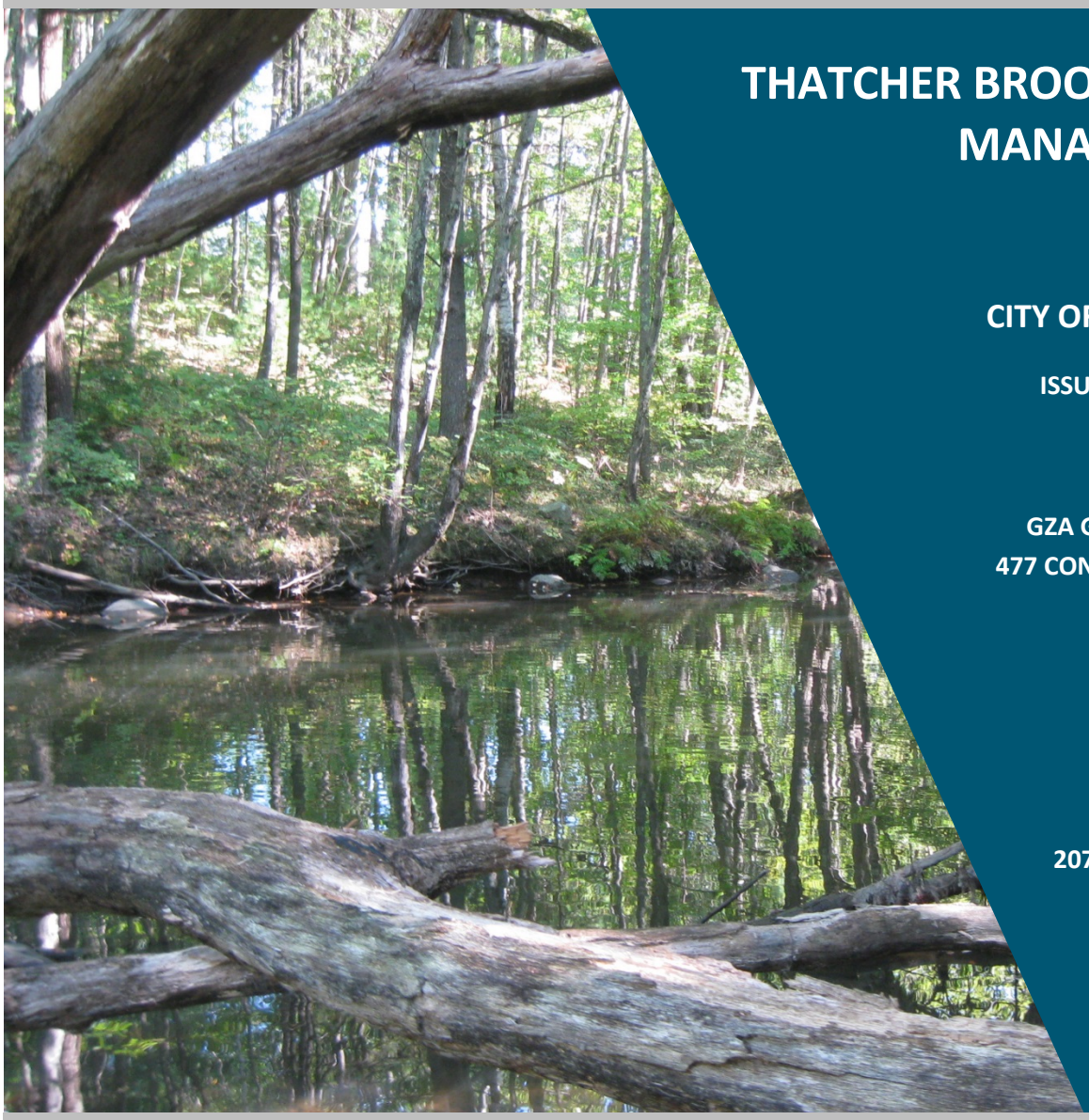


THATCHER BROOK WATERSHED MANAGEMENT PLAN

PREPARED FOR:

CITY OF BIDDEFORD, MAINE

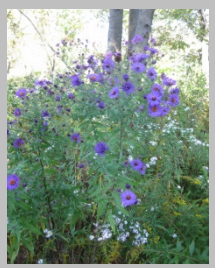
ISSUED FOR PUBLIC COMMENT

PREPARED BY:
GZA GEOENVIRONMENTAL, INC.
477 CONGRESS STREET | SUITE 700
PORTLAND, MAINE 04101

January 7, 2015

207.879.9190 | www.gza.com

30 Offices Nationwide



GZA *Proactive by Design*

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ACKNOWLEDGEMENTS

The Thatcher Brook Project thanks the following individuals and groups for providing input during the development of the Plan:

Maine Department of Transportation
Maine Turnpike Authority
Southern Maine Health Center
City of Biddeford Planning Board
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Mike Eon Associates
Residents of Arundel and Biddeford
Saco Valley Land Trust
Sterling Rope
New Life Christian Fellowship Church
Kohl's Department Store
University of New England

Technical Advisory Committee:
Jennie Franceschi – City of Biddeford
Tom Milligan – City of Biddeford
Brian Phinney – City of Biddeford
Wendy Garland - Maine Department of Environmental Protection
Jeff Dennis – Maine Department of Environmental Protection
Leon Tsomides – Maine Department of Environmental Protection
Paul Davis, GZA GeoEnvironmental, Inc.
Aimee Mountain – GZA GeoEnvironmental, Inc.
Tracy Tarr – GZA GeoEnvironmental, Inc.
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1.0 EXECUTIVE SUMMARY

Thatcher Brook is a Class B fresh water stream located in the City of Biddeford and Town of Arundel, on the southern coast of the State of Maine in the northeastern corner of York County, the State's most southern county. The Thatcher Brook watershed encompasses approximately 5.59 square miles in Biddeford and approximately 1.52 square miles in Arundel (see **Figure 2**, Watershed Area by Municipality). Thatcher Brook drains into the Saco River just upstream of the Saco River Dam at Saco Falls before ultimately flowing into Saco Bay. The Thatcher Brook watershed is a complex mix of land uses that includes dense residential, commercial, industrial, agricultural, public and forested land. Approximately 2.75 square miles of the watershed is classified as a "regulated area" under the National Pollutant Discharge Elimination System (NPDES) Phase II Stormwater Program (see **Figure 3**, NPDES Phase II Regulated Area).

1.1 THREATS TO WATER QUALITY

Thatcher Brook is on Maine's 303(d) list, signifying that the stream is not meeting one or more of its designated uses. Stream habitat and biomonitoring assessments completed by the Maine Department of Environmental Protection (MDEP) found that Thatcher Brook did not support the aquatic macroinvertebrates that should be found in a Class B stream. Thatcher Brook is not yet listed as an Urban Impaired Stream in MDEP's Chapter 502. A stream is considered urban impaired if it fails to meet state and federal water quality classifications due to the effects of stormwater runoff from impervious surfaces such as rooftops, parking lots and roads. In August 2009, Thatcher Brook was included in MDEP's Statewide Bacteria Total Maximum Daily Load (TMDL) Report, which uses bacteria as an indicator for the presence of pathogens in water. This bacteria TMDL report provides documentation of impairment and information on pollutant sources that are intended to provide guidance for protection of the waterbody by watershed stakeholders. In September 2012, the United States Environmental Protection Agency (EPA) approved MDEP's Statewide Impervious Cover (IC) TMDL Assessment, in which Thatcher Brook is included as an impaired stream. This assessment provides a framework for addressing aquatic life and habitat impairments by using impervious cover as a surrogate for a suite of pollutants commonly found in urban stormwater runoff. This TMDL establishes the target percentage of IC for the watershed and provides guidance for efforts to improve water quality in Thatcher Brook.

During the development of this Plan, the following threats to water quality (a.k.a. stressors) were identified:

- Stream channel alteration and the resulting stream bank erosion and degraded habitat;
- Elevated phosphorus and decreased dissolved oxygen [DO] (in part due to naturally-occurring conditions in associated wetlands); and,
- Elevated bacteria and specific conductance.

The following Watershed Management Plan (WMP) was developed to specifically address the aquatic life use impairment of Thatcher Brook. Efforts to reduce bacteria source areas are being addressed primarily through MS4 requirements and the efforts of City Departments.

1.2 PLAN DEVELOPMENT AND COMMUNITY OUTREACH

Restoration is necessary because Thatcher Brook has impaired water quality and the health of the stream is important to the health of the Saco River and ultimately, Saco Bay. The goal of the Thatcher Brook WMP is to develop a locally-supported watershed-based plan that clearly outlines a strategy to restore and protect the water quality of Thatcher Brook in order for it to attain its Class B water quality criteria. The long-term goal is to enhance quality of life, minimize impacts to the environment and manage an identified growth area of the City in a comprehensive and responsible manner.

The City of Biddeford partnered with the York County Soil and Water Conservation District (YCSWCD), GZA GeoEnvironmental, Inc. (GZA), and MDEP to develop this Plan, which is intended to serve as a roadmap for restoring and protecting Thatcher Brook. Incorporating input from stakeholders, this Plan identifies the top threats in Thatcher Brook and establishes goals, objectives, and actions for reducing those threats. The Plan also contains a set of criteria that can be used to monitor progress towards attaining water quality standards and financing implementation.

1.3 RECOMMENDED MANAGEMENT STRATEGIES

An adaptive management approach is widely recommended for restoring urban watersheds (Center for Watershed Protection 2003). Adaptive management, which is the process by which new information about the health of the watershed is incorporated in the WMP, provides the flexibility needed to ensure efficient and successful Plan implementation. The adaptive management approach recognizes that an entire watershed cannot be restored with a single restoration action or within a short timeframe. As new data/information and/or technology become available, this management approach allows restoration efforts to be adjusted over time to meet the current needs of the watershed.

1.4 THATCHER BROOK ACTION PLAN

The Thatcher Brook action plan incorporates comments recommended by watershed stakeholders at public meetings. The City of Biddeford intends to establish a Thatcher Brook Workgroup to implement the following goals and objectives that were established by the project partners and stakeholders during development of this plan:

Goal #1 – Improve the water quality of Thatcher Brook to meet State water quality standards.

- Work towards Thatcher Brook meeting its designated Class B water quality standards for aquatic life.
- Continue to monitor water quality parameters (e.g. DO, specific conductance, temperature and macroinvertebrates) to assess whether the goal is being achieved.

Goal #2 – Once attained, protect and maintain water quality and habitat conditions to ensure the brook continues to meet State water quality standards.

- Improve the management of stormwater runoff from existing development in an effort to improve the treatment and water quality of stormwater.
- Protect the brook through zoning and ordinances changes for new and re-development projects.

- For future development, limit impacts to streams and wetlands associated with Thatcher Brook.
- Coordinate efforts with other conservation and preservation groups in the watershed to maximize protection opportunities.

Goal #3 – Increase community support for the preservation and enhancement of natural resources within the Thatcher Brook watershed.

- Develop an outreach and education program for residents and local businesses to promote and implement the WMP.
- Strengthen ties with the local schools and the University of New England to enhance education and participation in community action opportunities.
- Establish a Thatcher Brook Workgroup to oversee implementation of the goals and objectives in the Plan and realize long term health in the stream and watershed.

1.5 FUNDING STRATEGIES

Implementation of the Plan is expected to occur in phases for many of the projects identified in the Action Plan (see Section 8 of this document). Pending receipt of funding, several of the highest priority actions listed will be further refined and implemented by the City of Biddeford and interested landowners during Phase 1, from approximately 2015 to 2020. It is anticipated that monitoring and medium to low priority items will be investigated and pursued during Phase 2 (2020 to 2025). The City of Biddeford intends to apply for MDEP NPS funds ("319 Grant Funds") for a number of the restoration efforts identified in this Plan. The Thatcher Brook Workgroup will be organized as a first step in Phase 1 to review and further prioritize overall objectives of the Plan during each phase.

Watershed stakeholders recognize that grants alone are not the complete solution to restoring Thatcher Brook. Therefore, alternative private and public funding sources will continue to be explored by project partners and stakeholders to fund the implementation of large structural retrofits and stream crossing work. The estimated cost to implement all items outlined in the following Plan is $1,274,700 over the next ten years (2015 to 2025). Although the Plan is developed based on a 10-year cycle with two major phases, it is expected that additional efforts may be needed in following phases after 2025 to maintain a proactive approach to improving water quality in Thatcher Brook.