Stanton Intercounty Drain

Hearing of Necessity and Adding Lands to District

Jonesfield Township Hall

December 15, 2016

1:30 P.M.

Agenda

- Background information
- Review drainage district
- Review engineering and proposed improvements
- Estimate of cost for proposed improvements

Drain Background

- Existing Drain
  - 8.5 miles of open drain – approx.(4.25 Mi. Mid.) (4.25 Sag.)
  - 26 existing drain crossings
  - Watershed area of 1,990 acres
  - 120 foot Right-of-way (60 feet on each side of drain centerline)
- Previous Projects
  - Drain established in 1893
  - Drain cleanout, Branch 1914
  - Maintenance and Improvement 1929, 1950, 1974

Drain Background

- December 21, 2015 - Petition for drain maintenance filed with Saginaw County Public Works Commissioner
  - Petition filed by Jonesfield Township
- March 4, 2016 – Hearing of Practicability
  - Determined to move forward with preliminary engineering study
  - Approximately 12 landowners attended
  - Testimony of debris and obstructions
  - Flooding over Tittabawassee Road in (2) locations.
  - Submerged field tiles
  - Flooding of fields and agricultural buildings.

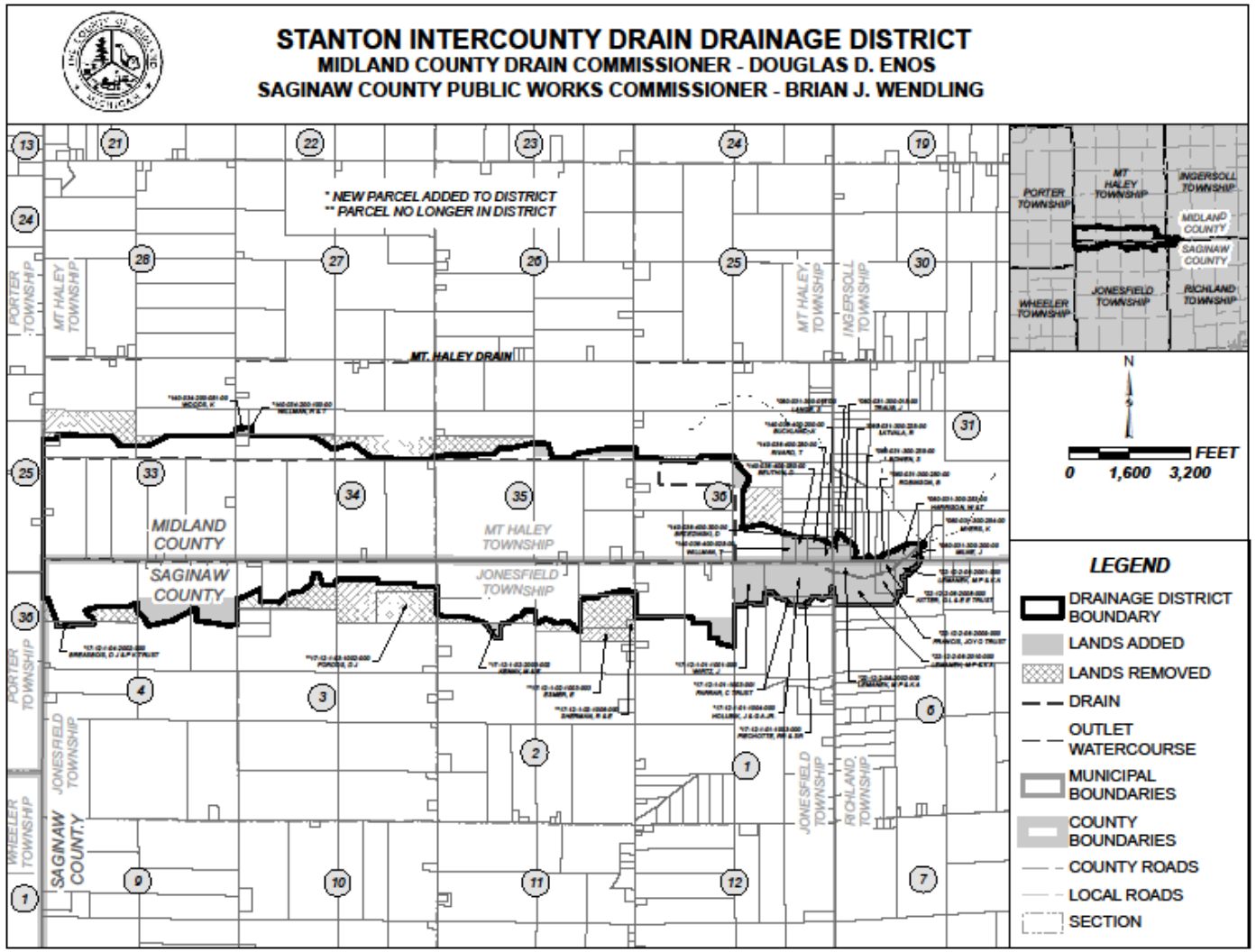
Drainage District

- What is a drainage district?
  - Lands that contribute storm water to the drain
  - Lands special assessed for improvements to the drain
- Drainage district includes:
  - County and township government
    - Saginaw County: Richland and Jonesfield Twp.
    - Midland County: Ingersoll and Mt. Haley Twp.
  - Landowners (Approximately 86 parcels)

Drainage District

- How is drainage district determined?
  - Identify lands that drain towards the county drain
    - Directly or indirectly connected to drain
    - Based on surface water flow
  - Reviewed historic drainage district maps
  - Reviewed existing infrastructure and aerial photos
  - Reviewed available contour maps (LiDAR)
  - Performed field review of drainage district boundary

Drainage District



Drainage District

- Drainage district map shows revised boundary
- Drainage district map shows lands to be added or removed from the Drainage District
- Added lands – Lands that currently utilize the Stanton Drain, but were not previously in the historic Drainage District
- Removed lands - Lands that don't currently utilize the Stanton Drain, but were in the historic Drainage District

Lands Added / Removed – Midland County

Midland County Lands Added

Midland County		
Township	Parcel IDs	Section
Ingersoll	060-031-300-015-00	31
Ingersoll	060-031-300-016-00	31
Ingersoll	060-031-300-200-00	31
Ingersoll	060-031-300-225-00	31
Ingersoll	060-031-300-235-00	31
Ingersoll	060-031-300-250-00	31
Ingersoll	060-031-300-253-00	31
Ingersoll	060-031-300-254-00	31
Mt. Haley	140-034-200-051-00	34
Mt. Haley	140-034-200-100-00	34
Mt. Haley	140-036-400-025-00	36
Mt. Haley	140-036-400-050-00	36
Mt. Haley	140-036-400-200-00	36
Mt. Haley	140-036-400-250-00	36
Mt. Haley	140-036-400-300-00	36

15 Parcels

Midland County Lands Removed

Lands Added / Removed – Saginaw County

Saginaw County Lands Added

Saginaw County		
Township	Parcel IDs	Section
Jonesfield	17-12-1-01-1001-000	1
Jonesfield	17-12-1-01-1003-000	1
Jonesfield	17-12-1-01-1003-001	1
Jonesfield	17-12-1-01-1004-000	1
Jonesfield	17-12-1-02-2003-002	2
Jonesfield	17-12-1-04-2002-000	4
Richland	22-12-2-06-2001-000	6
Richland	22-12-2-06-2002-000	6
Richland	22-12-2-06-2008-000	6
Richland	22-12-2-06-2009-000	6
Richland	22-12-2-06-2010-000	6

11 Parcels

Saginaw County Lands Removed

Saginaw County		
Township	Parcel IDs	Section
Jonesfield	17-12-1-02-1003-003	2
Jonesfield	17-12-1-02-1006-000	2
Jonesfield	17-12-1-03-1002-000	3

3 Parcels

Drainage District

- Drainage District----------1,990.53 acres
  - Midland County----------1,339.76 acres 67%
  - Saginaw County----------650.77 acres 33%

  - Midland County Road Right of Way----------34.29 acres
  - Saginaw County Road Right of Way----------24.57 acres

Notification

- If you received a notice of this meeting, your property is currently in the Drainage District or proposed to be added to the Drainage District

Engineering

- Survey and inspection of drain
- Perform hydrologic and hydraulic analysis – to determine flow capacity and culvert sizing
- Develop proposed improvements
- Estimate of cost

Survey and Inspection of Drain

- Surveyed approximately 8.5 miles of drain and collected:
  - Top of sediment and hard bottom elevations at 200 ft. intervals
  - Drain cross sections at approx. 400 and 900 ft. intervals
  - Topographic features within 50 ft. of drain on either side
- Identified the following items
  - Levels of sedimentation
  - Areas of erosion
  - Tree and debris obstructions
  - Crossings that are inadequate

Survey and Inspection of Drain Crossings

- Measured length, elevation and size of each drain crossing
- Assessed condition of crossings and headwalls
- 26 existing crossings
  - 9 local road crossings
  - 17 Private crossings
    - 6 farm crossings
    - 9 driveway crossings
    - 2 footbridge crossings

Survey and Inspection of Drain Crossings

- Criteria for Evaluating Crossings
  - Is the size of the crossing hydraulically adequate
  - What is the structural condition of the crossing
  - Is the crossing on grade

Drain Crossings

- Culvert and bridge design criteria
  - 0.5 ft. of head loss for design storm
  - Minimum of 1.5 ft. of cover on drive culverts
  - Minimum of 2 ft. of cover on road culverts
  - Farm crossings – 24 ft. top width
  - Drive crossings – 20 ft. top width
  - Farm and drive – metal culverts with beveled ends
  - Drive surface to be replaced in-kind
  - County roads – meet county standards

Hydrology & Hydraulics

- 10-year storm design
  - 10-year storm flow rate – 168 cfs
  - 2.5” rain in 6 Hours to 3.4” rain in 24 Hours
- Open Channel
  - Convey 10-year storm within drain banks
- Culverts
  - Maximum 0.5 ft. of headloss through culvert
  - Minimum of 1.5 ft. cover on drive culverts
  - Minimum of 2 ft. cover on paved roads

Summary - Open Drain Improvements

- Site Clearing
- Channel Excavation and Channel Cleanout
- Spoil Leveling and Hauling
- Drain Crossings (clean out or replacement)
- Erosion Control Measures
- Cleanup and Restoration

Site Clearing

- Obstructions and debris will be removed from drain including trees and brush
- Maintenance lane along drain cleared on one side or both sides of drain depending on the scope of work
- All trees, brush and stumps will be disposed of either by burning, burying, chipping or hauling from site

Channel Excavation and Cleanout

- Channel Cleanout
  - Select removal of trees and brush
  - Removal of sediment from drain bottom
  - Spot repair of erosion
  - Excavate from one or both sides of drain
- Channel Excavation
  - Sediment removed from drain bottom
  - Reconstruct original bottom width
  - One or both banks sloped to 2 hor. to 1 vert.
  - All trees and brush grubbed from banks being sloped
  - Excavate from one or both sides of drain

Spoil Leveling and Hauling

- Spoils will be leveled within the drain right of way in agricultural and wooded areas (60’ on either side)
- Spoils will be hauled in lawn areas
- Openings will be left in spoils to allow for drainage

Erosion Control

- Vegetation re-establishment
  - Seed drain banks
- Bank erosion prevention
  - Riprap or grassed spillways
  - Riprap placed where high concentration of runoff
  - Riprap or erosion fabric placed at erosion prone areas
- Field tile outlets repaired with splash pads

Cleanup and Restoration

- Disturbed areas will be seeded
- All debris and spoils will be disposed of
- All disturbed lawn areas will be landscape graded and seeded with a minimum of 4” of in-kind topsoil
- Drain must be stabilized prior to final inspection

Preliminary Design

- Existing Conditions
  - Main-
    - Station –(0+69) P.O.B. to 55+52 (Tittabawassee Rd. Cross Culvert)
      - Length 5,621 feet
      - Fall/Grade 12± feet 0.22%
      - Avg. bottom 6 feet
      - Avg. depth 4 to 6 feet
      - 1 to 4 feet of sediment
      - Thick heavy brush from Steel Road downstream
      - 7 crossings (3 road and 4 private)

Preliminary Design

- Existing Conditions
  - Main-
    - Station 55+52 (Tittabawassee Road Cross Culvert) north and west to Meridian Road (P.O.B.)
      - Length 20,852 feet (approximately 4 miles) Farmed
      - Fall/Grade 29± feet 0.14%
      - Fall/Grade between 5 Mile Road and Meridian 0.07%
      - Field tiles under water
      - Avg. bottom 4 feet
      - Avg. depth 5 feet
      - 1 to 1.5 feet of sediment, cattails
      - 6 crossings (3 road and 4 private) 5 Mile Road (high)

Preliminary Design

- Existing Conditions
  - Branch (Parallel to Tittabawassee Rd., S. Side)
    - Station 0+00 (P.O.B.) to Meridian Road (P.O.B.)
      - Length 18,000 feet (approximately 3.5 miles)
      - Fall/Grade 26± feet 0.14%
      - Avg. Bottom 4 feet
      - Avg. Depth 6.5 feet
      - 0.5 to 2 feet of Sediment
      - Farm ground / Lawn
      - 13 crossings (3 road, 10 private drive or farm)

Drain Crossings

- No. 1 – Sta. 1+98 – Footbridge

- ❑ Hydraulically Adequate
- ❑ Structurally Adequate
- ❑ On Grade
- ✓ Not in use

Crossing proposed to be replaced Rockford Crossing

Drain Crossings

- No. 2 – Sta. 8+74 –Tittabawassee Road
  - 50’ of 144” x 96” CMPA

- ✓ Hydraulically Adequate
- ✓ Structurally Adequate
- ✓ On Grade

Crossing to remain in place. Needs headwall repairs.

Drain Crossings

- No. 3 – Sta. 15+39 – Footbridge

- ❑ Hydraulically Adequate
- ❑ Structurally Adequate
- ✓ On Grade

Crossing proposed to be replaced w/ 46 Lin. Ft. of 128” x 83” CMPA (108”)

Drain Crossings

- No. 4 – Sta. 20+68 – Farm Bridge
  - 11.5’ x 12’

✓ Hydraulically Adequate
✓ Structurally Adequate
❑ On Grade (footing depth)

Crossing proposed to be replaced w/ 46 Lin. Ft. of 128” x 83” CMPA (108”)

Drain Crossings

- No. 5 – Sta. 28+25 – Steel Road
  - 51’ of 144” x 96” CMPA

- ✓ Hydraulically Adequate
- ✓ Structurally Adequate
- ✓ On Grade

Crossing to remain in place. Channel proposed to be widened up and downstream.

Drain Crossings

- No. 6 – Sta. 49+17 –Farm Crossing
  - 42’ of 132” x 78” CMPA

- ✓ Hydraulically Adequate
- ✓ Structurally Adequate
- ✓ On Grade

Crossing to remain in place.

Drain Crossings

- No. 7 – Sta. 55+52 –Tittabawassee Road
  - 46’ of 144” x 96” CMPA

- ✓ Hydraulically Adequate
- ✓ Structurally Adequate
- ✓ On Grade

Crossing to remain in place.

Drain Crossings

- No. 8 – Sta. 75+10 – Farm Crossing
  - 25’ of 48” CMP

- ❑ Hydraulically Adequate
- ❑ Structurally Adequate
- ❑ On Grade

Crossing proposed to be replaced w/ 52 Lin. Ft. of 81” x 59” CMPA (72”)

Drain Crossings

- No. 9 – Sta. 100+11 – Farm Crossing
  - 42’ of 42” CMP

❑ Hydraulically Adequate
✓ Structurally Adequate
✓ On Grade

Crossing proposed to be salvaged and replaced w/ 52 Lin. Ft. of 81” x 59” CMPA (72”)

Drain Crossings

- No. 10 – Sta. 107+86 – S. Kane Road
  - 48’ of 48” CMP

- ❑ Hydraulically Adequate
- ✓ Structurally Adequate
- ✓ On Grade

Crossing proposed to be replaced 52 Lin. Ft. of 81” x 59” CMPA (72”)

Drain Crossings

- No. 11 – Sta. 160+65 – S. Homer Road
  - 44’ of 48” RCP

❑ Hydraulically Adequate
✓ Structurally Adequate
✓ On Grade

Crossing proposed to be replaced. w/ 66 Lin. Ft. of 73” x 55” CMPA (66”)

Drain Crossings

- No. 12 – Sta. 213+62 – S. 5 Mile Road
  - 44’ of 48” RCP

- ❑ Hydraulically Adequate
- ✓ Structurally Adequate
- ❑ On Grade

Crossing proposed to be replaced w/ 64 Lin. Ft. of 66” x 51” CMPA (60”)

Drain Crossings

- No. 13 – Sta. 231+27 – Farm Crossing
  - 27’ of 72” Steel Boiler Tube

- ✓ Hydraulically Adequate
- ✓ Structurally Adequate
- ✓ On Grade

Crossing to remain in place.

Drain Crossings

- No. 14 – Sta. 6+71 – Wietfeldt, D.E. – Driveway Crossing
  - 31’ of 60” CMP

- ❑ Hydraulically Adequate
- ✓ Structurally Adequate
- ❑ On Grade

Crossing proposed to be replaced w/ 56 Lin. Ft. of 73” x 55” CMPA (66”)

Drain Crossings

- No. 15 – Sta. 26+45 – N. Chapin Road
  - 51’ of 60” CMP

- ✓ Hydraulically Adequate
- ✓ Structurally Adequate
- ✓ On Grade

Crossing to remain in place.

Drain Crossings

- No. 16 – Sta. 46+29 – Rohn, A. – Driveway Crossing
  - 33’ of 66” RCP

- ✓ Hydraulically Adequate
- ✓ Structurally Adequate
- ❑ On Grade

Crossing proposed to be replaced w/ 66” x 51” CMPA (60”)

Drain Crossings

- No. 17 – Sta. 78+95 – Merrill Road
  - 60’ of 60” CMP

✓ Hydraulically Adequate
❑ Structurally Adequate
✓ On Grade

Crossing proposed to be replaced w/ 66” x 51” CMPA (60”)

Drain Crossings

- No. 18 – Sta. 85+15 – Fleming, S. – Driveway Crossing
  - 37’ of 60” CMP

- ✓ Hydraulically Adequate
- ✓ Structurally Adequate
- ✓ On Grade

Crossing to remain in place.

Drain Crossings

- No. 19 – Sta. 111+79 – Frollo, W. & A. Trust – Driveway Crossing
  - 33’ of 84” Steel

- ✓ Hydraulically Adequate
- ✓ Structurally Adequate
- ✓ On Grade

Crossing to remain in place.

Drain Crossings

- No. 20 – Sta. 122+11 – Clapp, D. & T. – Driveway Crossing
  - 31’ of 60” CMP

✓ Hydraulically Adequate

❑ Structurally Adequate

✓ On Grade

Crossing proposed to be replaced 60” x 46” CMPA (54”)

Drain Crossings

- No. 21 – Sta. 126+62 – Miller, R. & J. – Driveway Crossing
  - 144’ of 48” CMP

- ❑ Hydraulically Adequate
- ❑ Structurally Adequate
- ✓ On Grade

Crossing proposed to be replaced w/ 60” x 46” CMPA (54”)

Drain Crossings

- No. 22 – Sta. 131+99 – N. Fenmore Road
  - 93’ of 48” CMP

- ❑ Hydraulically Adequate
- ❑ Structurally Adequate
- ✓ On Grade

Crossing proposed to be replaced w/ 60” x 46” CMPA (54”)

Drain Crossings

- No. 23 – Sta. 137+85 – Coppens, K. – Driveway Crossing
  - 33’ of 72” STEEL

- ✓ Hydraulically Adequate
- ✓ Structurally Adequate
- ✓ On Grade

Crossing to remain in place.

Drain Crossings

- No. 24 – Sta. 152+38 – Breasbois, C. – Driveway Crossing
  - 42’ of 42” RCP

- ✓ Hydraulically Adequate
- ✓ Structurally Adequate
- ✓ On Grade

Crossing to remain in place.

Drain Crossings

- No. 25 – Sta. 154+28 – Breasbois, C. – Driveway Crossing
  - 26’ of 60” STEEL

- ✓ Hydraulically Adequate
- ✓ Structurally Adequate
- ✓ On Grade

Crossing to remain in place.

Drain Crossings

- No. 26 – Sta. 182+07 – Farm Crossing
  - 42’ of 12” CCP

- ❑ Hydraulically Adequate
- ✓ Structurally Adequate
- ❑ On Grade

Crossing proposed to be replaced w/ 18” CMP

Planning Level Cost Estimate

- Channel improvements/maintenance to approximately 8.5 miles of drain
- Replacement of undersized, structurally deficient, and off grade crossings and Tittabawassee Road cross culverts
- Estimated Cost: $857,000

Planning Level Cost Estimate

- Cost Estimate Includes:
  - Construction Costs
  - 10-15% Contingencies
  - Inspection, Survey, & Design
  - Bond and Interest
  - Permitting (if necessary)
  - Construction Administration
  - Utility Coordination
  - Legal
- Actual project cost will be based on contractor's bid

Next Steps, If Determined Necessary

- Final engineering and project scoping
- Coordination and permitting with impacted utilities and governmental agencies
- Bid letting phase
- Day of Review of Apportionments
- Project financing and bonding
- Proceed with construction

Next Steps, If Determined Not Necessary

- No further action on current petition
- Subsequent petitions may be filed
- Cost incurred to date will be assessed

Public Testimony

- Fill out speaker cards
- State name and relation to proposed project
- Limit comment to 3 minutes
- Be specific, focus on necessity questions
- Leave copy of materials, if any, with Board

Board Deliberation and Necessity Decision

- Decide if it is necessary to move forward with a project on the Stanton Intercounty Drain
- Drain board to decide on need to add lands to the Drainage District
- Adopt new county apportionments

Appeal

- Any person feeling aggrieved by the determination of necessity or no necessity for the project may institute an action in County Circuit Court within **10 days** after the determination by the Board.