

The Hartman family farm is located in Section 5 of West Heron Lake Township, in the southeastern portion of the JD 36 watershed.

Comments, information, and questions are based upon sources which include:

- The preliminary engineering report
 - The information meeting in May
 - Discussion with ISG staff
 - MnDNR website on climate and water levels
 - USGS Water-Resources Investigation Report 00-4095 on the Heron Lake Basin from 1991-1997
 - National Weather Service and North American Oceanographic Administrator's website on climate and precipitation
 - State Climatologist Office
 - Other sources
1. We question if this project will ultimately provide the desired outcomes and necessary economic returns to ALL the affected landowners within JD 36.
 2. According to the watershed boundary map, our farm appears to be the 3rd largest affected tract. Four tracts of farmland, owned by their respective landowners, which will have direct access to the new mainline as proposed because it runs through or to their property. Our farm is one of the outlying parcels, owned by a different set of landowners. These will be connected to the new mainline through the existing branch lines, which are probably the same age and condition as the original mainline itself. Is it correct the age and conditions of the branch lines will have no impact on the benefits determined?
 3. In the proposed project, the bottom elevation at the runout of the 36 inch outlet is at 1397.71 feet and the top of the 36 inch outlet at approximately 1401 feet. Correct?
 4. The photos, taken on September 11th and 26th, shown in the preliminary engineering report and during the information meeting held on May 21st, the elevation of Jack Creek at the time these photos were taken was suggested to be around 1401 feet. Correct? Approximately 7 weeks of drier weather were experienced leading up the first photo.
 5. In the model shown during the information meeting in May, the event simulated was a 10 year/24 hour rainfall event. How many inches of rain is this? What is the basis for the determination of this event? Can ISG staff restate the conditions for the model shown? Watershed wide rainfall event? Wet or dry soil conditions? Growing crop conditions? Elevation of water in Jack Creek?
 6. The earliest recorded measurements from the North Lake Marsh are 10 cited elevations from May of 1907. **July 2nd of 1969, the one single recorded water level was 1406.6 feet.** The data improved in 1970 and continued so afterwards.
 7. Since the outlet of JD 36 lies within .62 miles of North Heron Lake, is it reasonable to suggest the water levels on Jack Creek at this location tend to correlate to those observed on the North Lake and/or the North Lake Marsh?
 8. With that, much of what we will share starts in 1970 and runs through 2016. No data available since 2016.

9. The Ordinary High Water Level for North Heron Lake is 1401 feet and the top elevation of its outlet dam is 1399.5 feet.

From 1970 through 2016 (No records from 1972, 1978, and 1981):

- a. In 14 of the 44 years recorded, recorded peak elevations did not exceed 1401 feet.
 - i. 2009 was the only year in the last 10 where the recorded elevation did not exceed 1401 feet.
 - b. In 18 of the 44 recorded years, recorded peak elevations exceeded 1403 feet.
 - i. In 5 of the 10 years from 2007-2016, peak elevations exceeded 1403 feet.
 - ii. 2007, 2012, and 2016 still came in at or above 1402.5 feet.
 - c. In 12 of the 44 years recorded, recorded elevations remained between 1401 and 1403 feet.
 - d. No data available from 2017 through 2019.
10. The recorded elevations on the North Lake and the North Lake Marsh have shown water levels of exceeding 1403 feet for extended periods of time. I have specifically looked for durations of 10 days or more. The average, based upon recorded timeframes lasting at least 10 days, stands at 27.5 days.
- a. In 44 years, 19 events occurred with sustained water levels exceeding 1403 feet for 10 days or more.
 - b. 3 of the 19 events were from 2000 – 2009
 - c. 5 of the 19 events were from 2010 – 2016, with at least 2 more to be added for 2018 and 2019
11. Annual rainfall has played a key role in this. In looking at the National Weather Service/NOAA data on Annual Observed Precipitation, which shows years 2005 through 2019, one can draw some conclusions on a watershed scale.
- a. 2006 was the lowest year in total annual precipitation with a watershed wide range of 20 to 30+ inches
 - b. 2010 provided a range of 30 to 40+ inches total annual precipitation
 - c. 2018 and 2019 each provided a range from 40 inches to more than 50 inches
 - d. The years 2010 through 2019 showed the following:
 - i. The 5 wettest years had no less than 30 inches in the watershed
 - ii. The 5 driest years had no less than 20 inches in the watershed
 - iii. 8 of the 10 years had locales receiving 30 to 50 PLUS inches in the watershed

12. The USGS Water-Resources Investigation Report 00-4095 on the Heron Lake Basin from 1991-1997 cited the following:

“Annual precipitation in the Southwest Climate Division of Minnesota and annual runoff in the Des Moines River Basin have increased since the mid 1960’s and the mid 1970’s. The 10-year average of annual precipitation increased from 25.9 in. for 1936–45 to 27.5 in. for 1988–97. The 10- year average of annual runoff increased from 3.4 in. to 7.4 in. for the same period. Analyses of annual precipitation and annual runoff data show increasing trends in precipitation and runoff from 1947 to 1987.”

13. Things to consider:

- Precipitation continues to trend upwards?
- Precipitation from thunderstorms versus rains and showers trends upwards?
- Runoff has been and continues to trend upwards?

- Soil erosion seems to have increased in the most recent decade?
- There is tremendous variability across the entire watershed, including in the amounts of precipitation received and likewise its intensity?
- The amount of water coming to and through Heron Lake is variable, but has increased, while the point where it makes its exit is pretty much fixed?
- Heron Lake has not experienced lower water levels for an extended period of time since the droughts of 1976 and 1988?
- We are experiencing wetter conditions through the growing season?
- High water flood events have become significantly more prevalent?

14. We believe the computer model shown during the information meeting, based upon the inputs, is generally accurate, aside from a few site specific conditions not reflected in the model.

15. Can ISG staff offer some insight into the likely outcome of the model with the water levels of Jack Creek at 1403 feet or higher, which on average lasts 27.5 days, such as in 2010? How about at that same level under the wet conditions we typically seem to experience for those extended durations, such as likely seen in 2018? Historic normal and average may not represent the most recent decade of weather conditions. Is this the new normal?

Questions for the Heron Lake Watershed District

16. What changes in water quality are anticipated if this project is ultimately approved for construction?

17. Who will issue the bond, if the JD 36 project is approved?

18. What is the anticipated rate of interest on the bond?

19. Who is likely to be the bond counsel? Who is likely to be the municipal advisor?

20. What is the bond credit rating of the issuer of the bond?

21. Are the interest costs factored into the cost to benefits analysis?

22. In a conversation with staff from ISG, I recall the engineering costs are expected to be between 20 and 22 percent. Am I correct on this?

23. What does the Heron Lake Watershed District anticipate to receive in terms of a portion or a percentage of the cost of this project for fiscal administration and oversight?