



Stony Creek Metropark, Washington Township

EXECUTIVE SUMMARY

The Clinton River Watershed

The Clinton River basin is the most populous watershed in Michigan, with over 1.4 million residents inhabiting over 760 square miles, portions of four counties (Lapeer, Macomb, Oakland, and St. Clair), and more than 60 communities. The Main Branch of the Clinton River itself runs over 80 miles, dropping more than 500 feet from its headwaters in Brandon, Independence, and Springfield townships to its mouth at Lake St. Clair in Harrison Township.

The Clinton River Watershed includes seven (7) subwatersheds, three (3) of which are subwatersheds of the main Clinton River, the other four (4) of which are subwatersheds of the major tributaries entering the Clinton River. These subwatersheds are smaller areas with similar features, land uses and drainage patterns that help to facilitate effective watershed planning activities.

Stony Creek Subwatershed

Stony Creek is a high-quality coldwater tributary of the Clinton River, with headwaters in the primarily rural communities of Oxford and Addison townships in northeastern Oakland County. The creek has two main branches, the West and Main, which flow through Bruce, Oakland, and Washington townships before entering the Stony Creek Lake impoundment in Stony Creek Metropark. Stony Creek then flows through a portion of Rochester Hills before reaching its confluence with the Clinton River near downtown Rochester. Stony Creek's subwatershed spans over 74 square miles in 12 communities and is inhabited by roughly 17,500 people. The creek follows a broad glacial outwash channel and its riparian corridor and surrounding uplands feature a variety of ecosystem types, from northern hardwood forests and prairies to cedar swamps and emergent marshes.

Stony Creek is home to a wealth of unique natural areas that are already protected in both the public and private domains, including Bald Mountain State Recreation Area, Stony Creek Metropark, Addison Oaks County Park, the Michigan Nature Association's Lakeville Swamp Sanctuary, and a number of local parks and easements. The bulk of the subwatershed, however, is in private ownership, with much of the creek running unseen and relatively unknown through individual parcels in low-density residential and rural areas.

Paint Creek Subwatershed

Paint Creek is a high-quality coldwater tributary of the Clinton River, with headwaters in Brandon and Oxford Townships upstream of Lake Orion. The creek then flows through Lake Orion, Orion Township followed by Oakland Township, Rochester Hills and Rochester before

reaching its confluence with the Clinton River near downtown Rochester. Paint Creek's subwatershed spans over 70 square miles in 10 communities and is inhabited by roughly 68,000 people. The creek follows a broad glacial outwash channel and through end moraines in its middle section. Much of this stream is bordered by public land and recreational trails and the riparian corridor is of high quality. It is managed as a trout stream from Lake Orion to its confluence with the Clinton River. Land uses are characterized primarily by residential, recreation/conservation and commercial uses. Similar to the Stony Creek, surrounding uplands feature a variety of ecosystem types, from northern hardwood forests and prairies to cedar swamps and emergent marshes.

Purpose of the Stony/Paint Creek Subwatershed Management Plan

In 1997, seven communities, two counties, and a variety of other local stakeholder groups came together to form the Stony Creek Stewardship Committee to guide a wetlands assessment project initiated by the Clinton River Watershed Council. Upon completion of that project, the Stewardship Committee turned its attention to the development of an overall management plan for the Stony Creek subwatershed. This effort was also initiated by the Clinton River Watershed Council, which received a Clean Water Act Section 604(b) non-point source pollution planning grant from the Michigan Department of Environmental Quality to fund the development of the plan.

In 2002, the Stony Creek group was joined by communities from the Paint Creek subwatershed, which is located to the immediate west of Stony Creek subwatershed and exhibits many similar land uses and stream characteristics. This was done so that a combined Stony/Paint Subwatershed Plan could be developed to fulfill the watershed management plan requirements of the U.S. Environmental Protection Agency's National Pollutant Discharge Elimination System (NPDES) Phase II stormwater regulations. (For more information on these regulations, visit the Southeast Michigan Phase II Information Clearinghouse at www.crowc.org/phase2/phase2home.html.) In addition, the Clinton River Watershed Council was awarded an additional grant to update the Stony Creek Subwatershed Plan and include specific components that would make the stakeholders eligible for future grant funding.

This plan is part of an effort to create management plans for all seven of the major subwatersheds of the Clinton River basin. ***This plan creates a vision for the long-term protection of Stony/Paint Creeks as unique natural, recreational, and cultural resources for the communities through which they flow.*** The purpose of this plan is thus two-fold:

- (1) to identify current sources and causes of impairments in order to determine actions necessary to restore the streams to stable conditions; and
- (2) to recommend actions that will prevent further degradation of Stony and Creeks and their watershed resources as development advances on the landscape.

The fourteen communities, two counties and two school districts that were involved in the development of this plan are committed to protecting the high-quality natural areas of the Stony/Paint Creek subwatershed, mitigating the impacts of increasing stormwater discharges, and restoring areas that have been degraded. Another recurring theme in this plan is the importance of maintaining the rural character and natural "viewsheds" that make the Stony/Paint Creek subwatershed such an attractive place to live. Protection of the subwatershed's water resources and natural features are a critical component in maintaining the high quality of life enjoyed by Stony and Paint Creek residents.

Current Conditions in Stony & Paint Creeks

A stream is quite literally a reflection of the land through which it flows. The current condition of Stony and Paint Creeks is reflected by the subwatersheds' relatively low-impact land uses. Undeveloped, conservation, and recreation lands comprise nearly 70% of the Stony Creek subwatershed's land area, while agriculture and low- and medium-density residential development dominate the remaining 30%. Only a small proportion of the subwatershed is intensely developed (commercial, office, industrial, high density residential, etc.); these uses are clustered primarily in the southern end of the subwatershed.

A comprehensive assessment of Stony Creek, including a physical stream inventory, macro-invertebrate sampling, and hydrologic survey, were completed in mid-2003 to assess the overall condition of the stream and riparian corridor. Additional field assessments were conducted in 2004 & 2005 in conjunction with the Paint Creek assessment described below. These assessments, along with analysis of historic data, indicate that Stony Creek retains many high-quality characteristics, but is experiencing isolated water quality impairments as a result of increasing development, particularly in the southern end of the subwatershed.

Paint Creek is more densely developed in areas with primarily residential areas in the headwaters and increasing developed areas consisting of residential and commercial downstream of Lake Orion. There are numerous recreational opportunities and this stream has very high potential for sport fishing and there is an ongoing very active cold-water fish management program. Similar to Stony Creek, a comprehensive assessment was completed for Paint Creek, including a physical stream inventory, macroinvertebrate sampling, a geomorphology evaluation and bank erosion survey. This work was completed in 2004 & 2005. At the same time the geomorphology and bank erosion survey were also completed in areas along Stony Creek.

As the Stony and Paint Creek communities continue to develop (as trends indicate they will), the potential for negative environmental effects on Stony and Paint Creeks will increase, including water quality impacts resulting from erosion, sedimentation, and increased inputs of storm water pollutants, as well as water quantity impacts resulting from loss of wetlands, woodlands, and riparian vegetation and increased impervious surfaces. ***The main focus for these two subwatersheds is to minimize these potential impacts by focusing on creek preservation efforts.***

Water Quality Impairments

Current water quality impairments in Stony & Paint Creeks are, for the most part, limited to isolated areas, but these areas are widespread across the subwatershed. Both creeks' water quality impairments can be summarized in the following categories:

- **Hydrology** – Stony Creek is not yet experiencing the damaging high velocity flows during wet weather events that are typical of more urban streams. However, isolated changes to the natural flow characteristics of Stony Creek are already noticeable, particularly in the lower portion of the subwatershed. This is where development has historically been concentrated and where impervious surface coverage is highest and streambank alteration is most pronounced. As development continues to advance northward, hydrologic alteration of Stony Creek will continue unless steps are taken to protect the natural ability of the land to absorb precipitation.

The two USGS gages located within the Stony Creek subwatershed show stable values of both annual mean stream flow and peak stream flow. The two USGS gages located within the Paint Creek subwatershed are fairly typical of most USGS gages within the Clinton River watershed, in that most of the flow trends have been increasing. It is evident that development has not had a drastic effect on the bankfull discharge within the Stony Creek subwatershed and only a moderate effect on the bankfull discharge within the Paint Creek subwatershed.

- **Sediment** – Sediment is one of the primary pollutants of concern in Stony and Paint Creeks, as it appears to be impairing the macroinvertebrate community in a number of locations. Sediment-laden runoff from construction sites, gravel roads, roadside ditches, and poorly maintained bridges enters the stream channel. There, sediments remain suspended in the water column or settle out onto the streambed. Both suspended sediments and sediment deposits can have a negative impact on aquatic organisms and impair aesthetics. Sedimentation is increasing as storm water flows increase, scouring the banks and depositing sediments downstream.
- **Nutrients** – Phosphorus is the primary nutrient of concern in the Stony/Paint Creek subwatershed. Sources of phosphorus include fertilizers from lawns, golf courses, and croplands; failing septic systems; pet, waterfowl, and livestock wastes; and illicit connections between sanitary sewers and storm drains. When excessive amounts of phosphorus are present, aquatic plants can grow out of control and algae blooms are common – problems that have been documented both instream and in lakes and ponds in the Stony/Paint Creek subwatershed.
- **Bacteria** – Excessive levels of bacteria can impair both the aquatic community and threaten public health. Although the extent of bacterial contamination in Stony and Paint Creek is not well documented outside of Stony Creek Metropark, the existence of failing septic systems in the region is well known and therefore is considered to be a fairly certain source of bacteria in Stony and Paint Creeks. Congregating waterfowl, particularly Canada geese, and livestock that have free access to the stream are also potential contributors to elevated bacteria levels.
- **Elevated Temperature** – The Michigan Department of Natural Resources considers Stony and Paint Creeks to be coldwater streams, although only Paint Creek downstream of Lake Orion is managed as a recreational trout fishery. Observations from the stream survey indicate that coldwater fish species are present; however, low flows below impoundments, removal of streambank vegetation, and inputs of storm water runoff (which are typically warmer than base flows) are all likely to be elevating temperatures in Stony and parts of Paint Creek, which could affect sensitive species that cannot tolerate warmer waters.
- **Organic Compounds & Heavy Metals** – Organic compounds and heavy metals can cause adverse impacts on river ecosystems. The Stony Creek Lake impoundment is identified as a Section 303(d) non-attainment water body for FCA - PCBs and mercury under the Clean Water Act. Section 303(d) provides authority for restoring polluted waters, requiring states to work with interested parties to develop Total Maximum Daily Loads (TMDLs). TMDLs are pollutant loading “budgets” designed to restore the health of the waterbody in question. TMDLs must be established for Stony Creek Lake by 2009 for FCA - PCBs and 2011 for mercury. Within the Paint Creek subwatershed, TMDL implementation for Lake Orion is scheduled for 2010 and 2011 for FCA-PCBs, chlordane

and mercury. TMDL implementation for Lakeville Lake is scheduled for 2011 for mercury.

- **Salt** – The effects of salt application on roadside vegetation and the aquatic life in Stony and Paint Creeks are a concern. In areas where runoff from paved roads enters roadside ditches that flow into Stony Creek, salt may also impact surface waters, where it can negatively impact both macroinvertebrates and coldwater fish species.

Goals & Objectives

The Stony/Paint Creek Subwatershed Group used a variety of information to develop goals and objectives for the long-term protection of both creeks. These information sources included the stream assessments, an analysis of impervious cover and land use build-out, reviews of each participating community's master plan, ordinances, and development standards, and the input of local officials, organizations, and Stony & Paint Creek residents.

Goal 1. Establish and sustain a community-based mechanism to administer and implement the Stony/Paint Creek subwatershed plan.

Objective 1-A. Continue operation of the Stony/Paint Subwatershed Group as an advisory and decision-making body to guide implementation of the subwatershed plan.

Objective 1-B. Identify and develop creative financing programs to support implementation of the subwatershed plan.

Objective 1-C. Collaborate with the Clinton River Watershed Council, the Clinton River Public Advisory Council, SEMCOG, and other regional groups on watershed-wide activities.

Goal 2. Increase the public's understanding of their role in protecting Stony/Paint Creek.

Objective 2-A. Develop and/or promote existing and future public education and outreach programs.

Objective 2-B. Identify, promote, and encourage participation in educational opportunities for land use decision-makers (e.g. planning commissions, local boards and councils, developers, chambers of commerce, realtors, etc.).

Goal 3. Protect and restore the Stony/Paint Creek subwatershed's water quality, stream channels, riparian corridors, natural areas, wetlands, and unique ecosystems.

Objective 3-A. Reduce storm water and other point and non-point source pollution impacts and stabilize stream flow.

Objective 3-B. Reduce nutrient loading contributing to excessive aquatic plant growth.

Objective 3-C. Reduce sources of bacteria contributing to beneficial use impairments.

Objective 3-D. Identify, prioritize, and establish mechanisms for preserving, restoring, and/or enhancing stream channels, riparian corridors, natural areas, wetlands, and unique ecosystems.

Objective 3-E. Promote and participate in local land and water stewardship efforts.

Objective 3-F. Participate in local and regional efforts to promote natural corridors and greenways.

Objective 3-G. Reduce inputs of hazardous materials, organic compounds, and heavy metals and restore affected areas.

Goal 4. Protect and restore the Stony/Paint Creek fishery.

Objective 4-A. Develop and implement a fisheries restoration and enhancement plan.

Goal 5. Improve recreational access and opportunities.

Objective 5-A. Develop and implement a recreation enhancement plan.

Goal 6. Protect farmland and reduce agricultural impacts on water quality.

Objective 6-A. Support farmland preservation efforts.

Objective 6-B. Encourage agricultural practices that protect water quality.

Goal 7. Protect and interpret the historic character of Stony/Paint Creek.

Objective 7-A. Develop and implement a historic preservation and interpretation plan.

Goal 8. Reduce Soil Erosion and Sedimentation.

Objective 8-A. Develop or revise ordinances to prevent, minimize and reduce soil erosion and sedimentation, especially for construction sites.

Objective 8-B. Implement BMP's for effective soil erosion and sedimentation prevention and mitigation, addressing both upland sources as well as sources from streambank erosion.

Objective 8-C. Improve soil erosion and sedimentation control inspection and enforcement, as well as education, for parties responsible.

Objective 8-D. Reduce sediment deposition into stream channels and wetlands.

Stony/Paint Creek Action Plan

A variety of land management agencies exist in the Stony/Paint Creek subwatershed, including municipalities, county and state agencies, and school districts. Each entity is unique and must determine what practices will be most effective in achieving the goals and objectives of this plan. The following four categories of management recommendations were developed, from which each entity can choose from an array of best management practices for water resource and natural features protection:

- **Plans & policies**, such as master plans, natural features inventories, sewer infrastructure plans, storm water master plans, and greenway plans.
- **Development / redevelopment regulations**, such as Low Impact Development plans, storm water ordinances, private road ordinances, natural features setbacks, and wetland ordinances.
- **Design standards & maintenance practices**, such as detention basin maintenance programs, street sweeping, golf course management programs, streambank stabilization projects, and road maintenance practices.
- **Education & stewardship**, such as lawn care and pet waste education programs, volunteer monitoring programs, and stewardship projects.

The recommended actions are outlined in Chapter 5, which includes a detailed Action Matrix. In addition to the main Action Matrix that identifies the responsible parties and approximate timeline completion of each suggested action, additional tables are provided that refine both subwatersheds into subbasins and outline recommended actions in these areas.

Successful implementation of this plan will depend upon the continued commitment of the Stony & Paint Creek communities, Macomb and Oakland county agencies, school districts and residents to protect and improve the water resources and other natural features of the Stony/Paint Creek subwatershed. One of the most important aspects of watershed management is monitoring activities and evaluating progress. Monitoring can be either quantitative or qualitative; because financial resources for quantitative water quality monitoring is so limited, the use of qualitative evaluation methods will be critical in following the progress of this plan. In addition, the active involvement of residents in monitoring and stewardship will be critical to protecting Stony and Paint Creeks over the long term.

Watershed planning is, just like the water cycle itself, an ever-renewing process. Each community participating in this plan will develop a Storm Water Pollution Prevention Initiative (SWPPI), which outlines their specific actions and timelines to achieve the long-term goals of the plan. The SWPPIs and the subwatershed plan will be reviewed and revised on a regular basis to assess progress and make any necessary changes based upon new information or technologies.

For More Information

For additional copies of the Stony/Paint Creek Subwatershed Management Plan, data sources referenced in this plan, or other information, contact the Clinton River Watershed Council at 248-601-0606, email contact@crwc.org, or visit CRWC's website at www.crwc.org. Complete contact information for the project team members is also listed below.

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