6.1 Water Quality and Protection Goal Statements

Based on loading calculations watershed inventory efforts; stakeholder input for concerns, problems, and sources; the following goal statements were created.

In an effort to scale goals to manageable levels, a generational approach occurred. Each goal was scaled to a level of the volume of practices which could realistically be installed within a 5, 10, and 30 year period. These scaled goals represent realistic target reductions based on current technology and funding levels. Each target lists the overall goal, the scaled goal, and indicators that can be measured to determine if the goal is being met. It should be understood that many of these goals work synergistically and overlap in their effect on improving water quality and therefore are not listed multiple times.

Flashiness – Goal Statement

To reduce high and low flow events by 5% across the watershed according the USGS stream gages at Rensselaer and Foremen, the steering committee would like to:

1. 5 year goal:
    a. Ensure flow of water is not hindered via log jams on an annual basis along the main branch of the Iroquois River and tributaries.
    b. Establish two demonstration sites of two-stage ditches.
    c. Establish two demonstration sites of drainage water management
    d. 500 acres of wetland restoration.
    e. Installation of one LID in each urban critical area.
2. 5 -30 year continuing goal: Educate about natural stream design, LIDS(retention basin naturalization, etc), and alternative flood control strategies
3. 10 year goal:
    a. 3- 2 stage ditch sites installed
    b. 3 drainage water management systems in place
    c. 1,000 acres of wetland restoration
    d. Ordinance and zone code have LID requirements
4. 30 year goal: Increase flood storage capacity
    a. X amount of 2 stage installed to increase flood capacity by 5% across watershed
    b. 10 drainage water management systems in place
    c. 2,000 acres of wetland restoration
    d. LID adoption across urban areas widespread and common.

Indicators

- Number of log jams removed.
- Target placement and linear feet of two-stage ditches installed
- Increase use of natural stream channel design
- Increase in no-till corn and soybean acres
- Increase in cover crop acres
- Installation of Low Impact Development technologies across the urban areas
- Increases in SOM = water storage capacity
- Targeted installation of saturated buffers

- Target placement and creation of new wetland areas so each sub watershed has greater 4% of land acres in wetland.
- Preservation of current wetland areas
- Reduction in number of active erosion sites
- Improved MIBI scores, which would indicate more stable flow regime
- Improved CQHEI scores, which would indicate more riparian and flood storage areas.
- # of Education events and materials distributed

Fish and Wildlife Habitat – Goal Statement

To protect and enhance fish and wildlife habitat, the steering committee would like to increase the amount of buffer within 100 ft of all streams from the current status of 20% to a target of 50%, reduce roadside mowing by 25% and replace with native habitat, restore wetland acres from the current status of 1% to a target of 4% of total land acres, improve CMIBI from current poor/fair score to a target of excellent, and CQHEI scores from current status of unhealthy to a target of healthy.

1. Increase amount of 100 ft of land use along streams considered buffered:
    a. 5 year goal: 25% buffered (190 acres or 8 stream miles)
    b. 10 year goal: 35% buffered (570 acres or 24 stream miles)
    c. 30 year goal: 50% buffered (1900 acres or 80 stream miles)

2. Reduce roadside mowing and replace with native vegetation
    a. 5 year goal: Complete assessment and design cost comparison
    b. 10 year goal: Implement 15% no mow areas
    c. 30 year goal: Implement 25% no mow areas

3. Restore sub watersheds to a wetland land percent of total acres to 4%.
    a. 5 year goal: 1% increase
    b. 10 year goal: 2% increase
    c. 30 year goal: 4 % increase

4. CMIBI community scores improve at sites:
    a. 5 year goal: CMIBI scores improve to all good.
    b. 10 year goal: CMIBI scores improve to high good rank
    c. 30 year goal: CMIBI scores at Excellent

5. CQHEI scores improve at sites:
    a. 5 year goal: CQHEI to high 50
    b. 10 year goal: CQHEI to above 60 for 50% of sites.
    c. 30 year goal: CQHEI at all site to healthy score.

6. Educate about native fish, flora, and fauna populations.

7. Determine current native fish populations

Indicators

- No net loss of riparian habitat to other land uses.
- Results of fish surveys done by St. Joseph's College
- Reduced nutrient concentrations and loads in water quality samples
- Improved MIBI scores, which equals more fish food.
- Improved CQHEI scores, which equals better fish habitat.
- Reduced *E. coli* concentrations and loads in storm water quality samples
- Currently impaired segments removed from 303(d) list
- # of Education events and materials distributed

Recreation Use – Goal Statement

To increase recreational use of area streams, the steering committee would like to create more access points from the current 2 to 5, increase public use of streams from less to more often, stream passage by canoe from 60% passable to 100% passable, and associated educational outreach.

1. Create new access points to streams:
    a. 5 year goal: 1 new site along Iroquois
    b. 10 year goal: 2 new sites: one additional to above on Iroquois River and one on Curtis or Carpenter Creeks.
    c. 30 year goal: public access point every 5-10 miles along Iroquois.

2. Increase public use of streams:
    a. 5 year goal: 2 annual float trips conducted by local group
        i. 20 new people floated river
    b. 10 year goal: 4 annual float trips and annual Riverfest Celebration.
        i. 50 new people floated river
        ii. Local livery established to service area
    c. 30 year goal: more of the above.

3. Identify and clear log jams hindering family friendly canoe trips.
    a. Continue to assist and coordinate with Friends of Iroquois, Drainage Boards
    b. 5 year goal of log jam free canoeing from Rensselaer to State Line.

4. Change "perceived" poor water quality fears that hinder recreation use.
    a. 5 year goal: SI survey indicates Iroquois River is valued and not perceived as dirty.
5. Create recreational guide specific to Iroquois River region
    a. 5 year goal: created publication and distribute
    b. 10 year goal: Regionally known as excellence place to recreate. Host 4 events that bring in tourists.
6. Create "Safe to Canoe" Iroquois River website based on USGS gage.
    a. 5 year goal: Site up and utilized by NWIPA and tourism boards.

Indicators

- Public stream access point every 5-10 stream miles on navigable streams
- Number of log jams identified and cleared

- Miles of walking/riding trails along waterways.
- Miles of log jam free canoeing
- Reduced nutrient concentrations and loads in water quality samples
- Improved MIBI scores
- Reduced *E. coli* concentrations and loads in storm water quality samples
- Currently impaired segments removed from 303(d) list
- # of Education events and materials distributed
- # of annual paddle events on river

Nutrients – Goal Statement

To reduce nutrient concentrations (nitrogen and phosphorus) so that monthly water quality samples, do not exceed the 1.5ppm target for nitrate and the 0.005 ppm orthophosphate target more than 20% of the time within 30 years. We need to:

1. reduce orthophosphate loads from the current 377 pounds/year to a target of 100 pounds/year (a 75%% reduction) in 30 years.
    a. 5 year goal: 25% reduction or 25 pounds/year
    b. 10 year goal: 50% reduction or 50 pounds/year
    c. 30 year goal: 75% reduction or 100 pounds/year

And/or reduce the current 95% of the time orthophosphates samples exceed target of 20%

    d. 5 year goal: no more than 80% of samples exceed target annually
    e. 10 year goal: no more than 50% of samples exceed target annually,
    f. 30 year goal: no more than 20% of samples exceed target annually.

2. reduce nitrate levels from the current 2.08 tons/yr to 1.56 tons/yr (a 75% reduction) in 30 years.
    a. 5 year goal: 25% reduction or 0.52 tons/year
    b. 10 year goal: 50% reduction or 1.04 tons/year
    c. 30 year goal: 75% reduction or 1.56 tons/year

And/or reduce the current 36% of the time samples exceed target of 1.5ppm to a target of only 20% of the samples exceeding target.

    a. 5 year goal: no more than 32% of samples exceed annually
    b. 10 year goal: no more than 27 % of samples exceed annually
    d. 30 year goal: no more than 20% of sample exceed annually.

3. Education about local water quality testing via the release of an annual report to area stakeholders and partners.

Indicators for Nutrients:

- Number of sites identified for implementation
- Number of sites with BMPs implemented
- Number of livestock access sites removed from map (watering and fencing installed)
- Number of acres/linear feet of riparian buffers
- Linear feet of two-stage ditches installed
- Increase in no-till corn and soybean acres according to ISDA tillage transect and USDA Farm bill programs
- Increase in cover crop acres
- Number of nutrient management plans developed
- Number of fields enrolled in Indiana On-Farm Network
- Number of farmers using cover crops
- Number of field days and attendees
- Number of education workshops/meetings and attendees
- Number of follow-up emails, appointments, etc. from field days/workshops
- Number of demonstration sites
- Reduced nutrient concentrations and loads in annual water quality samples
- Improved MIBI scores
- # of Education events and materials distributed

Bacteria- E.coli Goal Statements

To reduce E. coli concentrations at all sites to 235 and below cfu/100mL within 30 years. As of April 2013, across the watershed 50% of E.coli samples exceed the WQ target of less than 235 cfu/100mL. To meet TMDL targets a 73% reduction in loading needs to occur across the watershed. The 10 year goal will theoretically achieve this load reduction.

1. 5 year goal: less than 40% of samples exceed target.
2. 10 year goal: less than 30% of samples exceed target
3. 30 year goal: less than 20% of samples exceed target

Given the difference in % reduction needed to achieve WQ goals compared to the 2008 TMDL, the steering committee determined having the stated above goal would achieve the same end goal as the TMDL.

Indicators:

- E.coli will be recorded 6 times a year at each sampling location according to current QAPP procedure. A reduction in levels will be the goal.
- Number of landowners identified amenable to fencing, alternative water supplies,
- Fewer number of visual observations of cattle in the stream
- Number of animals removed from stream by fencing
- Number of alternative water supply systems created
- Number of lagoons, manure systems added/implemented

- Number of homeowner receiving education on septic systems/wastewater disposal
- Number of homeowner receiving education on inflow and infiltration polices
- Retention ponds retrofitted or naturalized to meet Water Quality protection retention rates
- Increased NPDES compliance
- Reduced *E. coli* concentrations and loads in storm water quality samples
- Currently impaired segments removed from 303(d) list
- # of Education events and materials distributed

Sediment: Goal Statement

Total suspended solids (TSS) such as sediment, debris, and organic matter have been identified as a problem throughout the watershed. The steering Committee would like to:

1. reduce TSS loads from 37,929 tons/yr to 9,632 tons/yr (a 75% reduction)
    a. 5 year goal: 25 % reduction in load
    b. 10 year goal: 50% reduction in load
    c. 30 year goal: 75% reduction in load
2. Reduce annual water samples that exceed target to no more than 20% of the time. Currently, 61% of the samples from across the watershed exceed the WQ target.
    a. 5 year goal: 50% or less of samples exceed target annually
    b. 10 year goal: 35% or less of samples exceed target annually
    c. 30 year goal: 20% or less of samples exceed target annually
3. See your toes when standing in the water during mid and low flow conditions.

Indicators:

- Increase in no-till corn and soybean acres
- Reduction of # of active erosion sites on windshield survey maps
- Number of workshops (contractors, fairs)
- Number of urban BMPs (rain barrels, rain gardens) installed in CSO drainage areas in Rensselaer.
- Number of acres of BMPs installed on high concern Wind Erodibility acres
- Number of log jams removed/banks stabilized
- Number of demonstration sites
- Number of farmers using cover crops in critical areas
- Development of detailed maps for streams needing riparian buffers.
- Reduced TSS concentrations and loads in water quality samples
- Improved MIBI scores, which is a sign sediment is not reducing habitat