Watershed Semi-Annual Report for Reporting Year 2016

Please complete and submit to your project manager.

Reporting Period: ☑ January 1 through June 30 (Due August 1)
☐ July 1 through December 31 (Due February 1)

All information is required by the U.S. Environmental Protection Agency (EPA) and the Minnesota Pollution Control Agency (MPCA). Do not leave blanks (unless otherwise noted). This report form can be typed using your computer. Use the "tab" key to move through the fields of this form. Enter responses using text and check boxes as indicated. Keep a copy for your records.

I. General Report Information

1. Project title: Heron Lake Third Crop Phosphorus Reduction Effort

2. Project sponsor (Grantee): Heron Lake Watershed District

3. Contact name: Jan Voit, District Administrator

4. E-mail address: jan.voit@mysmbs.com

5. Funding: ☑ 319 ☐ CWP ☐ CWP Loan ☐ Clean Water Fund ☐ Other:

6. Contract number: 69593

7. MPCA Project Manager: Katherine Pekarek-Scott

8. Effective date (mm/dd/yyyy): 7/1/2014
Expiration date (mm/dd/yyyy): 8/31/2017

II. Semi-annual Report Information

1. Project activities completed during last six (6) months according to the program objectives or tasks (please be specific):

Objective 1 Task A: Jan Voit sent a memo to cover crop partners on April 18, 2016. The purpose of the memo was to serve as a reminder about cover crop termination, seeding, soil samples, tillage transects, and infiltration measurements.

Cover crop termination was done on the Christoffer site on April 22, 2016.

Cover crop termination was done on the Ackermann site on April 16, 2016.

Cover crop termination was done on the Perkins site on May 21, 2016.

Cover crop termination was done on the Hansberger site on May 16, 2016.

Objective 1 Task B: Infiltration measurements were taken at the Perkins site on June 9, 2016.

Infiltration measurements were taken at the Hansberger, Christoffer, and Ackermann sites on June 8, 2016.

Tillage transects were conducted at the Perkins site on June 9, 2016.

Tillage transects were conducted at the Hansberger, Christoffer, and Ackermann sites on June 8, 2016.

Soil samples were collected at the Perkins, Ackermann, and Christoffer sites on June 9, 2016.

Soil samples were collected at the Hansberger site on April 12, 2016.

Objective 2 Task A: On February 16, 2016, Catherine Wegehaupt drafted an invitation to the Cover Crop Steering Committee. The invitation was sent to all committee members. It was also sent via email to cover crop farmers in the surrounding area.

The Cover Crop Steering Committee meeting was held on February 24, 2016 at the Heron Lake Community Center. The event began with a brief overview of the grant. Justin Fruechte, Millborn Seeds in Brookings, South Dakota was the featured speaker. Justin covered topics that included: soil benefits of using cover crops, research that has been completed, timing of application, cover crop mixes, and herbicide use. There were 14 people in attendance, most of them being local farmers. Three Cover Crop Steering Committee members were present.

After the presentation, a majority of the farmers stayed for another hour. Discussion was held about their cover crop
experiences - what has or hasn’t worked.

A summary of the Cover Crop Steering Committee meeting was drafted and uploaded to the webpage.

Objective 3 Task A: Revisions were made to the annual report on January 21, 2016. It was approved by MPCA on that date.

Work began on the semi-annual report on June 27, 2016.

2. List all products (documents, pamphlets, videos, maps, etc.) produced in this reporting period:
   Memo to cover crop partners
   Cover Crop Steering Committee meeting invitation
   Cover Crop Steering Committee summary
   Tillage transects and infiltration test results Fall 2014 - Spring 2016

3. Challenges faced (optional):
   HLWD staff struggles with inputting data into the reporting form. The inability to use track changes, find and replace, or any formatting options available in Word makes entering information into the form very difficult.

4. Summary of monitoring data collected (if applicable):
   Soil Sample Results
   Christoffer:
   Six composite soil tests were taken in June 2016 from 0-6” and sent to MVTL Laboratories to be analyzed for Organic Matter, pH, Buffer pH, Phosphorus, Potassium, and Zinc. Soil texture was determined by examining the NRCS Soil Survey for Jackson County. Organic matter is high averaging 6.5% which is fairly typical for the region and soil types. The soil pH is approximately 6.5 in the top 6 inches. Again, this is within the ranges expected for the soil types in the field. Soil phosphorus is averaged 15 ppm on the weak Bray test. Soil potassium averaged 157 ppm. Zinc levels averaged 2.2 ppm. Soils are calcareous in nature and are fine textured. Soil nitrate in the top 6 inches averaged 20 lbs. per acre.

   Perkins:
   Six composite soil tests were taken in June 2016 from 0-6” and sent to MVTL Laboratories to be analyzed for Organic Matter, pH, Buffer pH, Phosphorus, Potassium, and Zinc. Soil texture was determined by examining the NRCS Soil Survey for Nobles County. Organic matter is high averaging 5.7% which is fairly typical for the region and soil types. The soil pH is slightly acidic averaging 6.0 in the top 6 inches. Soil phosphorus averaged 8 ppm on the weak Bray test. Soil potassium averaged 129 ppm. Zinc levels averaged 1.4 ppm. Soils are calcareous in nature and are fine textured. Soil nitrate in the top 6 inches averaged 37 lbs. per acre.

   Hansberger:
   Twelve composite soil tests were taken in June 2016 from 0-6” and sent to MVTL Laboratories to be analyzed for Organic Matter, pH, Buffer pH, Phosphorus, Potassium, and Zinc. Soil texture was determined by examining the NRCS Soil Survey for Nobles County. Organic matter averaged 6.0%, which is fairly typical for the region and soil types. The soil pH is neutral averaging 7.1 in the top 6 inches. Soil phosphorus averaged 43 ppm on the weak Bray test. Soil potassium averaged 177 ppm. Zinc levels averaged 3.9 ppm. Soils are calcareous in nature and are fine textured. Soil nitrate in the top 6 inches averaged 33 lbs. per acre.

   Ackermann:
   Six composite soil tests were taken in June 2016 from 0-6” and sent to MVTL Laboratories to be analyzed for Organic Matter, pH, Buffer pH, Phosphorus, Potassium, and Zinc. Soil texture was determined by examining the NRCS Soil Survey for Jackson County. Organic matter averaged 6.6% which is fairly typical for the region and soil types. The soil pH averaged 6.5 in the top 6 inches. Soil phosphorus averaged 20 on the weak Bray test. Soil potassium averaged 152 ppm. Zinc levels averaged 1.8 ppm. Soils are calcareous in nature and are fine textured. Soil nitrate in the top 6 inches averaged 20 lbs. per acre.

   Overall, there were very small changes in soil fertility characteristics that are likely the result of sampling variability and/or soil mineralization. They cannot be attributed to the cover crops.

   Tillage Transect Results
   Spring tillage transects are a way to measure the amount of surface residue. All four sites have similar tillage practices of strip till corn and no till beans, along with the use of cover crops. Conservation tillage and using a cover crop will increase the surface residue significantly. Residue counts can vary depending on previous year's crop, yields, and cover crop growth. Over the last two years, all tillage transect recordings with a previous crop of corn have had an average of 83 percent residue cover and an average of 54 percent following a crop soybeans. These readings are very good and indicate good cover.

   Infiltration Test Results
   Before the grant began in 2014, these sites had been through a pattern of one or two major rain events in the spring followed by drought like conditions through the remainder of the growing season. In the fall of 2015 through the spring of 2016, Nobles...
and Jackson County received more rainfall than usual. Corn planting was delayed in some locations in both counties due to flooding.

Infiltration tests were completed on June 8 and 9, 2016. The sites located in Nobles County had a three inch rain event within a three hour period just a week before the infiltration tests were completed. Both Nobles’ County sites showed signs of soil crust, which is an indication of surface disturbance due to intense rain events. (See photo below.) According to the Natural Resources Conservation Service (NRCS), soil crusting can be defined as, “Water droplets striking soil aggregates and water flowing across soil breaks aggregates into individual soil particles. Fine soil particles wash, settle into, and block surface pores causing the soil surface to seal and prevent water from soaking into the soil. As the muddy soil surface dries out, it crusts over.” In 2015, the Nobles County sites had an infiltration rate of 10 inches per hour and eight inches per hour in the spring and eight inches per hour and seven inches per hour in the fall. In the spring of 2016, the results were two inches per hour and four inches per hour. The reason for lower infiltration rates in Nobles County compared to previous years could be because of the high surface disturbance causing the ground to seal from surface crusting.

The Jackson County sites had infiltration rates of two inches per hour and four inches per hour. These results are similar to the previous year of three and four inches per hour in the fall and four and five inches per hour in the spring. The slightly lower infiltration rates could be due to the rain storms in late fall 2015 and early spring 2016. Compared to the Nobles County sites, Jackson County didn’t have the intensity of the rain storms.

4a. Have all monitoring stations been established in EQuIS? ☐ Yes ☐ No ☒ N/A

4b. Are the data being routinely submitted for storage into EQuIS? ☐ Yes ☐ No ☒ NA

If yes, last submittal date (mm/dd/yyyy): ________________

5. Are the Best Management Practices data being annually entered into eLINK? ☐ Yes ☐ No ☒ N/A

If yes, date last entered (mm/dd/yyyy): ________________

6. Describe specific (quantifiable, if possible) results achieved during this period:

   n/a

   Phosphorus Load Reduction: n/a lbs./year
   Nitrogen Load Reduction: n/a lbs./year
   Sediment Load Reduction: n/a lbs./year

7. Did the MPCA execute a change order or amendment for this project during this reporting period? ☒ No ☐ Yes

If yes, summarize those changes:

8 List anticipated program objectives or tasks to be completed during the next six (6) months please be specific):

   Objective 1 Task A: Plan for cover crop seeding
   Objective 1 Task A: Seed cover crop
   Objective 1 Task B: Schedule approximate dates to take tillage transects, soil samples, and infiltration measurements
   Objective 2 Task A: Hold steering committee meeting
   Objective 2 Task C: Update web page on the HLWD website
   Objective 3 Task A: Submit semi-annual report
   Objective 3 Task A: Begin drafting annual report

III. Expenditure Information for this Period

Provide a copy of your work plan budget showing cumulative expenditures and budget balances by work plan objective and task. Also, fill out the summary below.

☒ Expenditure Report attached

Complete the table below:

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Date form completed (mm/dd/yyyy): 7/12/2016