For example, IGA between Oneida Tribe and Outagamie Co Drainage Board
 - To facilitate payment of special assessments levied against tribal lands in Oneida-Hobart Drainage District

Preventive action based on drainage connection approval

- Ensure that land being drained manages runoff consistent with objectives for drainage district
- Understand the runoff impacts
 - Over time, are there changes in the amount, frequency and peak rate of runoff coming off land?
 - How do changes affect the drain's base flow or its peak flows during storm events?
- Are there design changes or new practices on non-ag land that can mitigate impacts?



Background



- Operates plant on 24 acres within district
- Services about 2000 residences, nearly all located within the district
- Discharges 330 million gallons of treated wastewater per year into a drainage drain

Recovering costs for maintenance project



- Established overall cost of \$2 million for project
- Determined sanitary district's benefit of \$10.00 per year for each of the 2,000 households
- Assessed \$200,000 (1/10 of project cost) over a ten-year period

Legal objections by the sanitary district

- Board reassessed benefits in 1996, bringing the discharge from the sanitary district into its calculation of benefits
- The sanitary district contended:
 - The Board lacks authority to levy assessments against it
 - The amount assessed by the Board is unreasonable and therefore invalid

Court concludes board was fair and reasonable

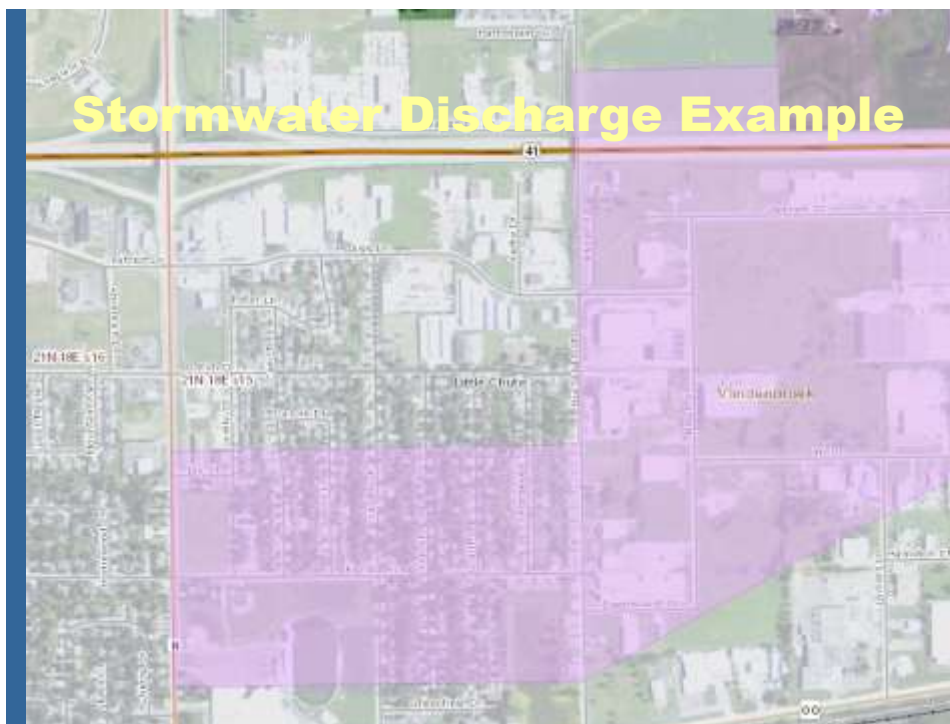
COURT OF APPEALS OF WISCONSIN PUBLISHED OPINION	
Case No.	05-204
Caption Title of Case	STATE EX REL. TOPPS OF NORWAY SANITARY DISTRICT vs. PETERSON APPELLANT, vs. N. vs. EVING COUNTY DISTRICT BOARD OF COMMISSIONERS, RESPONDENT.
Opinion Filed Entered on Docket	June 17, 1998 May 7, 1998
JUDGE Concurred Dissent:	SHOCK, J.J., DOWD, and ANDRUS, JJ.
Appellant ATTORNEYS	On behalf of the petitioner-appellant, the case was submitted at the trial of Michael P. Davis of Wausau.
Respondent ATTORNEYS	On behalf of the respondent-respondent, the case was submitted at the trial of Matthew H. Quinn and Brent J. Swanson of Hunt & Quinn, L.L.C. of Racine.

- May assess sanitary districts in the same manner as municipalities
- May consider wastewater discharges when assessing benefits
- Not required to show that discharges diminished drain capacity

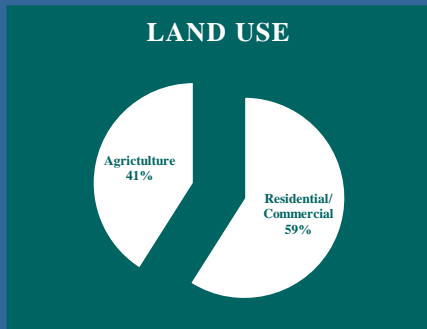
Court concludes board was fair and reasonable

COURT OF APPEALS OF WISCONSIN PUBLISHED OPINION	
Case No.	07-204
Complete Title of Case	SUNTEK, INC., TRUST OF NORWAY VANTAGE DISTRICT, INC., Petitioner-Appellant, v. N. Eau Claire County Division Board of Commissioners, Respondent-Respondent.
Oral Argument Submitted on Briefs	June 17, 1998 May 7, 1998
JUDGE Concurred Dissent	Stadler, J.J., Dannels and Anderson, JJ.
Appellant ATTORNEYS	On behalf of the petitioner-appellant, the case was submitted on the briefs of Michael J. Dannels of Waupesa.
Respondent ATTORNEYS	On behalf of the respondent-respondent, the case was submitted on the briefs of Matthew H. Quinn and Ronald J. Swoboda of Board & Quinn, L.L.C. of Waupesa.

- Supported by engineer's expert opinion justifying benefits calculation, \$10/yr household assessment and portion of project costs
- Supported by Board's judgment of what is fair under circumstances
 - Waived all past assessments, providing "time value of money" and 10-year immunity from future special assessments



Background



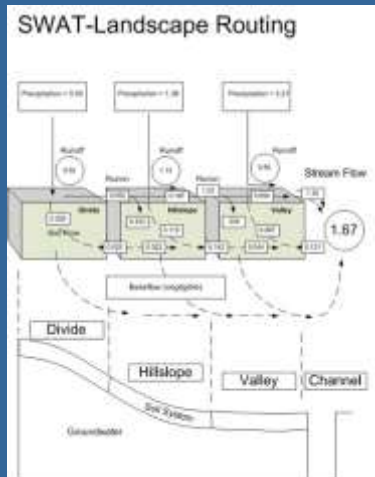
- Involves district covering 575 acres, with majority residential/commercial land
- Annexed benefited land, then assessed for planned maintenance of drain
- Board revised calculation to include a per-acre assessment for developed land based on impervious surfaces

Board approach based on impervious surfaces



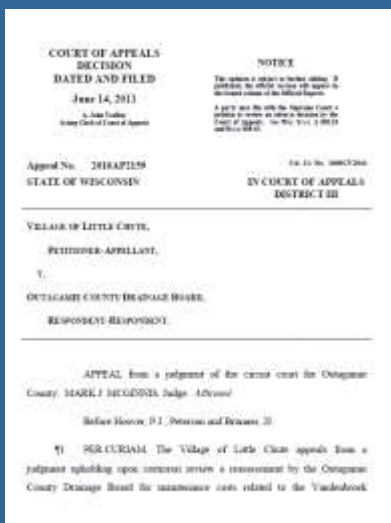
- Calculated an “equivalent runoff unit” (ERU) to establish the average amount of impervious surface from which runoff is generated
- Applied ERU, resulting in a 59% allocation to the Village for maintenance costs

Legal objections by the village

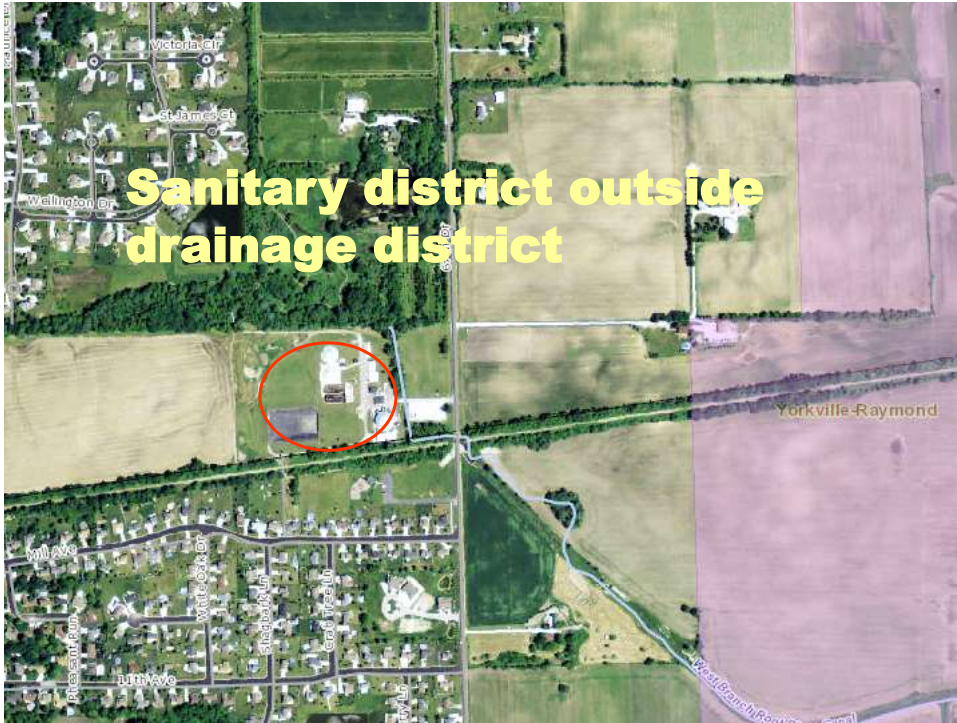


- ERU method focuses only on impervious surface and does not address sediment load, the primary cause of ditch maintenance costs
- Soil and Water Assessment Tool (SWAT) model is more reliable, better accounting for relevant factors such as land area, sediment load and runoff volume
- However, running SWAT is costly and requires an expert

Court finds board approach is reasonable



- One engineer selected model and another verified its validity
- ERU method does account for parcels with stormwater management practices
- Board may consider costs and feasibility in model selection



Background



- The drainage district contains 4,662 acres of land consisting of 248 parcels and including parts of two municipalities
- Non-ag lands located in the district discharge runoff into drain
- A sanitary sewer plant located outside the district discharges its treated effluent into the district drain

Calculation of sanitary district contribution to annual flow

Annual runoff (AR) for the watershed in which drainage located

AND

Annual discharge (AD) of treated effluent into drain

EQUAL

Combined contribution (CC)

The percent for which sanitary district is responsible

AD/CC

Calculation of annual runoff in to drainage district

Watershed area (25,319.8 acres)

multiplied by

the annual precipitation (34.15 inches)

AND

average runoff coefficient (0.172)

EQUAL

539.87 million gallons annually

Calculation of impact from sanitary district discharge

AR=539.86 million gallons per year

AND

AD= 368.54 million gallons per year

EQUAL

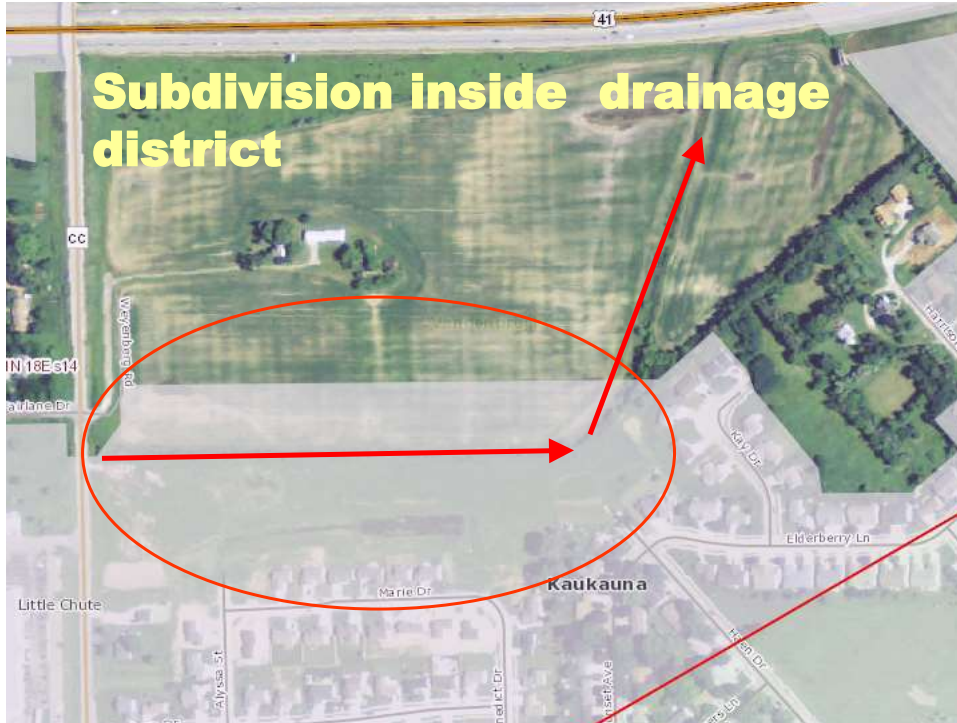
CC = 908.41 million gallons per year

$$368.54 / 908.41 = 40.6\%$$

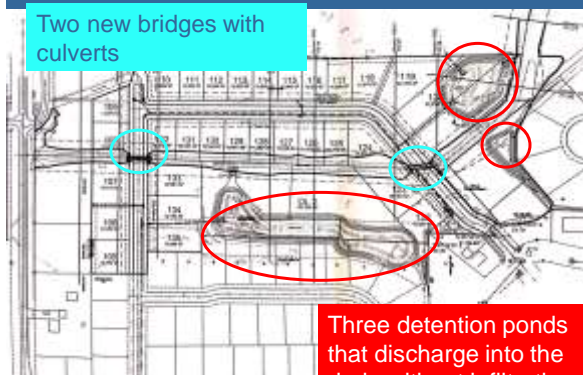
Percent for which sanitary district is responsible

Issues moving forward

- Are the outcomes of the model reasonable?
 - Is a 40% allocation open to challenge?
- Can costs be assessed to the upstream municipality under 88.64?
 - Is this a municipality as defined this section?
 - Can specific maintenance costs be attributed to the flow from the sanitary district? (ATCP 48.04(3))?
- Are there other options under ATCP 48.04(1) to address the impacts from outside land:
 - Initiating a legal action to recover costs
 - Entering into an agreement to secure compensation



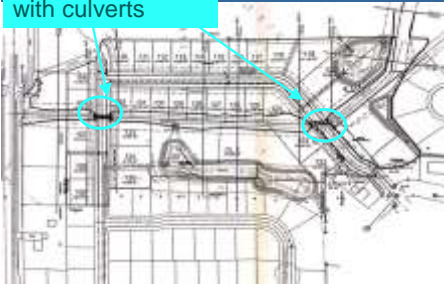
Background



- A subdivision is planned inside a drainage district
- Drainage board must obtain DATCP approval for construction project
- Engineering evaluations were prepared for DNR and county permits

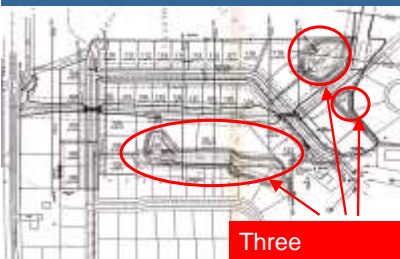
Engineer's analysis of stream flow based on new structures

Two new bridges with culverts



- Used HEC-RAS, a river modeling program, to analyze stream flow within limited areas near new bridges
- Showed culverts could handle flow from 10-year event
- Validated with topographic and other data

Engineer's analysis of changes in peak flow of stormwater



Three detention ponds that discharge into the drain

- Used Hydraflow Hydrographs (TR-55 method) to estimate peak runoff flows for existing and post-developed site
- Showed post-developed peak flows won't exceed peak flows from existing site
- Showed necessary removal of Total Suspended Solids

Limitations of engineering models for construction project evaluation

- Models used for county and DNR permits do not capture all critical information for drainage district review
- While TR-55 can assess peak runoff flow for the development area, it cannot be applied to drainage districts whose specifications are based on a different model/method
- Original plans and specs typically used Flood-Frequency Characteristics of WI Streams method/equations

Alternative engineering approach to evaluate runoff impacts on drain

- Determined “allowable” peak flow per acre by dividing the peak 10-year, 24-hour flow rate by the upstream drainage area
$$71 \text{ cfs} / 422 \text{ acres} = 0.2 \text{ cfs/acre}$$

(NOTE: cfs = cubic feet per second)
- Determined “allowable” rate for the development by multiplying “allowable” rate by the acres draining to the detention ponds
$$0.2 \text{ cfs} \times 49 \text{ acre development} = 9.8 \text{ cfs}$$
- Used HydroCAD to “combine” the outflow from 3 ponds (9.76 cfs)
- Showed that the discharge from the 3 ponds was very close to the “allowable” rate determined by the method above.
- Note: Does not calculate whether there is a substantial increase in flow.

What if model showed runoff substantially increased

- Redesign project to increase detention and infiltration?
 - Not easy to require since the development could meet DNR and County pre- to post- peak flow rate requirements
- Re-assess benefits to (or impacts from) the developed land to cover cost of drain modification?

Take home points



- May need to reassess benefits and capture impacts from non-ag land
- Need engineering expertise to select a method to categorize benefits and runoff impacts
 - Can select a method that focuses on impacts alone
 - Not held to perfection: Method need only be fair and reasonable
- More challenges to managing runoff from non-ag land outside a district, versus non-ag land inside
- Prevention can reduce impacts



DATCP Contacts

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DATCP Website:
www.datcp.wi.gov/Environment/Drainage_Programs/