

INFRASTRUCTURE COMMITTEE
Tuesday, November 15, 2016
Immediately Following Airport Committee
City Hall Council Chambers

Agenda

- 1. Stormwater Maintenance Ordinance – Enforcement Authority**
(Materials Attached)

- 2. AECOM SSES Scope of Work – Phase 3**
(Materials Attached)

- 3. Ordinance Change – Prohibit North Side Parking on Lincoln Street, between Main Street and Third Street**
(Materials Attached)

- 4. Amending Chapter 165, Land Development Code and 271, Streets – Add Construction Standards for Private Streets**
(Materials Attached)

Memorandum

To: Infrastructure Committee
From: Paul Nicklas, Assistant City Solicitor
Date: November 14, 2016
Re: Stormwater Maintenance Ordinance – Enforcement Authority

This ordinance amendment would clarify the City's stormwater maintenance ordinance, including by clarifying staff responsibilities for enforcing the ordinance.

The stormwater maintenance ordinance is required by the state as part of our Municipal Separate Storm Sewer System permit. The ordinance deals with the maintenance of stormwater management structures on properties throughout the City.

The City's Code Enforcement Office is primarily responsible for administering this ordinance. Other departments, including the City's Engineering and Water Quality Departments, often assist with review, approval, and enforcement efforts. The amendments would make this clear.

The ordinance amendment would also clarify that the locations of stormwater management structures should be included in a property's maintenance plan, and that any discharging to waters of the state should be so noted.



CITY OF BANGOR

ORDINANCE, Amending Chapter 268, Stormwater, of the Code of the City of Bangor, By Clarifying Enforcement Authority and Stormwater Maintenance Plan Provisions

WHEREAS, the Code Enforcement Office is primarily responsible for administering the City's stormwater maintenance ordinance;

WHEREAS, other City departments, primarily the Engineering and Water Quality Departments, are also involved in review, approval, and enforcement efforts for this ordinance; and

WHEREAS, stormwater maintenance plans should, where appropriate, indicate the location of stormwater management structures and where they discharge to waters of the state;

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF BANGOR AS FOLLOWS, THAT

Chapter 268 of the Code of the City of Bangor be amended as follows:

§ 268-3. Definitions.

For the purposes of this ~~chapter~~ article, the terms listed below are defined as follows:

...

ENFORCEMENT AUTHORITY

The Code Enforcement Officer or his or her designee, the or other person(s) or department(s) authorized by the municipality City Manager to administer and enforce this chapter. Other City departments, including but not limited to the Engineering and Water Quality Departments, may assist in the review, approval, and enforcement duties of this chapter, and act with the authority of the Enforcement Authority in doing so.

...

§ 268-6. Post-construction stormwater maintenance plan approval.

...

B. Required provisions. A post-construction stormwater maintenance plan must:

(1) Include a list of all stormwater management structures constructed or to be constructed on the premises in question, along with as-built drawings of all such structures constructed in September 1997 or thereafter. The locations of all stormwater management structures shall be noted on the list and/or the as-built drawings. The list shall note all those structures that discharge, and shall additionally note whether those structures discharge to the municipality's MS4 or to waters of the state. Should an as-built drawing for a structure not exist, the ~~Code Enforcement Office~~ enforcement authority may require an as-built drawing to be completed and provided, waive the requirement for the as-built drawing, or require alternative evidence of the structure in a form as deemed acceptable by the ~~Code Enforcement Office~~ enforcement authority.

...

Additions are underlined, deletions ~~struck through~~.

To: Infrastructure Committee
From: Wastewater Treatment Plant and Engineering, Andy Rudzinski and John Theriault
Date: November 9, 2016
Re: Phase 2 and Phase 3 Sewer System Evaluation Survey (SSES) Update

The City of Bangor has been working recently with AECOM Engineers to conduct a Sewer System Evaluation Survey (SSES) for the City's combined stormwater and sanitary sewer system. Phase 1 of this study was completed several years ago by CH2M engineering and focused on the overall system and included an asset management plan and general priorities for system and collection improvements. The SSES is a requirement of the City's Consent Decree with the USEPA and the Maine DEP.

Phase 2 of the SSES was completed more recently by AECOM and evaluates the Airport and Dow sewer subsections. This work included assessments of inflow and infiltration into the sewer system and provides a priority for future improvements within those sewer subsections. Phase 2 of the SSES will be submitted to USEPA and Maine DEP by January 31, 2017, along with the 2017 Phase II CSO Long Term Control Plan.

Moving forward with the required sewer system evaluations, the next sewer subsections to be included in the Phase 3 SSES are Carr Brook, Davis Brook, Kenduskeag East, and Barkersville. This investigative work will be conducted from 2017 to 2021, and the recommended improvements for these sewer subsections will be incorporated into the Phase II CSO Long Term Control Plan as Part B. Attached with this memo is the Phase 3 SSES Scope of Work (SOW).

To Andrew Rudzinski, Director of Water Quality
City of Bangor Page 1

Subject Phase 3 SSES Scope of Work (SOW)

From AECOM

Date November 10, 2016

1.0 INTRODUCTION AND BACKGROUND

AECOM has been retained by the City of Bangor to prepare a Phase 3 Sewer System Evaluation Survey (SSES) Scope of Work (Phase 3 SSES SOW), which updates the December 31, 2014 Sewer Assessment Plan/Sewer System Evaluation Survey Work Plan (Phase 2) for the January 2017 submission to the EPA and Maine DEP. The focus of this Phase 3 SSES SOW is to confirm high priority SSES locations, provide an outline of the investigation work to be completed between 2017 and 2021 and identify how the findings from the SSES investigation work will be incorporated into proposed design/construction projects in the CSO Long-Term Control Plan as Part B.

The Phase 3 SSES SOW is part of a larger effort by the City of Bangor to satisfy EPA and DEP commitments as part of the ongoing Consent Decree requirements and satisfies the requirements to prepare a “Phase 3 SSES SOW” for field investigations planned by the City through December 31, 2021 as delineated in item 9.c.(3) of the Consent Decree.

2.0 SEWER COLLECTION SYSTEM REVIEW AND ANALYSIS

The Phase 2 SSES Scope of Work included review of the sewer collection system in terms of the following five comparative categories: pipe rating, pipe age, high risk scores from the City’s Asset Management Plan, potential for infiltration/inflow (I/I) and vulnerability. A detailed description of each comparative category is included in the Phase 2 SSES Scope of Work dated December 31, 2014, and is not repeated herein. However, the below table is included from the Phase 2 SSES Scope of Work for reference of the overall SSES rankings and status update.

SSES Level of Needs Assessment

Subsection	Assessment of Level of Need of SSES	SSES Status
Airport	High	Complete
Arctic Brook	Low	Not Complete
Autumn	Low	Not Complete
Barkersville	Medium	SSES Phase 3
Blanchard	Low	Not Complete
Burleigh	Low	Not Complete
Capehart	Low	Not Complete
Cardinal Way	Low	Not Complete

Subsection	Assessment of Level of Need of SSES	SSES Status
Carr Brook	High	SSES Phase 3
Cemetery	Medium	Not Complete
Central	High	Not Complete
Davis Brook	High	SSES Phase 3
Dow	High	Complete
Dutton	Low	Not Complete
Everett	Low	Not Complete
Fourteenth Street	Low	Not Complete
Franklin	Low	Not Complete
Glenwood	Low	Not Complete
Hampden	Low	Not Complete
Hancock	Low	Not Complete
Hildreth-Perry	Medium	Not Complete
Husson	Low	Not Complete
Kenduskeag East	High	SSES Phase 3
Kenduskeag West	Medium	Not Complete
May	Low	Not Complete
Meadowbrook	Medium	Not Complete
Mill Street	Low	Not Complete
Penjawoc	Low	Not Complete
Strickland	Low	Not Complete
Westland	Low	Not Complete
Woodlawn	Low	Not Complete

The following five sewer subsections show high scores in all five categories compared to other subsections:

- Airport
- Carr Brook
- Davis Brook
- Dow
- Kenduskeag East

Subsections Airport and Dow were investigated in 2015 and 2016 under the Phase 2 SSES Scope of Work. The remaining three subsections listed above, Carr Brook, Davis Brook and Kenduskeag East, are recommended for field investigation under the Phase 3 SSES Scope of Work. An additional subsection, Barkersville, is also recommended for inclusion in the Phase 3 SSES Scope of Work.

This subsection was identified in the Phase 2 SSES Scope of Work as the next subsection, beyond the top five subsections, to expand SSES work because it scored “high” in three of the five comparative categories. All of the subsections referenced above are combined systems.

The locations of the subsections recommended for the Phase 3 SSES Scope of Work are shown on Figure 1, General Sewer System Plan (bound in back).

3.0 PHASE 3 SSES SCOPE OF WORK

This section of the memorandum presents the scope of work for the next phase of SSES activities. The activities include the execution of the SSES Scope of Work, sump pump identification program, maintaining a list of sewer service connections observed to have high infiltration, and a smoke testing program if deemed necessary by the City in areas that may be targeted for sewer separation.

3.1 SSES Scope of Work

The following SSES Scope of Work applies to the Carr Brook, Davis Brook, Kenduskeag East and Barkersville subsections. As noted in Section 2.0, the Carr Brook, Davis Brook and Kenduskeag East subsections have high scores in all five comparative categories; and the Barkersville subsection has high scores in three of the five comparative categories. The City has identified certain projects and scheduled implementation work within the Carr Brook, Davis Brook, Kenduskeag East and Barkersville subsections under the 5-year Capital Improvement Plan, independent of the Phase 3 SSES SOW included herein, including certain areas that are targeted for sewer separation and pipe replacement projects. The locations of pipe that are already scheduled for sewer separation or replacement within the Carr Brook, Davis Brook, Kenduskeag East and Barkersville subsections under the 5-year CIP projects will not be included for additional evaluation under the Phase 3 SSES SOW.

1. During a high groundwater period, perform light cleaning and internal television inspection of sewer pipe segments within each subsection. During television inspection, identify locations of defects and estimate infiltration amounts emanating from leaks in mainline pipe, and peer into lateral service connections long enough to determine if any lateral service connections are leaking, and estimate the infiltration amount emanating from leaks in lateral service connection.
2. While performing the internal television inspection in item 1 above, inspect sewer manholes accessed during the work, identify location of leaks in the manholes, if any, and estimate infiltration amount.
3. The results of the internal television inspections of mainline pipe will also be rated based upon the NASSCO rating system for inclusion in the City's database. The CCTV reports would also provide estimates of inflow to quantify flows into the combined system.
4. Summarize results of above field investigations in the SSES Report. The report will:
 - a. List all public and private sources of I/I identified during the Phase 3 SSES by sewer subsection, and for each sewer subsection of the collection system, describe the scope of the City's SSES investigations.
 - b. Identify each sewer subsection addressed in the SSES scope of work that is tributary to or contributes to any SSO or CSO in which identified I/I is determined to exist.

- c. Where practicable, quantify the combined total of both public and private sources of I/I.
- d. List all private sources of excessive I/I identified during each SSES and describe actions planned or taken by the City to enforce its sewer use ordinance (or otherwise address) so as to remove private sources of I/I from the collection system for all sources listed above.
- e. Include the framework of a public education plan to promote the elimination of private sources of excessive I/I, and a schedule for implementation of the plan.
- f. Include an evaluation of whether any changes in the City's ordinances or by-laws are necessary to implement or facilitate the planned remedial measures, and a proposed schedule for implementing and enforcing any necessary City ordinances or by-laws.
- g. Contain provisions for follow-up verification including, by way of example, conducting building inspections.

3.2 Flow Metering Program

Flow metering may be conducted in each combined sewer subsection during the CCTV inspections for the subsection, as a supplement to the CCTV work. Flow meters may be deployed in strategic locations within the subsection to identify the higher inflow locations within the subsection. The results of the flow metering program would be reviewed in conjunction with the CCTV reports, to locate areas of higher inflow, compare the CCTV flow estimates, and further refine investigations, if portions of the subsection have higher inflows.

3.3 Sump Pump Identification Program

In many municipalities a significant volume of infiltration/inflow enters the sewer system from sump pumps and basement drains improperly connected to the sewer system. Presented below is an ongoing program that was initiated in 2015 for the identification of these connections and will continue for this Phase 3 SSES SOW.

A sample form of the sump pump announcement is presented in Appendix A. The City will mail an announcement to all residents and businesses. In addition, a sump pump announcement will be published in local newspapers, distributed for posting in public places and made available for viewing on the city's web site.

Basement Inspection Plan. As part of the sump pump identification process, a basement inspection plan will be implemented to allow the City to monitor the status of a sump pump confirmed to be connected to the sewer system and the progress of its subsequent removal. When a sump pump is identified, the plumbing inspector (or other entity designated by the City) will perform a follow-up visit to the house to verify whether or not the connection is illegal and if there are any viable options to reroute or disconnect from the separated sewer

system. After securing permission from the owner and tenant, the inspector may perform one or more of the following tasks; as applicable:

1. Take photographs of the sump pump and its discharge location and related basement internal plumbing.
2. Complete a basement inspection form (to be developed). During the basement inspection, the inspector will also inspect the general premises to determine a proposed legal sump pump discharge location.
3. Confirm the discharge location. Introduce dye water, if necessary, into the sump pump system and then observe the public sewer through the first downstream sewer manhole for evidence of dye water.
4. If a sump pump redirection is completed, perform a follow-up inspection of the premises to confirm that the redirection work was performed in accordance with the approved plan.

The City will maintain a database record of the status of each sump pump extending from the initial identification to the final redirection.

The City is committed to public education/outreach as part of the SSES SOW Phase 3 and will incorporate this information within other City public outreach forums (i.e. MS4 Public Outreach Compliance).

3.4 Sewer Service Connections

Historical results of internal television inspection may show a significant amount of infiltration entering the sewer system through sewer service connections via leaks in the pipe joints, cracked pipe and offset joints. In fact, the estimated infiltration entering the sewer system from sewer service connections is often much greater than the estimated infiltration entering the sewer system through the main pipelines.

The City will maintain a list of service connections with observed high infiltration as determined from the internal television inspection performed during SSES Scope of Work tasks.

3.5 Smoke Testing of Targeted Locations in Combined Sewer Systems

As part of the City's Long-Term Control Plan for CSOs, the City may target specific areas within the Carr Brook, Davis Brook, Kenduskeag East and Barkersville subsections for sewer separation. The targeted locations may be smoke tested to identify both public and private I/I sources connected to the sewer system such as catch basins, roof leaders and area drains. During this work, dye-water tracing may also be required to confirm positive I/I sources. The results will be documented in a report.

4.0 IMPLEMENTATION SCHEDULE FOR PROPOSED PHASE 3 SSES SCOPE OF WORK

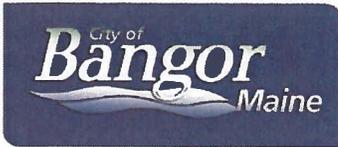
The field investigations for the SSES Scope of Work identified in Section 3.1 will be completed within a 5-year period extending from summer 2016 to December 31, 2021 (Kenduskeag East CCTV has been started in summer of 2016). An average of approximately 40,000 linear feet of pipe will be targeted for CCTV inspection in the late winter/spring high groundwater season each year, with the results summarized in one Phase 3 SSES Report to be submitted to EPA and DEP by January 31, 2022.

The sump pump identification program (Section 3.3) and the identification of leaking lateral service connections and maintaining a database of the locations (Section 3.4) will be ongoing tasks continuing until December 31, 2021.

The field work for the smoke testing program (Section 3.5) should be performed during a low groundwater period. This work is shown to be implemented over multiple years as deemed necessary to complete the SSES.

APPENDIX A

Sample Announcement for Sump Pump Identification Program



WATER QUALITY MANAGEMENT

Andrew F. Rudzinski
Director
andy.rudzinski@bangormaine.gov

Sump Pump Identification Program

The Bangor Wastewater Treatment Plant (WWTP) shows large increases in flow during wet weather, indicating that a significant amount of infiltration and inflow (I/I) exists. I/I is clean water, such as groundwater and stormwater, which enters the sanitary sewer system. Excessive amounts of I/I can contribute to basement sewer backups and combined sewer overflows. I/I also results in higher costs paid by residents for the operation and maintenance of the sewer system.

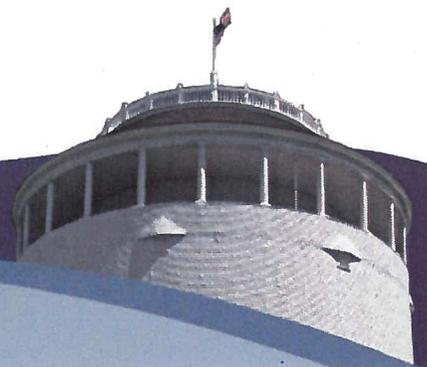
A large portion of I/I may be from sump pumps improperly connected to the sewer system. State and local regulations prohibit the discharge of sump pumps into the sanitary sewer. A sump pump is properly connected if it discharges to a stormwater drain pipe, to a drywell or to an overland discharge location in your yard or driveway. A sump pump is improperly connected if it discharges to a sanitary sewer when other viable discharge alternatives exist.

The City of Bangor is initiating a program for the identification of improper connections to the sanitary sewer. If you suspect that your sump pump (or basement drain) may be connected to the sanitary sewer, please contact the City of Bangor Sewer Maintenance Department at (207) 992-4513. The City will then arrange for an inspection at a time convenient for you to confirm the discharge location of the sump pump.

During the basement inspection by City employees, the inspector may need to temporarily introduce dye water into the sump pump system to determine the discharge location. The inspector may also take notes and photographs of the basement's internal plumbing and related appurtenances.

Please help Bangor remove extraneous water from the sewer system and thereby minimize the sewer use charges to the residents for wastewater treatment.

760 Main Street • Bangor, Maine 04401
207.992.4477 • Fax 207.947.3537
www.bangormaine.gov



To: Infrastructure Committee
From: Engineering Department, John Theriault
Date: November 8, 2016
Re: Ordinance Change to prohibit parking on the north side of Lincoln Street between Main Street and Third Street

The City of Bangor's Engineering Department is recommending a change to the City's Ordinance to prohibit on-street parking along the northerly side of Lincoln Street between Main Street and Third Street. The existing width of Lincoln Street in this portion of the road is only about 22 feet wide and does not safely accommodate on-street parking on both sides of the street. This topic was originally discussed at the June 28, 2016 infrastructure meeting and a significant number of residents attended the meeting to express their support for limiting the parking.

The Engineering Department mailed out questionnaires to residents of Lincoln Street between Main Street and Third Street to obtain further input with regards to on-street parking and which side of the road was preferred to have on-street parking eliminated.

The topic was further discussed at the September 13, 2016 infrastructure Meeting where the results of the questionnaire were discussed. A follow up meeting was held with residents of Lincoln Street on Wednesday October 19, 2016 to review the survey results and discuss the City's recommendation.

Based on the survey results and resident input, the Engineering Department recommends moving forward with the process to prohibit parking on the north side of Lincoln Street. The attached City Ordinance change is provided for the Council's consideration.

COUNCIL ACTION

Item No.

Date: November 28, 2016

Item/Subject: **ORDINANCE**, Amending Schedule I of Chapter 291, Article III, Sec. 38 of the Code of the City of Bangor - No Parking - Lincoln St

Responsible Department: Engineering

Commentary:

This Ordinance would prohibit parking on the northern side of Lincoln Street between Third Street and Main Street.

The existing width of Lincoln Street in this portion of the road is only about 22 feet wide and does not safely accommodate on-street parking on both sides of the street. The elimination of parking on the northern side of the street is recommended based on surveys of residents, input from residents at Infrastructure Committee meetings, and the recommendation of the Engineering Department.

This item was discussed at the Infrastructure Committee meeting on November 15, 2016.

Department Head

Manager's Comments:

City Manager

Associated Information: Ordinance

Budget Approval:

Finance Director

Legal Approval:

City Solicitor

Introduced for

- Passage
- First Reading
- Referral



CITY OF BANGOR

(TITLE.) ORDINANCE, Amending Schedule I of Chapter 291, Article III, Sec. 38 of the Code of the City of Bangor - No Parking - Lincoln St

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF BANGOR, AS FOLLOWS THAT:

Chapter 291, Schedule I of the Code of the City of Bangor is hereby amended as follows:

Schedule	Street	Parking Limitations Reference	Exact Location
...			
I	Kenduskeag Ave	prohibited	Commencing at the curbline of Harlow St and extending to the southerly curbline of Montgomery St on the easterly side of said street as defined by signs
<u>I</u>	<u>Lincoln St</u>	<u>prohibited</u>	<u>Commencing at the easterly curbline of Third St and extending easterly to the westerly curbline of Main Street on the northerly side of said street as defined by signs</u>

...

Additions are underlined, deletions ~~struck through~~.

To: Infrastructure Committee
From: Engineering Department, John Theriault
Date: November 8, 2016
Re: Amending Chapter 165, Land Development Code, and 271, Streets, of the Code of the City of Bangor, By Adding Construction Standards for Private Streets

The City's Engineering Department requests that the City Council amend the existing Code of the City of Bangor to remove some minor inconsistencies between the "Design Standards for Streets and Right of Ways" and the existing standards within the Code.

These changes include increasing the required excavation depth to subgrade to a range of 25 to 28 inches and increasing the minimum sidewalk width from 5 feet to 6 feet to accommodate the existing maintenance equipment.

In addition, the proposed Ordinance change requires that "private streets" to be designed and constructed in compliance with standards set by the City Engineer, which were recently laid out in a Policy for "Design Standards for Streets and Right of Ways" and approved by the City Council.

The Policy includes design standards for both public and private streets and addresses roadway geometrics, construction materials and required depths, safety enhancements including sidewalk and street lighting, and stormwater drainage.

COUNCIL ACTION

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Commentary:

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The existing width of Lincoln Street in this portion of the road is only about 22 feet wide and does not safely accommodate on-street parking on both sides of the street. The elimination of parking on the northern side of the street is recommended based on surveys of residents, input from residents at Infrastructure Committee meetings, and the recommendation of the Engineering Department.

This item was discussed at the Infrastructure Committee meeting on November 15, 2016.

Department Head

Manager's Comments:

City Manager

Associated Information: Ordinance

Budget Approval:

Finance Director

Legal Approval:

City Solicitor

Introduced for

- Passage
- First Reading
- Referral



CITY OF BANGOR

ORDINANCE, Amending Chapters 165, Land Development Code, and 271, Streets, of the Code of the City of Bangor, By Adding Construction Standards for Private Streets

WHEREAS, some properties in the City are only accessible by private street;

WHEREAS, emergency vehicles must be able to access properties in the City safely;

WHEREAS, construction standards for streets help ensure that access by emergency vehicles and others is possible;

WHEREAS, the City Engineer has developed minimum standards for streets, including private streets; and

WHEREAS, some of the standards in the subdivision section of the Land Development Code do not conform with these standards;

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF BANGOR AS FOLLOWS, THAT

Chapter 165 of the Code of the City of Bangor be amended as follows:

§ 165-131. Improvement construction standards.

A. Streets and roadways. The subdivider shall be required to provide the following:

...

- (3) Subgrade. Said street or way shall be graded to the subgrade of not less than ~~18 to 24~~ 25 to 28 inches, as specified by the City Engineer, for the road area and not less than ~~nine~~ 14 inches for the sidewalk areas below the finished grade shown on the plan, profile and cross section of said street right-of-way. The petitioner shall provide the land necessary for cut or fill slopes beyond the limits of the street right-of-way.

...

D. Sidewalks (nonindustrial subdivision).

- (1) Sidewalks shall be provided at a minimum of ~~five~~ six feet in width as deemed necessary by the Planning Board. . . .

BE IT FURTHER ORDAINED BY THE CITY COUNCIL OF THE CITY OF BANGOR AS FOLLOWS, THAT

Chapter 271 of the Code of the City of Bangor be amended as follows:

§ 271-12. Purpose; definition; city participation in costs.

. . .

- B. For purposes of this article, the terms "public street" and "public sewer" shall refer to any legally established municipal street or sewer in the City of Bangor. "Private street" shall refer to any drive or way that serves three or more properties in the City of Bangor and allows vehicular traffic.

. . .

§ 271-15. Construction standards.

All new public streets and sewers and private streets and all reconstructed public streets and sewers and private streets shall be constructed in accordance with such minimum standards as may be established from time to time by the City Engineer.

Additions are underlined, deletions ~~struck through~~.